PR0CEEDINGS

National Conference on Science, Humanities and Engineering Technology

(NCSHET- 2021)

30th and 31st Oct 2021

Published Online in Association With

International Journal of Engineering, Management, Humanities and Social Sciences Paradigms

IJEMHS

Organized by:

Department of Electrical Engineering
&
Department of MBA
College of Engineering Bhubaneswar
Plot No. 1(A), CNI Complex, Patia, Bhubaneswar-751024, Odisha, India

ABOUT THE CONFERENCE

The Department of Electrical Engineering and MBA, College of Engineering Bhubaneswar is glad to announce the **National Conference on Science, Humanities and Engineering Technology (NCSHET- 2021)** on 30th and 31st Oct 2021 at College of Engineering Bhubaneswar. NCSHET provided an ideal academic platform for leading academicians, scientists and research scholars to exchange and share their experiences and research results about all aspects of multidisciplinary studies. The conference presented emerging technologies and novel research results in all aspects of Sciences, Engineering, Management and Humanities. An effort was made to make the audience aware of multidisciplinary fields and the recent advances in these fields on various aspects. Participation from diverse groups of people and discussions provided useful ways in conquering challenges which mankind is facing today. Therefore, the emphasis was laid on paying attention towards nature and to bring into light all possible measures to resolve the various issues so that one can contribute in maintaining the life on Earth for longer period.

ABOUT THE INSTITUTE

College of Engineering Bhubaneswar has upheld its leading place in the domain of the technical education since 1999. The institute is located in the eastern region of India, at the heart of the capital city Bhubaneswar, Odisha. In response to the expectations of quality technical education, our college is approved by the All-India Council for Technical Education (AICTE), New Delhi, Government of India and affiliated to Biju Patnaik University of Technology (BPUT), Government of Odisha. It has trained, experienced dedicated faculty members. The introduction of post-graduate programmes has given impetus for research and innovation. Many of our students and faculty have been presenting papers at national and international conferences, and many have published their work in research journals of repute. Our excellence in academic and related areas has been well-recognized. The corporate world has also taken note of our efforts and good work. We have both faculty and student chapters of the Indian Society for Technical Education (ISTE) and the Institution of Engineers (IE). We also have various departmental and institute-level societies and clubs to encourage students to look beyond examination-centric learning, to explore and innovate, and to be life-long learners. Physical education is as important, if not more, than other domains of learning. A healthy mind requires a healthy body. We have excellent sports & games infrastructure. We equip our students with all the necessary skill sets in terms of technical knowledge, interpersonal skills, communication, and leadership skills to get placed in highly reputed companies.

ABOUT THE DEPARTMENTS

The Department of Electrical Engineering is one of the oldest departments of the College of Engineering Bhubaneswar. Established as one of the major departments of the Institute, since its inception in 1999, the Department of Electrical Engineering has been actively engaged in teaching and research in diverse fields of Electrical Engineering. With excellent faculty, the Department of Electrical Engineering offers undergraduate (B.Tech) and graduate (M.Tech) in Power System Engineering and research programmes. The Department of Master in Business Administration is one of the key departments of the College of Engineering Bhubaneswar (COEB). The Department of Business Administration has been actively engaged in technology enabled teaching & learning. Our Continuous improvement of processes & systems help us to make it a finest learning environment.

MESSAGE FROM CHAIRMAN

Er. Prabhat Ranjan Mallick
Chairman

On behalf of College of Engineering Bhubaneswar, I extend a very warm welcome to all the delegates and participants from various organizations to **National Conference on Science, Humanities and Engineering Technology (NCSHET- 2021)** on 30th and 31st Oct 2021. The Institute has taken on the mantle of greatness and is dedicated to giving the students a place where they can study, develop, and widen their knowledge by pursuing a variety of academic interests.

I would like to thank the faculty & staff members, the organizers of NCSHET- 2021 and students for their contribution in successfully organizing and managing the event.

I hope all the participants will extract the benefits of the said conference for their future growth.

Thank you!

Er. Prabhat Ranjan Mallick

(Chairman)

College of Engineering Bhubaneswar
Plot No. 1(A), CNI Complex, Patia, Bhubaneswar

MESSAGE FROM VICE-CHAIRMAN

Mrs. Namita Mallick
Vice-Chairman

I am glad to know that Department of Electrical and MBA, College of Engineering Bhubaneswar is going to organize **National Conference on Science, Humanities and Engineering Technology (NCSHET- 2021)** on 30th and 31st Oct 2021**.** These conferences are designed to distribute dormant and novel concepts, which are very beneficial for industry researchers and scholars to succeed in their research-focused endeavours. I sincerely appreciate the conference organizing committee.

 I send out my best wishes for the conference to be a huge success.

Mrs. Namita Mallick
Vice-Chairman

College of Engineering Bhubaneswar
Plot No. 1(A), CNI Complex, Patia, Bhubaneswar

MESSAGE FROM PRINCIPAL

Prof. (Dr.) Subrat Kumar Mohanty
Principal

It gives me immense pleasure to known that Department of Electrical Engineering and Department of MBA are jointly conducting a "**National Conference on Science, Humanities and Engineering Technology (NCSHET- 2021)"** on 30th and 31st Oct 2021.

I hope that this conference would certainly induce innovative ideas among the participants paving way for new inventions and technologies in their respective area of interests.

I congratulate the convener and the entire organizing team for their contribution in successfully organizing and managing the event.

Prof. (Dr.) Subrat Kumar Mohanty
Principal

MESSAGE FROM CONVENER

Dr. Sasmita Nayak   **Prof. Anjan Kumar Sahoo**
MBA   **EE**
Convener   **Convener**

We are extremely glad to organize **National Conference on Science, Humanities and Engineering Technology (NCSHET- 2021)** on 30th and 31st Oct 2021**.** NCSHET provided an ideal academic platform for leading academicians, scientists and research scholars to exchange and share their experiences and research results about all aspects of multidisciplinary studies. The conference presented emerging technologies and novel research results in all aspects of Sciences, Engineering, Management and Humanities. A concerted attempt was made to introduce the audience to diverse subjects and the various features of current developments in these fields. Discussions and participation from a variety of groups of individuals offered helpful strategies for overcoming the problems that humanity is currently experiencing. In order to help sustain life on Earth for a longer amount of time, emphasis was placed on being aware of nature and bringing to light all feasible solutions to the many problems.

As conveners we extend our gratitude to all Professors, Invited speakers, Chief guests and all the delegates and participants for their wholehearted contribution in the National Conference.

We wish the conference and the Proceedings a grand success.

Dr. Sasmita Nayak   **Prof. Anjan kumar Sahoo**
Convener   **Convener**

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

Practical Evaluation of Lithium Ion Battery

Mrtutyunjay Padhi[1], Ratikanta Praharaj[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju patnaik university of Technology, Odisha, India.

ABSTRACT

Rechargeable batteries are a key technology in the development of many new applications. Thousands of academic papers have been published on this topic. Quite often the conclusions and claims are exaggerated, partly because the laboratory test conditions differ significantly from the practical design of the battery. This article highlights common problems that can lead to biases in the evaluation of new materials and new devices.

INTRODUCTION

Rechargeable batteries are a key technology in the development of many new applications and have attracted widespread attention. In 2018, a search of the Web of Science Core Collection yielded 11,583 academic publications with the keywords "lithium" and "batteries". Quite often, conclusions and claims made in papers are exaggerated, partly due to ignorance of current industrial products. from laboratory test conditions to practical battery design and praise. The average growth rate of lithium-ion battery energy density has been less than 3% over the past 25 years and is only slowing. Historically, energy density has never increased dramatically due to complex system design and well-balanced application performance requirements. Setting a record with one activity does not guarantee that a new battery can be marketed in a short time. Researchers should be aware of battery development. After 28 years of effort by scientists and engineers, the energy density is 300 Wh/kg in batteries and 730-750 Wh/l in 3C devices, more than the original 90 Wh/kg. One could often read claims that the energy density of the new device 44244 is 1that of current lithium-ion batteries, i.e. 600-3000 Wh/kg or 1460-7500 Wh/l. These values are highly desirable, but probably very difficult to achieve. In addition to artificial exaggeration, the lack of a standard test protocol leads to exaggerations in laboratory studies. This is more important in the development of a new generation of lithium batteries that use a metal lithium anode. Similar problems often occur with lithium-ion batteries. It is imperative that researchers are aware of practical battery specifications and standard test protocols. Recently, Lin et al. pointed out that reporting the performance of a limited number of instruments does not give a realistic picture of the battery performance required for practical use.

Advances in Application of Graphene Material in Petroleum Chemistry

Santosh Acharya[1], Sitikanta Nayak[2]

[1]College of Engineering Bhubaneswar, Biju patnaik university of Technology,Odisha,India

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju patnaik university of Technology,Odisha,India

ABSTRACT

Graphene is a mono-atomic thick crystal consisting of carbon atoms. It is the lightest, thinnest and strongest material to date that conducts heat and electricity well. In terms of application, it can be argued that by adding oxygen groups, graphene can be well dispersed in solvents, chemically modified and functionalized, or combined with other electro active substances through a covalent or non-covalent bond to form composite materials that further promotes processing and progression. The use of graphene in petrochemicals started late but developed rapidly. Graphene has played an active role in drilling fluid, cementing fluid, fracturing fluid, shearing fluid and other oil field working fluids. It can improve the temperature and salt resistance of the working fluid and improve the performance of the working fluid. In this article, several trends in graphene applications in petroleum chemistry, such as modified graphene, graphene copolymers, and graphene nano particles, are discussed in detail about the effect and effect of synthetic methods and its mechanisms. Based on existing research, proposals were made for the development direction of graphene materials in petroleum chemistry for various graphene materials, with the aim of providing guidelines for the use of graphene in petroleum chemistry.

INTRODUCTION

Graphene is a hexagonal tiling material based on sp² hybridized carbon atoms. It is the lightest, thinnest and strongest material to date that conducts heat and electricity well. For example, its strength is greater than diamond, its thermal conductivity is always greater than copper, it has a large specific surface area, and it has high physical, chemical and biological stability.[1-2].In the 1960s, scientists introduced the concept of graphene, which was defined as a two-dimensional crystal composed of carbon atoms with only one atom-thick layer. Due to limitations in graphite layer separation techniques, it was not until 2004 that Andre Geim and Konstantin Novoselovin produced graphene by mechanical exfoliation in the UK. Research on graphene has developed rapidly since then, and the excellent properties of graphene have been gradually exploited [3-4]. Graphene has been used to produce new high-performance products such as ultra-thin devices, high-strength materials, flexible electronics, powerful batteries and other high-performance products.

Optimization and Power Management Strategies for Fuel Cell/Battery/Super capacitor Hybrid Electric Vehicles

Rojalini Sahoo[1], Samir Kumar Jena[2]

[1]College of Engineering Bhubaneswar, Biju patnaik university of Technology, Odisha, India

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Energy management strategies and optimal power sources for fuel cell/battery/super capacitor hybrid electric vehicles (HEV) are critical for power allocation and cost-effective sizing to meet power demand at good range, lower power source, and lower power. The paper presents a comprehensive overview of energy management techniques and their integration in hybrid electric vehicles with energy sources, mainly fuel cell/battery/super capacitor dimensions. The article discussed the benefits of integrating an energy management strategy (EMS) and sizing hybrid energy sources. Predictive energy management strategies such as Artificial Neural Network (ANN), Reinforcement Learning (RL), Model Predictive Control (MPC) were briefly explored. In addition, the work looked at hybrid rhythms or real-time energy management strategies based on a predictive rule-based community. time and predictable with learning-based algorithms that provide a good energy management strategy for fuel cell/battery/super capacitor. HEV achieves optimal objective functions. The results show that time intervals for fuel cell size, energy demand estimation of high-capacity batteries and lower capacity batteries, and state-of-charge (SoC)-based methods show that the SoC-based method is not valid in the real world. world conditions fuel efficiency improved when using dynamic programming (DP) compared to RL-battery hybrid vehicles. When EMS was compared using dynamic programming (DP), Pontryagin's minimum principle (PMP), and equivalent consumption minimization strategy (ECMS), the results show that ECMS is more effective than PMP and DP in network optimization. Further results show that RL-based EMS systems help reduce energy losses as well as increase system efficiency and help reduce battery wear compared to rule-based EMS systems.

INTRODUCTION

Traditional transport accounts for approximately 20% of the world's greenhouse gases and pollutants emissions, resulting in climate change and natural resource depletion. To address the issue of energy security and pollution, vehicle manufacturers and research institutions have been work- ing to develop energy-efficient and emission-free vehicles using alternative propulsion systems and clean and renewable energies (Madanipour et al.,2016;Marzougui et al.,2017;Ala-garsamy,2018).

Research on Super Capacitor Speed Control System

Dharitri Routray[1], Samita Biswal[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]NMIET, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

ABSTRACT

In the context of carbon peaking and carbon neutrality goals, large new energy systems have low inertia and weak damping properties. The frequency stability of the new electrical system has become a major problem for the safe and stable operation of the electrical network. Traditional primary frequency modulation technology based on thermal or hydroelectric power plants has a poor response speed and a long frequency detection delay. Therefore, we offer a multi-purpose multiplexed super capacitor high-speed power control system with frequency stability control and voltage control functions. Meanwhile, we propose a fast frequency detection algorithm for sequential signal delay, and the frequency detection delay is less than 10ms. The system uses a fast ringing network and data transfer delays are less than 2 milliseconds. Finally, we built a 50 kW super capacitor energy storage system so that the super capacitor can quickly and actively support the power system during frequency disturbances.

INTRODUCTION

Current power grids, large heat capacity and hydroelectric power plants are the main frequency modulation power supply, which responds to the change in the frequency of the power grid by continuously adjusting the output of the equipment. However, both have rotating mechanical components that are affected by mechanical inertia and wear, etc., and have a long response time delay. Solar energy, wind energy and other new energy widely connected to the power grid, electric car charging network, as a new type of charging, the rapid development of the power grid "a large part of renewable energy", "high power electronics" function, adopt the characteristics of low inertia, low damping and high power DC project continuous operation, power grid frequency issues related to safety and stability [1-3]. On the other hand, large capacity DC will produce a huge amount of unbalanced power once the fault such as bipolar locking occurs. The superposition of the above two factors poses more and more severe challenges to the frequency safety of the current power grid energies to rage devices using power electronic interfaces, such as battery energy storage,

4

Globalization and English Literature: How Globalization has Affected the Themes, Style And Influences of Modern English Literature.

Ipistia Dhal[1], Indrani Samantaray[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This article explores the far-reaching effects of globalization in the themes, styles and influences that shape contemporary English literature. With globalization, the world is becoming smaller and smaller due to the interdependence and sharing of cultures. In today's world, walking and exploring nature is important. This article reveals how globalization has affected the narratives of English literature, where writers are allowed to write about universal themes while respecting diversity and multiculturalism. English literature has a rich history, crosses borders and contains diverse traditions. This research explores the history of different literary styles and how today do writers adapt and innovate in a rapidly changing society. This study also explores how literature reflects an interdependent world and shows the flexibility of English literature.

INTRODUCTION

The effects of globalization can be seen in almost all walks of life in today's world and #039; It shaped modern business, communication, art making and consumption. This article examines the effects of globalization and its effects on themes and motifs in contemporary English literature. Contemporary English literature reflects many universal and diverse thematic and globalized stylistic trends. This metamorphosis highlights the dynamism of English literature that continued despite the changed environment. English literature has a rich history, it crosses borders and contains various traditions. This era of globalization was characterized by a cultural exchange that transcended geographical boundaries and reformed societies, giving rise to a new literary landscape. On a global level, writers experience identity issues, migration issues, and technological issues, among others, all related to different nationalities. The following stories consider the universality of humanity, but also the prejudices and perspectives specific to different cultures.

Professional Jargon in Social Media

Nidhi Sahoo[1], Sibashis Mahakud[2]

[1]College of Engineering Bhubaneswar,Biju Patnaik University of Technology,Odisha,India.

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Professional language and social media can affect writing skills depending on how they are used. Professional language can help build credibility and demonstrate expertise. On the other hand, social media can help improve writing skills through practice and peer feedback. First, jargon can help build credibility and demonstrate expertise. This can add depth to your writing and make it sound more authoritative. A specialized language can also help a writer become more familiar with the language of a certain field. This can be especially useful if you are trying to influence a specific audience.

INTRODUCTION

On the other hand, social media can be a great platform to practice and improve your writing skills. Authors can share their work on social media and receive feedback from peers. This can help them identify areas where they need improvement and areas where their writing is strong. It can also help them keep up with industry trends and the latest writing techniques. In addition, social media can help make writing easier. For example, it can help writers find and share writing resources, such as tutorials and helpful articles. Writers can also connect with other writers and professionals in their field to share ideas, participate in discussions, and learn from each other.In conclusion, both slang and social media can affect writing skills. Using professional language can help build credibility and demonstrate expertise, while social media can help writers practice, receive peer feedback, and stay informed. Social media can also make writing easier and help writers find and share writing resources..

How Media is The Medium to Express The Social Issue

Namita Mahapatra[1], Alok Das[2]

[1]College of Engineering Bhubaneswar,Biju Patnaik University of Technology,Odisha,India.

[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The mass media provide access to and construct social problems for the general public all over the world, and they in turn have become a social problem due to their multiple and complex and many negative effects. Several theorists and critics have accused the media of promoting violence and sexism, racism, homophobia, ageism, and other oppressive social phenomena. Social problems related to media include the allegedly harmful media effects on children and young people; pornography and defamation of women and sexuality; advertising manipulation; and promoting excessive consumption and materialism.

INTRODUCTION

Mass media affects our daily life. We are constantly updating ourselves by following daily news. Media creates and shapes our lives. It is meant to reach a large audience immediately. The role of the media in society is broad and comprehensive. The word media was first used for the print. The print media includes magazines and newspapers, it is one of the oldest forms of mass communication. With the advancement of technology, now the media encompasses various mediums of mass communication like television, radio, internet and theatre. Now the time people are just one click away from the information which is available on various social media sites. Today the media is everywhere and it is very convenient for the people due to its potability, we can get the information from the internet and from radio as it is available in our mobile phones. Internet is the newest and modernized form of media. It gives us real-time information and updates us about the happenings around us. Mass media is a key component of any majority society. It acts as the fourth pillar of democracy, it fights against injustice, abuses, insults and oppression in our society. The media acts as the watchdog of the society. It also affects the reputation of the party, organization and individual.

A study and analysis on impact of Covid-19 on digital marketing

Sushant Mishra[1], Parbeen Mishra[2]

[1]Department of Business Administration College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The global pandemic of Covid-19 while having its impact on various sectors, had a considerable impact on Digital Marketing and Advertising as well, in global, regional and local level. However, this impact for most part was a positive one, rather than what was being witnessed in various other fields such as economy, human resource, etc., While the virus created lot of uncertainties among customers and marketers alike, with respect to health, social life, economic stability, employment, etc., the same also led to behavioural shifts such as working remotely, spending lot of time indoors, adopting to home-schooling, learning new recipes from the internet, increased attention on health and hygene, avoiding crowded areas, increased social media engagement, shift towards online content, etc., and all of these had an immense impact on marketing and advertising efforts. The behavioural shift was predominantly towards digital platforms and digital content, which created true opportunities for the marketers and brands to connect with the customers digitally more than ever before. With increased social media engagement and craving for digital content, digital medias provided the marketers with lot of opportunities to cash on.

INTRODUCTION

Digital Marketing is a branch of marketing that utilizes internet and digital technologies such as Computers, Mobile phones, Websites, Social Media platforms, Application Software, e-mail and other platforms to promote products and services. The development of Digital Marketing in the 1990's and 2000's, changed the way brands and marketers use technology for implementing marketing plans and strategies. In recent times, Digital Marketing have become more prevalent, employing combination of Content Marketing, Micro-Video Marketing (M.V.M), Search Engine

Optimization (S.E.O), Search Engine Marketing (S.E.M), Social Media Marketing (S.M.M), Influencers Marketing, In-App P.O.S Advertising, Social Media Optimization (S.M.O), e-Commerce Marketing, Digital Advertisement Displays, e-mail Marketing, etc., While the Digital Marketing and Advertising were growing at a steady pace, the outbreak of Covid-19 gave it an unexpected boost, by making the people locked down at home with less or no work hand and influencing a fast paced behaviour shift towards digital platforms, digital media, and digital content.

Project Management versus Operations Management the realistic study

Barsha Baishali Sahoo[1], Anadee Shethy[2]

[1]Department of Business Administration College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The two fields of operations management and project management are widely practiced in industry. However, to the best of the authors' knowledge, there exists no specific study that highlights the differences and/or similarities between the two in the understanding of the practitioners. Thus, this study is undertaken to identify and study the differences between project management and operations management from the perspectives of practitioners in industry at the Sultanate of Oman. This paper aims to have a better and a deeper understanding on each field's definition, characteristics, responsibilities and key personnel roles and required skills. Accordingly, a set of hypothesis were drawn from the literature and a specific survey was designed to test these hypothesis. The survey is then distributed to practitioners in Oman and results from 100 respondents were collected, analyzed and discussed. The study has revealed that indeed there exists a strong Alliance between project management and operations management.

INTRODUCTION

Travelling two different paths that leads to the same destination may be a suitable way of describing project management and operations management, yet, a logical concern will raise regarding the differences between both paths. Project management and operations management are mutually related to each other, however, level of interaction and intersection between them depends on the perspective of how things are seen or defined. In a very broad sense, though simple, projects focus on deliverables while operations care about the processes of making deliverables in mass (Moore, 2015). According to Kwak and Anbari (2009), when the interaction level of both fields are evaluated based on academics and practitioners it may be revealed that the level of alliance between project management research and operations research disciplines are ranked second among the highest disciplines allied with project management. This study seeks to identify and discuss the differences between project management and operations management from several different perspectives in order to have a better & deeper understanding on each field's definition, characteristics, responsibilities and key personnel roles and required skills.

Investigating the Culture of Digital Marketing

Barsha Baishali Sahoo[1], Deepak Keshri[2]
[1]Department of Business Administration College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The digital marketing discipline is facing growing fragmentation; the proliferation of different subareas of research impedes the accumulation of knowledge. This fragmentation seems logically tied to the inherent complexity of the Internet, itself resulting from 50 years of evolution. Thus, our aim is to provide an integrative framework for research in digital marketing derived from the historical analysis of the Internet. Using practice theory and institutional theory, we outline a new type of institutional work: imprinting work. We apply this framework to the analysis of historical secondary sources. We find four cultural repertoires on the Internet (collaborative systems, traditional market systems, co-creation systems, and prosumption market systems) and describe the dynamics of imprinting work leading to their creation, showing how new systems are created by appropriating and assimilating existing cultural repertoires.

INTRODUCTION

Most recent reviews of the digital marketing literature observe a fragmentation in the discipline (Lamberton and Stephen 2016; Yadav and Pavlou 2014). This fragmentation is not surprising when we recognize that the Internet is an extraordinarily complex system (Hewett et al. 2016). This complexity is the natural outcome of a complex history, and fragmentation isthe outcome of the absence of a comprehensive view of the Internet. Some academics tend to overlook the fact that the Internet did not emerge suddenly and uniformly, and while some authors acknowledge that the technical architecture of platforms has an impact upon the link between marketing actions and consumer behaviors (Yadav et al. 2013), these contingency effects are still considered exogenous in most research work. However, when adopting a historical perspective, contingency effects are seen less as independent factors than as culturalfeatures: behaviors and platforms are interdependent, and the Internet is both an outcome and a determinant of the behavior of consumers and firms. In this article, we aim to investigate this issue by reconstructing the cultural history of the Internet and its relationship with marketing. In so doing, we provide an integrative cultural framework for subsequent research in digital marketing.

An Analysis of Investment Banks' Contribution to India's Economic Development

Sadasiv Dash[1], Rajib Giri[2]

[1] Department of MBA, College of Engineering Bhubaneswar. Biju Patnaik University of Technology, Odisha, India.

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

A venture bank is a financial intermediary with real-world experience in recommending the issuance of fresh value offers in order to obtain funds. Speculation banking is a special area of banking that helps individuals or groups raise capital in the essential market, where additional safeguards are offered, and involves a significant amount of work in the optional market by following up on behalf of their clients. Speculation banks support new duty and value safeguards for a variety of businesses, assist in selling protections, and support establishments' and private investors' consolidations and acquisitions. The role of a mediator between the stock market and financial backers is fulfilled by the speculation banking association. Based on a plethora of factors, including attention to the various roles played by venture banks and the speculative banking among financial backers, venture banking has grown crucial in the Indian capital market. The purpose of the exploration paper is to illustrate venture banks' role in the current market. This review used optional data and is meant to be illustrative only. The analysis demonstrates the growth, advancement, capabilities, and role of venture banks in the Indian economy.

Keywords: Speculation Banks, Monetary Development, Indian Economy, Liquidity, Essential Market.

INTRODUCTION

A speculative bank is a financial intermediary with some experience in ensuring the issuing of fresh value offers to raise capital assets and in selling protections. Speculation banking is a unique subset of banking activities that helps individuals or groups raise capital in the primary market, where additional safeguards are provided, and involves them doing vital work in the secondary market by looking out for their clients. They act as intermediaries between financial and security supporters and help newly established businesses become more global.

An Analysis of Investors' Investment Patterns

Anurag Sahani[1], Jitendra Mallick[2]

[1]Assistant Professor, Department of MBA, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Investing is the use of money on assets with the goal of increasing capital or providing income. Investing is putting money to work for you in order to make more money—or, to put it another way, sacrificing money now in order to reap rewards later. Given the unpredictability and uncertainty of the future, investments are crucial to the provision of a financial future. A well-thought-out investment produces a sense of security and life assurance. Any type of investment, including those in stocks, the financial sector, real estate, gold, bullion, banking, and the capital market, has some level of risk. Investments are good for society and the economy. Two days later, the entire situation has changed to one of widespread economic prosperity. An increasing amount of excess has resulted from rising income levels and thriving stock markets. A variety of products are available, including mutual funds, insurance, and equity. Financial investment is the use of money in the form of assets to generate new revenue and increase the value of the investment over time. Investments in the Assets can be both hazardous and secure. Therefore, certain assets, such as real estate, bank deposits, post office certificates, life insurance, mutual funds, chit funds, and so on, only produce income. Certain investments can be easily transferred and sold; these are securities issued by the government that are listed on an accredited stock exchange.

Keywords: Investment, Portfolio Management, Insurance, Mutual Fund, etc.

INTRODUCTION

Among the considerations is the investor's investing horizon, quantity invested, and risk tolerance. Among the most crucial is the fact that mutual funds or exchange-traded funds could make suitable portfolio investments for a young investor with limited resources. A high net worth individual's investment portfolio could contain equities, bonds, real estate, and commodities. A portion of sovereign funds and pension funds are part of the largest institutional investors' portfolios. The duration of assets and liabilities must coincide for institutional investors' portfolio investments to match long lifetimes. A portfolio's investments are determined by each investor's unique situation.

Automation of the Financial Reporting and Accounting Process: A Digital Lending Study

Anurag Sahani[1], Prakash Pati[2]

[1]Assistant Professor, Department of MBA, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Understanding automatic accounting procedures and the financial information process in the context of digital lending is the goal of this research. Digital transaction recording has replaced manual systems in managerial and financial accounting. The financial report is identified, recorded, and summarized by automated accounting. The process of using an automated accounting procedure to evaluate a person's credit worthiness is known as digital lending. Digital accounting provides all necessary financial data in a digital format at a minimal cost and effort. In order to strengthen the entire plan, this study will also investigate how automated accounting is assisting digital lending organizations in better understanding and enhancing their managerial, financial, and strategic information.

Keywords: Automated accounting, Financial Reporting System, Digital Accounting, Digital Lending Strategy.

INTRODUCTION

Automated accounting is the process of electronically recording financial transactions through the use of a digital accounting system. Digital accounting is the conversion of computerized accounting systems that are software-based and manipulable from paper-based accounting systems (Deshmukh Ashutosh, 2006). Accounting, which entails recording transactions, summarizing them, and reporting financial affairs, is the language of business. Decision-making bodies in management are required to make decisions within the allotted period, thus information must be sent to them as soon as possible. According to Ritter and Pedersen (2020), digital accounting encompasses innovations like big data analytics, cloud base computing, CSM, data keeping, and the internet of things. It is expected that a company's productivity and efficiency will contribute to its commercial success. Digital technology can facilitate data analysis, collaboration, and the creation and evaluation of content. Digital technology can be useful for data analysis, collaboration, and content creation and assessment. Artificial intelligence technology has been established in the field of accounting in the current period of rapid technological growth, and many firms are using it for their accounting processes.

Visual Analytics for Model-based Policy Analysis

Purnachandra Pradhan[1], Priya Gosh[2]
[1]Assistant Professor, Department of MBA, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

I present a prototype of an interactive visualization that allows for ad hoc investigation, something we haven't seen in previous policy research tools used by people outside of the intelligence community. Built upon a dynamic butterfly economic concept is this visual workstation. It allows analysts to look at global trends in imports, exports, production, and consumption at national and regional scales and relate them to GDP, income elasticity, and population for policy objectives.

INTRODUCTION

Having the ability to explore economic relationships, trends and future needs in dynamic commodity markets is critical to developing effective policies for trade, economic incentives, and environmental issues. Policies that account for global food markets are especially challenging in terms of analysis because demands are changing so rapidly. The changes are a function of rising incomes and evolving tastes. Increased spending power shifts consumption away from traditional foods to more international products and preferences. Many times this means a shift from grains to animal and fish protein. These broad-based trends are the subject of much research and have significant policy implications. For example, if global patterns shift to increased pork consumption abroad – as they have - a commensurate need arises for more soybean meal to feed pigs. This, in turn, causes the expansion of agricultural land uses with potential environmental consequences. Examining these issues, policy advisors need to turn evidence into arguments and brief decision makers so they can set policies addressing these shifts.

Marketing Strategy Decision Support for Technology and Advances

Biswamohan Dash[1], Sapan Gosh[2]

[1]Assistant Professor, Department of MBA, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Rapid organizational environment changes have both beneficial and negative effects on marketing decision-making. Because of this, businesses compete fiercely in their markets, which cause fundamental shifts that necessitate strategy reconsideration and adaptation. According to earlier research, companies constantly look for fresh perspectives and cutting-edge management strategies to enhance their performance and competitiveness. This study aims to investigate how environmental dynamism, new product/service development, and product/service dissemination affect the efficacy of marketing strategies. An ordinal regression analysis is used to test the framework that was previously discussed. Previous theoretical and empirical conclusions are validated by the analysis. Customer wants, competition hurdles, and the management of technical and market changes were used to quantify environmental dynamism.

INTRODUCTION

Throughout the recent years, the market environment has become extremely demanding. Technological developments and market uncertainty has accelerated the pace of the organizational responsiveness in the market. Management researchers are really interested in capturing and studying these changes and their role in strategic implementations. Taking strategic marketing decisions into consideration, literature has highlighted on the benefits of handling environmental dynamism (Mitroulis and Kitsios 2017). Moreover, the literature has focus on implementing these benefits into new service or product development and their diffusion in the market. Although new product or services bring many opportunities for the organizations, there is, always, the risk of being unsuccessful, due to the environmental dynamism. As a result, firms are forced to foster a marketing strategy which could be more sensitive and flexible to the changes that may arise in their environment. For example monitoring customer needs, analyzing competitors' barriers and investing on technological and market changes forecasting, are some of the factors which could enrich their marketing strategy success

Impact of Covid-19 Pandemic and Lockdown on Business Sectors

S.S Panda[1], Litan Dash[2]

[1]Department of Business Administration College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The objective of our study to evaluate crisis across different sector in Indian Economy due to corona virus pandemic and lockdowns, to shed light on key government initiatives to kickstart to the economy again after drastic effects of Covid-19. We are studying five sectors Trade, Manufacturing, Growth, MSMEs and Education which are severely affected by the pandemic. We took the secondary data from various government organizations for our study.

Data indicated the negative growth of GDP by -7.7% and industrial production contracted by -9.6%. Trade deficit shrank by $85 billion in FY2020-21. Economy went into the recession and growth came into positive by the end of FY2020-21.

Keywords: Corona virus (Covid-19), MSMEs, Manufacturing and Trade.

INTRODUCTION

With corona virus rampaging across the globe. Every nation was thrown into chaos. Lockdowns imposed for controlling spread of virus created difficulties of its own. Economy tumbled, lives disrupted and, in some cases, uprooted. Coronavirus brought death and destruction not only in the form of medical illness but also in form of loss of livelihoods. Poor sections of society with little or no savings bore the brunt of pandemic. This is a study of fallout of coronavirus pandemic on Indian economy. We are taking mainly five sectors which are as follows Impact on Growth, Trade, Manufacturing, MSMEs and Education Sector

Women's Leadership and Empowerment

Minati Das[1], Kritika Singh[2]

[1] Department of MBA, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2] Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Women's empowerment is an indicator of social change and a priority for sustainable development goals. The higher the status, the more powerful the person in question is perceived, whether it is a woman or a man. However, men had a higher status than women. More women in senior positions are needed to better assess leadership and influence. Several national and international communities have addressed the problem of women and made different efforts to strengthen their social and health status and involve them in development activities. In the last decades, authorization as the delegation of power to someone was a mechanism that improved the quality of the personal and professional life of a woman. Higher education and profession are an effective means of empoweringwomen, but the role of culture and creativity in this regard cannot be denied. This article explores how to lift women out of poverty through the creative industries.

Keywords: Feminist methodology Empowerment Target groups Rural women

INTRODUCTION

Development is a phenomenon that occurs in all areas of life. It aims to improve the quality of life for all people, regardless of sex, color or caste. For the development process to be more effective and efficient, both women and men must participate equally in the decisions and processes that shape their lives. However, because women are considered a marginalized group in societies around the world, they have very little influence in the development process. One of the policy approaches that can help women participate equally and more effectively in development is empowerment. Such an approach is considered a viable political approach for women in development cooperation.

An Innovative Feature Selection for Attack Detection in Big Data Environments that uses a Fuzzy Deep Neural Network

Alaka Rout[1], Bijya Palka[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In recent times, the massive quantity of data and its continual expansion have transformed the significance of information security and data analysis systems for Big Data. An intrusion detection system (IDS) is commonly employed to monitor and analyze data for the detection of intrusions in the network.The conventional IDS models are not adequate to handle the high volume, variety, and speed of big data. This paper presents a new quantum brain storm optimization (QBSO) based feature selection with fuzzy deep neural network (FDNN), called QBSO-FDNN model for IDS in big data environment. The proposed model enables to detection of intrusions in the big data environment. The presented model initially performs preprocessing to enhance the quality of the big data. Also, to reduce the computational complexity, QBSO algorithm is applied to elect an optimal set of features. The choice of optimal features by the QBSO algorithm helps to boost the detection performance. Besides, FDNN model is applied as a classification model for identifying the occurrence of intrusions in the network. An extensive set of simulations was carried out to highlight the results on benchmark dataset. The resultant experimental values showcased the superior performance of the QBSO-FNN model with the detection accuracy of 98.90%.

Keywords: Intrusion Detection System, Big Data, Hadoop.

INTRODUCTION

The word Big Data defines enormous gathering of distinct data structures attained from several heterogeneous sources packed on memories where information is deliberate in Petabytes and zeta bytes. The 5 different dimensions are related by Big Data, classified as five Vs representing Variety, Volume, Veracity, Value, and Velocity [1]. All these dimensions have a vital part to act as Big Data Management Systems (BDMS) that is a modern term for handling Big Data Systems (BDS) [2].

AN EXAMINATION OF METHODS FOR DETECTING SCAMS

Alaka Rout[1], Pratap Dev[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

 With regard to the Indian public sector, this study article specifically aims to comprehend and examine how frauds occur as well as what sets off such fraudulent acts. The article also attempts to examine the tactics and methods that can be successfully used in advance to identify and prevent these types of frauds. With the aid of research questions, the researchers attempt to accomplish the goal of causes and reasons towards the occurrence of fraudulent actions in order to determine how frauds begin in India's public sector. This work presents a number of hypotheses, all of which were supported by a review of the relevant secondary literature. The researchers discovered that the Indian public sector administration is weak and dishonest, which makes them more vulnerable to fraud because there is no internal control and no vigilance system in place. Additionally, it was discovered that the frequency of these frauds and the application of management fraud prevention measures had a positively significant association. In order to stop fraudulent actions, the public sector needs very strong internal control mechanisms in addition to the most up-to-date auditing techniques. It was also shown that people who lack honesty and integrity tend to turn to deceitful tactics to their advantage, which results in losses for other parties.

Keywords: Corporate scam, fraud prevention, public sector, prevention audits, public perception.

INTRODUCTION

There are two sorts of fraud: the first occurs when there are inaccuracies or inaccurate entries in the organization's accounting records, leading to discrepancies that in turn produce purposeful errors. committed by those in positions of authority who wish to hold the offender accountable for their unethical behavior. when a worker attempts to pilfer tangible or intangible company property, including cheap products like office supplies, furniture, or other little stuff. This asset misappropriation is not approved. Similar situations occur when staff members purposefully republish inaccurate financial data or attempt to present the company in a more positive light than it actually is.

An Experimental Study on the cold-formed steel profiled sheets in Reinforced Concrete Beam

Mamata Mohanty[1], Priya Tripathy[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Two load-bearing structural components that are integrally joined and deflect as a single unit are referred to as composite structures. Cold-formed steel decks with profiled sheets are now widely used in the construction industry as tension steel for composite profiled slabs that are formed after concrete has hardened, as well as permanent formwork for supporting the soffits of reinforced concrete slabs. Cold-formed steel profiled sheets used as permanent formwork to the sidewalls of rectangular reinforced concrete beams have not been the subject of many studies. Trapezoidal RCC beams are less expensive than traditional rectangular beams, but because formwork construction is more expensive, they are not as commonly utilised. The current study's goal is to investigate the flexural behaviour of rectangular, trapezoidal composite profiled beams made of concrete grade M20. The bottom and sides of the profiled sheets serve as permanent formwork. Preliminary material and concrete work study was completed in phase I of the project. In the second phase, two trapezoidal section profile beams and two typical RCC beams with two rectangular sections were cast and tested under a centrally concentrated load. Additionally, a theoretical method for determining ultimate moment carrying capacity is developed. The study examines the ultimate flexural strength, deflection, ductility, and stiffness properties of rectangular and trapezoidal composite profiled beams. It has been noted that the profile sheets can be efficiently used for permanent form works and that their moment bearing capacity increases.

Keywords: Rectangular tank; cold formed steel; RCC beam; composite profile beam

INTRODUCTION

Making the optimum use of materials is essential to MAN's goal of constructing infrastructure at the lowest possible cost. It is customary to make use of their strengths and repress their weaknesses. This group includes steel-concrete composite constructions. It is not feasible to find many specialists in concrete, whereas there can be a small number in steel. Since reinforcing steel is a necessary component of all RCC structures, RCC structures are composites in and of themselves. In civil engineering structures, the use of composite elements made of concrete and steel sections has grown in popularity recently.

Analysing the Bearing Capacity of Interfered Adjacent Strip Footings on Granular Bed Overlying Soft Clay

Mamata Mohanty[1], Narendra Bag[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This research examines the effects of interference on the bearing capacity of two and three closely spaced strip footings that are sitting on a granular substrate covered in clay. When adjacent strip footings are optimally positioned on the surface of a Granular Bed (GB) covering clay and both footings are loaded simultaneously, a straightforward analytical model is provided to predict the load-carrying capacity and the interference factor of an interfered footing. In the analytical model, a punching shear failure mechanism is anticipated. The combined shearing resistances along the two vertical planes along the borders of the strip footing in the upper granular layer plus the load-carrying capacity of the soft clay beneath the GB are added to determine the footing's load-carrying capacity. Utilising insights from finite element simulations, a novel modified punched shear model for interfering footing is developed. The punched shear model for interfering footing that has been suggested makes it simple to calculate bearing capacity. Numerical calculations and prior experimental results are used to validate the analytical model, which is discovered to be in relatively good agreement. This study examines the effects of many parameters, including the thickness of the granular bed, the width of the footing, and the number of footings.

Keywords: Interference Effect; bearing capacity; punching shear model Analytical Model; Interference Factor

INTRODUCTION

Interference occurs between neighboring footings that are closely spaced apart. The bearing capacity, settling, rotational, and failure mechanism of footings are all altered by interference. The majority of research on interference with shallow footings is done in uniform soil conditions. However, layered soil profiles are something geotechnical engineers encounter frequently. Granular fill, sometimes known as granular bed, is occasionally applied to the top of low-lying areas with weak or clayey soil. The Granular Bed (GB) serves two purposes: it raises the allowed load of the superstructure on the backfilled ground and levels the ground about the nearby road. A variety of techniques, including experimental, numerical, and analytical ones, are used to assess the impact of interference, particularly about bearing capacity.

A model of energy demand for forecasting electric load in metropolitan distribution networks

Anjan Kumar Sahoo[1], Debanashi Parharaj[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Understanding future power demand is critical to a network operator's planning process. Future energy demand will be shaped by new patterns brought about by the market introduction of new load types in conjunction with the electrification of existing loads—such as electric automobiles and heat pumps—and transportation. With a three-part approach based on a statistical model for residential loads and two downstream models for the regionalization and dimensioning of electric vehicles and heat pumps as new emerging loads, this contribution presents a methodology of an energy demand model for an electric load forecast in urban distribution networks.
Keywords: Energy demand load, DSO, Electric Vehicle, Standard load profile.

INTRODUCTION

One of the most important steps in network planning for metropolitan areas is projecting future electric loads. In order to design their systems on a daily basis, distribution system operators (DSOs) need to know the amount of electricity that will be consumed in the future. The deployment of new technologies like heat pumps, energy-efficient appliances, and electric vehicles (EVs) is causing a fundamental shift in the load profile, particularly in metropolitan areas, as part of the global energy transition. Furthermore, metropolitan areas are continuously experiencing demographic changes, such as shifts in population and residential structure, in tandem with the coming energy transition. Urban regions' future power consumption is being shaped by both technology advancements and population changes, but in opposite ways [1]. While the standard load profile (SLP) provides a historical pattern that is relatively well-descriptive of the normal household load, emerging technologies such as HPs and EVs exhibit distinct profile characteristics that influence the total energy consumption. Therefore, it is crucial to create methods and tools to assess how the aforementioned impact variables are changing urban loads and their load patterns. An energy demand model that addresses the problem of projecting future loads on urban distribution networks is presented in this contribution [2]. The model is divided into three sections: the forecast for residential loads, which takes into account the effects of various factors like changes in demographics and the advancement of energy

A Research Hearing Aid with High Performance and Low Power Equipped with a Custom 22nm FDSOI SoC

Anjan Kumar Sahoo[1], Deepti Mishra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The need for high-level programmable, behind-the-ear (BTE) wearable, low-power research systems is growing as algorithmic hearing aid development improves. These may be applied to real-world settings to evaluate new algorithms. While multiple teams are working on different portable solutions, they do not yet have a BTE form factor. Because of this, the devices have to be worn on the body or around the neck, which limits movement and may provide unreliable study findings. Consequently, this study offers a completely functioning and integrated research platform for hearing aids that weighs only 5 grams and is worn behind the ear. The platform has Bluetooth Low Energy (BLE) and near-field magnetic induction (NFMI), two wireless technologies that are configurable at a high level.

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

INTRODUCTION

Research on hearing aids is becoming more and more important, as there are currently over 430 million people with a debilitating hearing loss and this number is projected to rise to over 700 million in 27 years [1]. Additionally, the devices can reach better computing performance and lower power consumption thanks to developing technology and breakthroughs in architectural designs.

In order to make these improvements helpful to those who are deaf or hard of hearing, research is being done on new and more sophisticated algorithms for hearing aids. Enhancing the recognition and location of various speakers in intricate and cacophonous settings, such in [2], is one field of study. As a result, the idea and demonstration prototype for a hearing aid research platform are presented in this work. It is a BTE hearing aid-sized, portable, low-power, high-level programmable, and rechargeable gadget. The platform has every element required to assess various real-world situations.

Improved Approach and Cost-based Indices for Probabilistic Prediction of Renewable Energy Generation

Anshuman Nayak[1], Priya Sahu[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Making decisions that meet the demands of all parties involved in the electricity energy market and managing future distribution networks effectively depend heavily on the capacity to predict photovoltaic (PV) power-production with accuracy and reliability. The pertinent literature has put forth a number of forecasting techniques, and several indices have been employed to measure the forecasts' accuracy. Although probabilistic forecasting approaches have garnered a lot of attention lately, most methods still provide deterministic projections. In a similar vein, most of the indices that have been employed to measure prediction accuracy relate to deterministic forecasting and do not take into consideration the economic ramifications of forecast mistakes within the context of energy markets that are competitive.

Keywords: Renewable energy, power production, probabilistic forecasting methods, probabilistic indices.

INTRODUCTION

Photovoltaic (PV) generators are one of the distributed generating technologies that are most in demand these days among renewable energy sources. However, it is challenging to precisely and consistently design and run electrical power systems because of the uncertainties brought about by solar energy's intermittent nature.

Thus, for electrical networks to operate efficiently, precise techniques for predicting the generating power of PV generators and indices to measure the accuracy of the predictions are essential. Precise hourly and sub hourly forecasting of solar power is especially necessary to enable unit commitment, ancillary service supply, and the scheduling and dispatch of the necessary hourly ramping and load following [1]. The pertinent literature has presented a number of techniques for predicting the active power of PV generators. The suggested approaches varied in how the input and output data were used, as well as in how long they were applied for.

Specifically, deterministic and probabilistic forecasting were employed to determine the kind of information on the expected result. Whereas probabilistic forecasting provides information about the output value's randomness, deterministic forecasting just provides a single value.

Use of Hybrid Machine Learning Algorithms for Detection of Text Fishing

Anugnya Pravamanjari[1], Pritikanta Dhal[2]

[1]College of Engineering Bhubaneswar, Biju patnaik University of Technology, Odisha, India
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The proliferation of the internet contributes to an increase in cyber attacks on a daily basis. Social engineering is a prevalent cyber security attack that relies on the physiological makeup of humans. The most common type of social engineering is the phishing attack. Phishing attacks can take many different forms, but messages are the most common one. We require strategies to defend ourselves against these assaults. Usage guidelines, awareness campaigns, and other measures are insufficient. Therefore, in this paper, we proposed to use machine learning techniques in conjunction with natural language processing (NLP) for text phishing detection. We began with 6,224 emails from a pre-existing dataset that included both authentic and phishing emails. Prior to extracting features from the data, NLP was utilized to prepare it.

Keywords: Ada Boost; Decision Tree; Artificial Intelligence; Cyber security; Detection; K-Nearest Neighbors; Machine Learning; Multinomial Naive Bayes; Natural Language Processing; Phishing; Social Engineering; Word2Vec

INTRODUCTION

The quick technical development in communications and networks has made us dependent upon it in most of the activities in our lives, e.g., money management, communication, shopping and education. The key features of the Internet such as availability, anonymity and unmanageable make it an appropriate environment for cybercrime, which threatens people along with networks and devices [Şahingöz, Ö. K., Buber, E., Demir, Ö., and Diri, B. (2017)]. In the cyber world, social engineering (SE) attacks are popular, easy to perform, and considered as a first step for other attacks [Lansley, M., Mouton, F., Kapetanakis, S., and Polatidis, N. (2020)] [Ni, S., Qian, Q., and Zhang, R. (2018).] [Yasin, A., Fatima, R., Liu, L., Yasin, A., and Wang, J.(2019)]. They are critical threats to cyber systems, end users and data [Wang, Z., Sun, L., & Zhu, H. (2020)]. While there is no computer system that does not depend on humans, SE depends on the human factor to gain access to the valuable data and to the systems [Stergiou, D. (2013)].

Prioritizing Bug Reports by Using Classification Algorithm

Anugnya Pravamanjari[1], Srikanta Rout[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Users, software developers, and testers rate the severity of issue reports, but developers determine the report's priority. Different priorities are assigned by the developer, with P1 being a greater priority than P5 (P1, P2, P3, P4, and P5). A bug report will have higher priority for repairing if it includes the priority level P1. Priority information is needed in order to determine which problem should be corrected first based on its priority. Even though the developer assigns the priority, there are situations where it may not be accurate due to a busy schedule or an incompetent developer. Developers may save time and use this recommendation system at that point to allocate priorities more accurately. In this work, many classification methods, including Naïve Bayes, Simple Logistic, and Random Tree, are used to estimate the importance of bug reports. Simple Logistics performs better than the other two classifiers out of the three.

Keywords: Priority, Bug Reports; classification algorithms.

INTRODUCTION

Bug reports for open source software are frequently sent in from all around the world to the development and maintenance teams. problem triages need a lot of time and resources if they begin examining every problem report. Few issues will be fixed throughout the bug triaging process due to time and resource constraints. The severity and priority of the bugs determine which ones are chosen. When a bug is reported, the user specifies its severity, and the developer assigns a priority to determine which bugs need to be fixed first. Priority and severity support resolving the most serious bugs first. Information about severity is assigned by the submitter (developer or user). The developer assigns priority information based on severity and other information.

B2B marketing and the Sustainable Development Goals

AnuragSahani[1], Deepak Swain[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This paper examines the intersection of business-to-business (B2B) marketing strategies and the Sustainable Development Goals (SDGs), seeking to explore how B2B companies can align their marketing efforts with the global agenda for sustainable development. The SDGs, adopted by all United Nations Member States, provide a framework for addressing global challenges such as poverty, inequality, and climate change. B2B companies, as key players in the global economy, have a significant role to play in advancing these goals through their operations, supply chains, and marketing activities. Drawing from a synthesis of theoretical frameworks and empirical research, this study analyzes the ways in which B2B marketing strategies can contribute to the achievement of specific SDGs, including responsible consumption and production, gender equality, and climate action. Through a comprehensive examination of case studies and best practices, this research offers insights into how B2B companies can integrate sustainability principles into their marketing strategies to create shared value for themselves and society while advancing the global sustainability agenda.

INTRODUCTION

The adoption of the Sustainable Development Goals (SDGs) in 2015 marked a significant milestone in the global effort to address pressing environmental, social, and economic challenges. Comprising 17 interconnected goals and 169 targets, the SDGs provide a comprehensive framework for governments, businesses, and civil society to work towards a more sustainable future. While much attention has been focused on the role of governments and non-profit organizations in advancing the SDGs, the contribution of businesses, particularly business-to-business (B2B) companies, is equally crucial.

B2B companies, which operate within complex supply chains and cater to other businesses rather than individual consumers, have a unique opportunity to drive sustainable development through their operations and marketing activities. By integrating sustainability principles into their marketing strategies, B2B companies can not only enhance their brand reputation and competitive advantage but also contribute to the achievement of specific SDGs.

A Place to Call Home: Entrepreneurship in Urban Slums

AnuragSahani[1], Prasant Deury[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This paper explores the phenomenon of entrepreneurship in urban slums, focusing on the unique challenges and opportunities faced by entrepreneurs operating in these marginalized environments. Urban slums are characterized by dense populations, inadequate infrastructure, and limited access to formal employment opportunities, making entrepreneurship a vital means of economic survival for residents. Drawing from a synthesis of empirical research and case studies, this study examines the entrepreneurial activities that emerge in urban slums, including micro-enterprises, informal markets, and community-based initiatives. By analyzing the socio-economic context, institutional dynamics, and entrepreneurial strategies in urban slums, this research sheds light on the role of entrepreneurship in fostering economic empowerment, social cohesion, and resilience within marginalized communities. Through a nuanced understanding of the challenges and opportunities facing slum entrepreneurs, this paper offers insights for policymakers, development practitioners, and entrepreneurs seeking to support and promote entrepreneurship in urban slum settings.

INTRODUCTION

Urban slums represent a complex and dynamic socio-economic environment characterized by poverty, informal settlements, and inadequate access to basic services. Despite these challenges, entrepreneurship thrives in these marginalized communities, offering residents a means of economic survival and social mobility. The entrepreneurial activities that emerge in urban slums range from small-scale businesses and informal markets to community-based initiatives that address local needs and aspirations. Entrepreneurship in urban slums is shaped by a unique set of challenges and opportunities. Limited access to formal financial services, inadequate infrastructure, and legal barriers often constrain entrepreneurial activities in these environments. However, slum entrepreneurs also demonstrate remarkable resilience, resourcefulness, and creativity in overcoming these challenges, leveraging social networks, informal economies, and local knowledge to build sustainable businesses and livelihoods.

From 5G to 6G—Challenges, Technologies, and Applications

Anwesha Halder[1], Ritu Saha[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

As the deployment of 5G mobile radio networks gains momentum across the globe, the wireless research community is already planning the successor of 5G. In this paper, we highlight the shortcomings of 5G in meeting the needs of more data-intensive, low-latency, and ultra-high reliability applications. We then discuss the salient characteristics of the 6G network following a hierarchical approach including the social, economic, and technological aspects. We also discuss some of the key technologies expected to support the move towards 6G. Finally, we quantify and summarize the research work related to beyond 5G and 6G networks through an extensive search of publications and research groups and present a possible timeline for 6G activities.

INTRODUCTION

The world's global communication network has come a long way since the second-generation (2G) mobile radio network systems were deployed in the early 1990s. The second-generation network, undoubtedly, has been internationally recognized as the start of a new era in digital communications. The aforesaid comes as no surprise based on the exploding rate of communication between users in the form of SMS texts and phone calls towards the end of the last century [1]. The world at that time experienced a paradigm shift on all levels, from individual users to large corporations, which created room for new business models. Since then, the focus has been concentrated on offering faster communication speeds and supporting more users. To alleviate the connectivity issues that occur when many users try to access the network at the same time and to offer a better experience, third-generation (3G) systems were introduced in the early 2000s with new innovations, the most notable being the Universal Mobile Telecommunications System (UMTS), which has wideband code division multiple access at its essence [2]. However, 3G was short-lived for a variety of reasons. Many analysts suggested that 3G faced regulatory and technical issues, leading to many operators phasing it out of their networks. Conversely, the global, widespread media praise of 3G's successor, i.e., 4G, introduced around 2010, demonstrated that it was so far the most successful generation since 2G.

6G Wireless Communications: Future Technologies and Research Challenges

Arpit Sourav Mohapatra[1], Shishir Patra[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

5G wireless communications technology is being launched, with many smart applications being integrated. However, 5G specifications meagre the requirements of new emerging technologies forcefully. These include data rate, capacity, latency, reliability, resources sharing, and energy/bit. To meet these challenging demands, research is focusing on 6G wireless communications enabling different technologies and emerging new applications. In this paper, the latest research work on 6G technologies and applications is summarized, and the associated research challenges are discussed. Index Terms—5G, 6G wireless communication, requirements, capacity, data rate, applications, challenge.

INTRODUCTION

Almost every ten years, a new communication system has been introduced, improving the QoS, providing new features and introducing new technologies. Although 5G is not officially launched yet, researchers have turned their attention to 6G communication system. The reason is that 5G provides a high standard infrastructure enabling a variety of technologies such as; self-driving cars, AI, mobile broadband communication, IoT and smart cities. However, the usage of smart devices is increasingly growing each year and the data traffic usage will be exponentially increasing as in Fig. 1, which puts constraints on the 5G communication network.These constraints open the door for a new communication system providing more capacity, extremely low latency, high data transmission, secure error-free communication and fullwireless coverage.

Applications and challenges of meta-heuristic techniques in cloud computing: A Review

Ashok Kumar Panda[1], Pritikanta Dhal[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

 In recent years, cloud computing has become a very demanding technology. The shift of data and services to the cloud has decreased market-wide increases in hardware and software costs. Cloud computing now faces new challenges as a result of the cloud's integration with numerous other technologies, such as mobile and the Internet of Things. To find the best possible solution, researchers have used a variety of swarm intelligence, nature-inspired, and hybrid algorithms. This paper presents state-of-the-art optimization algorithms used to solve these problems. These algorithms' uses in cloud computing have been examined and discussed in relation to load balancing, scheduling, resource allocation, virtual machine allocation, and placement.

Keywords: Cloud Computing, swarm intelligence, nature inspired, virtual machine, scheduling.

INTRODUCTION

Cloud computing is not a new term for IT professionals, industries, and academicians. It leads to the extension of new paradigm like mobile cloud, fog computing, edge computing, Internet of Things (IoT), and Internet of Vehicles (IoV). The applications of cloud computing in healthcare, intelligent transportation management system, agriculture, Brain Computer Interface, retail management, automobile, and many more have led to huge development in cloud computing and its associated technologies. The Amazon Web Service (AWS) has declared that by 2020, there will be 20.6 billion connected devices across world, and this number will be 1.0 trillion by 2025. The extreme development has headed to rise in the number of cloud users across the world and increase the load on cloud datacenters, which in turn, has reduced the Quality of Service (QoS). Traditional techniques in the cloud for providing good QoS in scheduling, load balancing, Virtual Machine (VM) consolidation, VM migration, VM placement, resource scheduling and optimization, resource allocation, VM allocation are not able to grip good QoS for cloud users and may reduce number of users for cloud provider.

Estimation of Seed Characteristics on Environmental Conditions Using Multi Features Set

Ashok Kumar Panda[1], Umakanta Dhal[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The final added value in crop production is greatly influenced by seed classification. Estimating seed characteristics by hand is a challenging, labor-intensive procedure that is prone to human error. One viable option for creating automated systems for estimating seed characteristics is image processing. Image processing is used in many applications, such as determining crop diseases, classifying fruits according to size and color, and assessing the ripeness of fruits and vegetables before harvest. The classification of various seed varieties is still done using antiquated techniques. Using calipers, one could manually calculate the size of seeds and classify them into small, medium, and large groups. There are no cutting-edge techniques for categorizing seeds within species. This research will examine several image processing methods for determining different seed properties, enhancing classification, finding new features, simplifying things and finding problems with current methods. The results show that the size of soy bean seeds and climate have a negative correlation. Larger seeds are impacted by the decrease in osmotic ability because they require more water to grow. Because of this, choosing seeds that are compatible with the local environment before planting is crucial.

Keywords: Seed Classification, Feature Extraction, Machine Learning Classification, and Image Processing.

INTRODUCTION

There has been a lot of research done on various aspects of automated (computer vision based) agriculture systems (Liu et al., 2013; Varma & Kanakadurga, 2013). The overall quality and rate of vegetative growth are influenced by seed characterization and classification. Smart Grain software (Tanabata et al., 2012) is proposed, which uses image processing to measure seed shape quickly and accurately. This method calculates seed parameters very quickly and accurately. However, essential characteristics of seeds such as color and texture are not considered by the process. Seed size measurement from non-singulated samples and seed size distribution estimation are presented in (Shahin & Symons, 2005).

Artificial Intelligence in Medicine

Asit Kumar Satapathy[1], Babaji Nayak[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Artificial intelligence (AI) is the science of creating intelligent computer programs. The aim of AI is to help doctors in clinical diagnosis and treatment and to reduce the rate of medical error. The main AI methods used extensively are expert systems (ESs), fuzzy logic, genetic algorithm, and artificial neural networks (ANNs). ESs make inferences with patient data in cause and effect relationships and make recommendations to the doctor. Fuzzy systems aim to produce scientific expressions and approximate results from uncertain data such as those in the field of medicine. ANNs contain neurons that mimic the biological nervous systems. A network is obtained by connecting these neurons in various ways. AI methods continue to evolve even if medical field use has been tested many times. In the present study, a brief evaluation has been made regarding the methods mentioned.

INTRODUCTION

Artificial intelligence is a computer science that deals with the design of intelligent computer systems. The Intelligent Computer System is a system that is comparable to the intelligence of human behavior. Similar systems of the thinking ability of humans can be established with AI. Its areas of application include robotic, expert systems (ESs), automatic translation programs, meaning analyzers for natural languages (e.g., understanding questions in certain areas and understanding text), natural language sentence production (e.g., abstract poetry writing, story writing, and making computer art/music), audio analyzers (e.g., recognizing certain words in a speech and determining the boundaries between sound units), game programs (e.g., chess and bridge), and theorems proving/ problem solvers (2). Although significant progress has been made in the field of AI in recent years, the efforts of researchers to develop new inventions and programs are ongoing. Expert systems is the most important application area for AI. It is a computer program that aims to replicate the expertize of a specialist on a computer. A well-developed ES has the ability to imitate processes that can be performed by specialists, such as designing, planning, diagnosing, interpreting, summarizing, generalizing, controlling, and making recommendations (2). The data base and inference mechanism are the most important features that distinguish ES from other decision support systems .

An Analysis of Nonlinear and Non-Stationary Signals for Precise Power Quality Monitoring in Smart Grids

B. Veera Murthy Pandian[1], Madhuri Rao[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The widespread use of technologies based on renewable energy has brought up a number of unresolved problems with Smart Grid (SG) operation and design. The electricity Quality (PQ) when Distributed Generators (DGs) linked to SGs inject a significant quantity of electricity has been the subject of various research recently.The impact of photovoltaic (PV) plants in actual distribution lines is covered in this research. Specifically, a numerical tool has been created to investigate distribution lines' active power. The distribution lines that supply homes and businesses are the source of the dataset, which is derived from actual measured purchases. The time-domain power signal is significantly influenced by PV plants, as seen by the numerical findings. Since this signal is usually non-stationary and non-linear, power disturbances and anomalies can be corrected using the HHT-based method.

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

INTRODUCTION

When power disruptions are introduced by DGs, the study of SG dynamics gains new insights through the application of sophisticated signal processing technologies. In reality, multi-modes and intermittent non-stationary stimulations are caused by an uneven spatial distribution of the electrical power [1]. Due to a shortage of reactive power, for instance, SGs with a high penetration of DGs substitute a substantial portion of conventional generation with distributed PV resources [2]. Another effect of using more PV generators is a reduction in system inertia [3, 4], which lowers the overall power system stability [5], especially during transient times. Power system monitoring has long been a crucial responsibility. Depending on the line parameters (power fluxes, line length, low, medium, and high voltage networks, passive or active lines, etc.), power disturbances can be seen in several ways. Unexpected fluctuations cause abnormalities in the systems' proper operation when they manifest.

One Nation One Market Project- Identifying Challenges and Way Forward

BarsaBaisaliSahoo[1], Babaji Nayak[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The "One Nation One Market" project has been hailed as a transformative initiative aimed at streamlining India's fragmented agricultural markets and enabling seamless trade of agricultural produce across state boundaries. However, despite its potential benefits, the project faces numerous challenges that hinder its effective implementation. This paper examines the challenges encountered in the implementation of the One Nation One Market project and explores potential strategies to address these challenges and pave the way forward. Drawing from a synthesis of empirical research, policy analysis, and stakeholder perspectives, this study identifies key obstacles such as regulatory inconsistencies, infrastructure gaps, and lack of institutional coordination. By analyzing these challenges and proposing actionable recommendations, this research contributes to the ongoing discourse on agricultural market reforms in India and offers valuable insights for policymakers, practitioners, and stakeholders seeking to advance the One Nation One Market agenda.

INTRODUCTION

India's agricultural sector is characterized by a complex network of fragmented markets governed by diverse state-level regulations, which often hinder the free flow of agricultural produce across state boundaries. In response to these challenges, the Government of India launched the "One Nation One Market" project, with the aim of creating a unified national market for agricultural commodities and facilitating seamless trade across state borders. The project seeks to leverage technology, infrastructure development, and regulatory reforms to eliminate barriers to inter-state trade and enhance farmers' access to wider markets. While the One Nation One Market project holds immense potential to transform India's agricultural landscape and improve farmers' incomes, its implementation has been met with numerous challenges. These challenges stem from various factors, including regulatory inconsistencies, infrastructure gaps, lack of institutional coordination, and resistance from entrenched interests. Addressing these challenges is crucial to realizing the full potential of the project and ensuring its impact on farmers' livelihoods and the overall economy. This paper aims to identify the challenges encountered in the implementation of the One Nation One Market project and propose strategies to address these challenges and chart the way forward.

Bearing Performance of Inclined Pile Foundations under Uneven Settlement

Sipra Mallick[1], Raju Muduli[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Finite element models of single-cap and multi-cap foundations are created in order to assess the bearing capacity of high-cap inclined pile foundations using foundation design in practical engineering. An investigation is conducted into the effects of the inclined pile's inclination direction and angle on the internal force of the pile body and the foundation's lateral displacement. By reducing the strength of the soil, the impact of uneven settling on inclined pile foundations is investigated. According to this research, a negatively inclined pile has a greater lateral bearing capacity than a positively inclined pile. A negatively inclined pile's lateral displacement can be significantly impacted when the inclination angle of the pile changes within a specific range. Under uneven settlement, each bearing platform's horizontal displacement differs little from one another, whereas the vertical displacement varies significantly. The inclined pile's internal force changes more than the vertical pile's does.

Keywords: Finite element model, pile foundation, uneven settlement

INTRODUCTION

Building structures with high requirements for foundation displacement and bearing capacity, as well as those with shallow soil that cannot support them adequately, are best suited for piling foundations. One type of unique pile foundation is a high-pile cap foundation. The cap is situated above the surface of the planet. If the cap is subjected to a horizontal load, a significant lateral displacement will result. It is simple to modify the pile diameter, pile length, and pile number to alter the pile foundation's vertical bearing capability. Increasing the pile diameter and spacing typically increases a foundation's horizontal bearing capacity. The cost of building the cap will go up if the pile diameter and spacing are increased, and the pile diameter and spacing will only go so far in improving the foundation's horizontal bearing capacity. Scholars worldwide have suggested using inclined piles into pile group foundations to increase the horizontal bearing capacity of these structures to investigate a more cost-effective and efficient manner. To investigate the impact of pile tilt direction and angle on the lateral bearing capacity of foundations, a single cap finite element model is developed in this research.

Behavior of High Volume Fly Ash (HVFA) Slabs on the Addition of Micro Particles under Static Loading Conditions

Nibedita Sahoo[1], Pratap Jena[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The purpose of this study is to determine how the addition of microparticles to cementitious materials affects the characteristics of fly ash concrete. To examine their combined effect, a binary combination of distinct contents (micro SiO2 + micro CaCO3) was utilized. After 28 days of water curing, tests were conducted on slabs for mechanical properties (compressive strength, split tensile strength, and flexural strength), as well as static loading. The mix containing 8% micro particles added to 50% fly ash substituted concrete demonstrated significant results when compared to the traditional mix of M40 grade concrete, according to the findings of mechanical strength tests. To obtain load-deflection curves, six slab specimens measuring 600 mm by 600 mm by 60 mm were investigated. These specimens included a control mix, a mix that replaced 50% of the cementitious materials with fly ash, and a mix that replaced 50% of the cementitious materials with 8% micro particle addition. The results were found to be comparable with theoretical values for the same.

Keywords: Load deflection behavior, grade of concrete, compressive strength, micro calcium carbonate

INTRODUCTION

For many years, fly ash has been used in concrete as a partial replacement for OPC. Due to the presence of amorphous SiO2 and Al2O3, fly ash functions as apozzolanic material that reacts with Calcium Hydroxide (CH) during cement hydration. Nevertheless, fly ash has a sluggish reaction during the hydration reaction, which impacts the properties of concrete at its early age. Additionally, according to ACI 226.4R, its usage in concrete is restricted to between 15 and 25 percent by mass. Maximising the use of fly ash or other SCMs in concrete is crucial for its sustainability. This has been thoroughly studied, with a focus on high volume fly ash (HVFA) concrete.

Feature Selection of On-Line Text clustering

Bhimsen Moharana[1], Reena Rani[2]
[1]College Of Engineering Bhubaneswar, Biju Patnaik University Of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Text clustering is gaining importance among researchers because of rapid increase in the availability of online text collections without class labels. It helps to organize, summarize and retrieve useful information from corpora. High dimensionality of text datasets leads to poor performance of clustering algorithms. Dimensionality can be reduced using feature extraction or feature selection methods. Feature selection methods scale well and are easy to interpret. An unsupervised univariate filter feature selection method was proposed for dimensionality reduction. The proposed method outperformed nine other filter methods reported in the literature, by identifying most relevant features that lead to good clustering performance on eight popular text datasets**.**

INTRODUCTION

Due to tremendous growth in the usage of internet [Warf (2021)], the volume of online text without class labels; in the form web documents, judicial records, medical health records, operation manuals, research articles, news articles and textbooks increase [Zhai and Massung (2016)]. Text clustering is essential to organize, summarize and to retrieve relevant information automatically from the online text corpora [Garcia-Dias *et al.* (2020)]. Curse of dimensionality is the major challenge faced by Text clustering [Li *et al.* (2017)]. Due to the presence of irrelevant features the performance of clustering algorithm is poor and consumes more computational resources [Wang *et al.* (2021)]. Hence, dimensionality reduction techniques help in identifying significant features. As the class labels are not available in clustering, unsupervised dimensionality reduction techniques should be used. Feature extraction and Feature selection are the two popular unsupervised dimensionality reduction methods [Ray *et al.* (2021)]. Feature extraction techniques map the given feature space to a virtual feature space, where the virtual features are difficult to interpret by human beings [Guyon *et al.* (2008)].

Key Distribution Approach to Mitigate Passive Attacks in MANET

Bhimsen Moharana[1], Susanta Kumar Dash[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Because of the dynamic nature of the MANET, creative researchers have a plethora of options to brainstorm and put forth various upgrades for the communication system. Security precautions are important because the environment is dynamic. The same kind is taken into account as the environment's strength in this essay. One of the difficult requirements related to the environment's security is the resolution of passive assaults in the MANET AODV routing. In this regard, by including a few columns into the current AODV routing table, the proposed article aims to develop a novel key distribution mechanism. Additionally, the paper confirms the results of the conventional AODV and the suggested algorithmic framework that match the network's end-to-end latency, throughput, and packet drop characteristics. The suggested and current systems' parameters are estimated using Network Simulator 2.

Keywords: MANET; AODV routing; Passive attacks; NS2 simulator.

INTRODUCTION

An environment for communication known as a mobile ad hoc network (MANET) links non-stationary devices using one of the routing algorithms, such as AODV, DSR, ZRP, DSDV, and so forth. Because non-stationary components or devices let the addition of new nodes to the communication environment, a dynamic topological structure is produced. [1]. This MANET feature could lead to an environment that is susceptible and unsecured. In addition to disrupting the communication environment (dynamic or active attacks), malicious nodes also enable eavesdroppers (detached or passive attacks) to divulge sensitive data. Numerous approaches [2] have addressed the current attacks by providing various frameworks, algorithms, and other techniques. However, a number of research [3] indicate that dealing with passive attacks in the environment is more difficult.

Evaluation of Plant Flexibility's Value in Low-Carbon Energy Systems

Bishnupriya Das[1], Rabi Narayan Ray[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The importance of thermal power plant flexibility in the next low-carbon energy system is examined in this research.The operation cost savings resulting from increased flexibility are calculated using a stochastic scheduling model with rolling planning. The model clearly models the uncertainty related to renewable output and generator outage, allowing for the best scheduling of energy and auxiliary services. Plant flexibility has a system-specific value, as demonstrated by the definition and analysis of many flexibility characteristics across two sample systems. Sensitivity studies are conducted to determine how various scheduling strategies and carbon prices affect the perceived value of flexibility. The idea of market incentive for flexibility is also presented in this work.

Keywords: Flexibility, Thermal power plant, Wind energy, Stochastic unit commitment.

INTRODUCTION

When intermittent renewable energy becomes a large percentage of the system, the needs for operational reserves and flexibility rise dramatically above those of traditional systems. The provision of additional operational reserve is achieved by running a larger percentage of the plant part-loaded, or more expensively, which raises the expenses associated with real-time system balancing. The system's capacity to accommodate intermittent renewable energy is further reduced by the requirement for supplementary reserves and a lack of flexibility, especially when large outputs of renewables coincide with low demand. To lessen these difficulties, other balancing technologies have been suggested and studied [1]. Energy storage, which provides auxiliary services and stores excess wind energy, will be crucial to the development of a low-carbon power system in the future [2, 3]. Many studies have been conducted on demand side response (DSR) to facilitate the incorporation of renewable energy [4,5,6]. For relatively small power networks, like Ireland, interconnection offers the advantages of sharing auxiliary services and exporting renewable energy [7].

Efficient Clustering Algorithm for Mobile Cluster Heads to Improve the WSN Lifespan

C. Sunil[1], Kapil Suna[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

One of the main research topics for wireless sensor networks is minimizing the creation of energy holes. The article makes two contributions. To extend the lifespan of wireless sensor networks, we have first proposed a novel clustering algorithm that is energy efficient and a novel cluster head selection procedure that lessens the creation of energy holes in the network. Our optimization of the cluster head's sojourn time based on the one hop sensors' residual energy constitutes another noteworthy contribution. We contend that the clustering procedure design and implementation issues that arise in the current works can be effectively addressed by our suggested work. A presentation and study of the efficiency analysis are made.

Keywords: Wireless Sensor Network, WSN, clustering, cluster head, clustering algorithm, energy hole,
bottle neck nodes and network lifetime

INTRODUCTION

Wireless Sensor Network comprises of small tiny sensor nodes which are deployed in large numbers across the region to be monitored. Drastic improvements in the area of miniaturization led to the nnovation of these small tiny sensor nodes which can be spread across large area with minimal cost. These sensor nodes have the ability of self-organizing themselves to form a wireless network. The low cost sensor nodes are deployed randomly in the area of interest usually in large numbers for the purpose of precise sensing. They are used to monitor various environmental conditions like humidity, moisture, pressure, temperature, sound, movement and so on. Wireless sensor networks offer a wide diversity of real time applications like environmental monitoring, crisis management ,military applications, medical applications, agricultural applications and so on[1]. One of the most important issues to be dealt with Wireless Sensor Network is the limited energy resources of the nodes [3].

Capacity and Level Of Service for Urban Signalized Intersections in India

SusriSailaza Mishra[1], Shiily Choudhury[2]
[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Around the past 20 years, a lot of work has been done on level of service (LOS) all around the world.But as of right now, India has no rules regarding LOS of signalized junctions. The goal of the current study is to establish LOS requirements for signalized intersections with mixed traffic. For this investigation, thirteen crossroads from four distinct Indian cities were selected. The area estimation approach is used to estimate the delay at crossings, which is the foundation for determining LOS (HCM 2010).Six delay groups that correspond to six distinct LOS have been classified using the clustering technique—more specifically, K-mean clustering—in order to determine the LOS criteria. The suggested delay clusters have been validated using the silhouette method. The obtained silhouette indices support the suggested.

Keywords: Area estimation method, LOS, *K*-meanclustering, signalized intersection, user perception survey.

INTRODUCTION

The term "level of service" (LOS) refers to the qualitative metric that describes the operational circumstances in a traffic stream and how drivers and passengers perceive them. Operating conditions at a crossroads deteriorate dramatically when traffic flow at the intersection is equal to its capacity, even under the best of traffic and roadway circumstances. Reduced speed is accompanied by an increase in stop frequency and delay. Depending on the amount of traffic, an intersection's service to drivers may change. The notion of LOS—which refers to the degree of satisfaction one can have from a road under various operational parameters and traffic volumes—was first presented in the US Highway Capacity Manual (HCM)1. Based on USA2 traffic circumstances, HCM 2010 has identified six different levels of service, ranging from LOS A (free flow) to LOS F (forced or break-down flow), and their corresponding requirements for signalized crossings. There is no comparison between the traffic situation in developing nations like India and those in the US or Europe. In underdeveloped nations, the main traffic features are heterogeneity and inadequate lane discipline.

Efficient Utilization of Cloud Storage Through Overwriting Data Deletion Approach

Chandra Kanta Mallick[1], Uma Sahu[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Cloud storage utilization rapidly increases due to the on-demand availability of computer system resources, especially computing power and storage requirements. It reduces the data owner's direct involvement to perform various computing activities which include computing as well as data storage and update. At the same time, it increases the security challenge because the data owner's do not have direct control over the remote resources. Specifically, the data deletion from the cloud storage do not give assurance to the owner about data deletion hence remanence of the data on the cloud storage may result in a potential threat. This paper aims to propose a trustworthy secure data storage mechanism by adopting the replication factor to increase the secure storage and availability of data in the cloud and secure data deletion method by overwriting it with a non-retrievable bit sequence. To make it more robust, the blockchain-based smart contract is developed to guarantee the data insertion, data deletion and verification with secure storage mechanism. The experiments were carried out using AWS small ec2 server cloud environment with various sizes of data to validate the claim of the proposed methodology without requiring any trusted third party. The algorithm is also validated by proving the security properties, efficiency, practicality, robustness of the proposed scheme.

Keywords: Cloud storage; Secure data overwriting; Non-retrievable bit sequence; Data verification.

INTRODUCTION

Cloud computing, an evolving and promising web-based computing environment, which delivers on-demand computing resources on request. The need for the computing power and storage requirement increases day-today due to evolution in the various fields and evolvement of the connecting technology. To beat the resource constraint, users can outsource the pricey storage resource from the remote cloud and get the benefits of plentiful storage services [1].

Characterization of Foamed Bituminous Mixes with Varying RAP and Foamed Binder Content

Susri Sailaza Mishra[1], Pushalata Barik[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Many eco-friendly solutions have been developed in recent years to lower the energy consumption and CO2 emissions during the manufacture of asphalt. Using foamed bitumen for cold recycling is one of these technologies. The bitumen is foamed, which momentarily lowers the viscosity of the binder and increases its volume. The process of injecting cold water into hot bitumen results in homogenous foams. The study reports on laboratory tests conducted on the mechanical and physical properties of recycled mixtures employing foamed bitumen and water resistance. The tests were designed to assess the mixtures' characteristics with respect to their RAP content and foam binder content.Two-way Analysis of Variance (ANOVA) was carried out to assess the significance of the impact of both components, i.e., Foam Binder Content and RAP Content, on the distribution of the investigated parameters. The results of the ANOVA analysis indicate that the RAP in cold mixtures is not entirely functioning as black rock, suggesting that part of the aged binder that is still there may be revived or softened by introducing fresh binders.

Keywords: ANOVA;Bituminous;Conservation;Energyconsumption;Foamedbindercontent;RAP

INTRODUCTION

Evaluating energy conservation and material qualities is crucial to attaining sustainability in road building. Major road infrastructure projects have been carried out in India during the past ten years by several road-building companies. The previous ten years have seen significant road infrastructure projects undertaken by several Indian agencies, which have had a higher impact on aggregate depletion and energy consumption. It should be mentioned that the installation of sporadic overlays is causing the thickness of the current pavements to increase. In metropolitan locations, the rise in road levels leads to significant drainage issues. Carbon dioxide emissions from the massive manufacturing of Hot Mix Bitumen (HMA) are substantial. In certain states of the nation, there is an issue with the scarcity of high-quality aggregates and their high cost due to long lead times.

GA-Based Feature Extraction Method for Biometric Authentication using 3D Imaging Technology

Tanmaya Kumar Das[1], Ritesh Kumar Senapati[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In order to address a variety of technical issues with identity management and authentication, multi-modal biometric authentication effectively replaces uni-modal biometric authentication systems. In the banking, military, and healthcare industries, where extremely secure, strategic, and private data transmission is involved, legitimacy is crucial. One can prevent spoofing by integrating numerous separate biometric systems. Unfortunately, there isn't a sufficient, easy-to-use biometric authentication method. As a result, the goal of the current study is to develop and implement a multi-modal biometric authentication system utilizing a feature extraction technique based on genetic algorithms (GAs). The goal of the proposed study is to use 3D imaging technology to extract human facial features and skeletons. Human joints are captured using this modeling technique, along with depth data, to increase the effectiveness of the framework. There are three stages to the suggested research. These include using the MinMax method for image preprocessing, Heuristic Optimization Techniques (HOT) for feature extraction, and Artificial Neural Networks (ANN) for personnel recognition. The accuracy, FAR, and FRR metrics are used to assess the proposed method's performance. Lastly, a comparison is made between the suggested approach's performance and those of other methods, such as neural networks and GA. While other forms of human recognition require direct physical contact, combined biometric technology operates in an inconspicuous manner.

Keywords: biometric authentication system, multi-modal, skeletal, feature extraction, artificial neural network**.**

INTRODUCTION

Recently, biometric based person identification system and security issues are emerging area of interest in research [8] [13] [24] [39]. Subsequently, the automatic detection of individual depends on their behavioral and physiological characteristics referred as "biometric"[37] [38].

Posing a Challenge to an IoT Platform to Handle New Services in an Adaptable Grid

Debarpita Roul[1], Devi Prasad Mishra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The distribution network can be monitored and managed more effectively with an improved, preventive, resilient, and flexible network operation philosophy thanks to the increasing digitalization, grid complexity, and quantity of digitally connected devices that communicate with systems in the distribution grid. These factors also make it possible for automation and intelligence to be continuously developed. Data from sensors, meters, and other devices is acquired. In order to illustrate the advantages of putting in place a platform that gathers, combines, and makes data correlation and horizontal integration easier from several sources, this research offers a number of use cases that enable these use cases throughout the distribution grid.
Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

INTRODUCTION

The power industry's digitalization of its monitoring, control, and management systems heralds a new era in the deployment of smart grids. Data from various sources—such as smart meters and sensors—combined with new information and communication technologies (ICT) platforms allow for the design and implementation of a preventive, resilient, and flexible network operation philosophy that can integrate significant amounts of distributed energy resources (DERs). The quantity of digitally linked devices interacting with distribution grid systems is expected to rise significantly in the coming years.They still can't be fully incorporated into vertical platforms that are specifically designed for gathering, processing, storing, and making data available. This shared layer of data may be created using the machine-to-machine (M2M) architecture that OneM2M [1] suggested. Enhancing the observability and management of LV networks is essential for managing the heightened unpredictability brought about by DER integration.

Fraud Detection for Telecommunication Systems using Artificial Intelligence (AI)

Dibyalekha Nayak[1], Deeptimayi Roy[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Fraud is on the rise worldwide, which can cost businesses billions of dollars and cause significant financial damage. Researchers from different fields of application have proposed different approaches. Investigating these ideas will enable us to view the issues more clearly. This paper objective is to examine numerous directions of fraud detection and prevention in the communications sector. This paper provides an overview of the different classifications of telecom fraud, issues that impede the process of detection, and a few solutions suggested to overcome it. The performance of the current approaches is reported at, followed by recommendations and recommendations for picking the best fit performance metrics.

INTRODUCTION

Telecommunications companies today have been plagued by problems for a long time now. In addition, losses resulting from fraudulent activities in companies that may not be able to stop these activities will no longer be able to retain their customers. Although, by using dynamic growth in automated systems it is possible to avoid fraud. Communication fraud causes great financial losses to group every year. It is almost impossible to calculate and disclose financial losses because of fraudulent activities within the telecommunications business, since a few companies in order to preserve their status, they decide to not divulge. Additionally, not every fraud is currently encountered by telecoms firms, it isn't always evident how successful their acquisitions processes are. Nonetheless, a conclusion was reached that telecoms fraud in 2013 grew by 46 billion globally, or around 2% in telecommunication service revenues, based mostly on some studies. Additionally, [2] claims that alleged fraud costs telecommunication firms roughly 7 percent of its revenue. Such damages might negatively impact earnings [3]. It is worth noting that even though wireless communication has emerged as the leading cause, telecommunications groups are suffering, especially in developing countries including China. In this paper, the aim is to provide an in-depth examination of various fraud-related programs, in particular fraud prevention programs and fraud prevention programs, along with strategies and challenges that cause problems in these systems.

6G Wireless Communication Systems: Applications, Requirements, Technologies, Challenges, and Research Directions

Dilleep Kumar Bhadra[1], Kailash Shaw[2]

[1]College Of Engineering Bhubaneswar, , Biju Patnaik University of Technology, Odisha, India.
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The demand for wireless connectivity has grown exponentially over the last few decades. Fifth-generation (5G) communications, with far more features than fourth-generation communications, will soon be deployed worldwide. A new paradigm of wireless communication, the sixth-generation (6G) system, with the full support of artificial intelligence, is expected to be implemented between 2027 and 2030. Beyond 5G, some fundamental issues that need to be addressed are higher system capacity, higher data rate, lower latency, higher security, and improved quality of service (QoS) compared to the 5G system. This paper presents the vision of future 6G wireless communication and its network architecture. This article describes emerging technologies such as artificial intelligence, terahertz communications, wireless optical technology, free-space optical network, blockchain, three-dimensional networking, quantum communications, unmanned aerial vehicles, cellfree communications, integration of wireless information and energy transfer, integrated sensing and communication, integrated access backhaul networks, dynamic network slicing, holographic beam forming, backscatter communication, intelligent reflecting surface, proactive caching, and big data analytics that can assist the 6G architecture development in guaranteeing the QoS. Besides, expected applications with 6G communication requirements and possible technologies are presented. We also describe potential challenges and research directions for achieving this goal.

INTRODUCTION

Rapid development of various emerging applications, such as artificial intelligence (AI), virtual reality (VR), three-dimensional (3D) media, and the internet of everything (IoE), has led to a massive volume of traffic [1]. The global mobile traffic volume was 7.462 EB/month in 2010, and this traffic is predicted to be 5016 EB/month in 2030 [2]. This statistic shows the importance of improving communication systems. We are heading toward a society of fully automated remote management systems. Autonomous systems are becoming popular in all areas of society, including industry, health, roads, oceans, and space.

The Advance Future of Radar Systems

G Ramprabu[1], Prakash Senapati[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The first radar has been patented 110 years ago. Meanwhile the applications became numerous and the system concepts have been adopted to the available technologies. Typical applications are speed control, air traffic control, synthetic aperture radar, airborne and spaceborne missions, military applications and remote sensing. Research for medical radar applications is well progressing for breast cancer detection and tumor localization. Automobile radar for save and autonomous driving are meanwhile produced in millions per year. In the next years the state-of-the-art radar system concepts will experience almost a revolution. Despite the significant advancements, the radar system technology did not develop like communications or other technologies during the last 20 years. Some of these new technologies will within a few years penetrate radar and revolutionize radar system concepts. This will then allow for new radar features and radar signal processing approaches.

INTRODUCTION

The first radar was patented in 1904 by Christian Hülsmeyer [1]. It was a pulsed radar, radiating differentiated video pulses, generated by a spark gap. Hülsmeyer's ideas were based on the experiments by Heinrich Hertz in 1888, when Hertz detected the polarization dependent reflection of electromagnetic waves. Since then radar system technology and signal processing have significantly been improved. The first electronically scanning radar was the German Search Radar FuMG 41/42 Mammut-1 in 1944. Numerous innovations in radar system technology followed since then, e.g. the FMCW radar technology. An important step was the invention of imaging Synthetic Aperture Radar (SAR) which was first introduced in 1956 by the patent of Carl Wiley [2] and the first civilian spaceborne SAR Seasat in 1978. In the same way the Z radar hardware technology and the radar signal processing have advanced significantly. Until 1990 radar technology was always a little ahead of the communications technology. But with the advent of the wide spread mobile communications, this situation changed. Although radars became equipped with new semiconductor devices and signal processing technologies, the system-level radar concepts have remained the same since many years; these radars still:

Deep Radar Detector using LiDAR method.

G Ramprabu[1], Brikram Pal[2]

[1]College Of Engineering Bhubaneswar, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

While camera and LiDAR processing have been revolutionized since the introduction of deep learning, radar processing still relies on classical tools. In this paper, we introduce a deep learning approach for radar processing, working directly with the radar complex data. To overcome the lack of radar labeled data, we rely in training only on the radar calibration data and introduce new radar augmentation techniques. We evaluate our method on the radar 4D detection task and demonstrate superior performance compared to the classical approaches while keeping real-time performance. Applying deep learning on radar data has several advantages such as eliminating the need for an expensive radar calibration process each time and enabling classification of the detected objects with almost zero-overhead.

INTRODUCTION

Autonomous driving is one of the major industrial trends that is expected to affect our lives in the near future. One of its main challenges is perception, i.e., understanding the surrounding. To address this challenge, autonomous vehicles use a set of sensors (e.g. cameras, LiDARs, and radars) to "sense" their surroundings and a set of algorithms to build the 3D world representation. Recently, deep learning (DL) became the key component of these perception techniques [2, 4, 5, 19]. It emerges as the main enabler to the great progress made recently in fields such as image recognition [1,2], object detection [3,4], instance segmentation [4] and 3D object detection [5]. While deep learning is applied mainly on the camera and LiDAR sensors data, radar processing still relies mostly on "classical tools". In this work, we wish to take a step towards making DL more applicable to radar processing. The recent demand for autonomous driving drove the automotive industry towards a new generation of highresolution (azimuth and elevation) automotive "imaging" radars [6, 7]. The main goal of these imaging radars is to create a relatively dense point cloud (less dense than lidars) of the vehicle surrounding at a lower cost and with a superior weather immunity compared to optical LiDARs.

A.I. Neural Networks Inference into the IoT Embedded Devices using TinyML for Pattern Detection within a Security System

K.Murali Babu[1], P.P Mohapatra[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The paper presents the implementation challenges of a proof of concept development for image processing with artificial intelligence neural network into an embedded device. Because of the hardware constraints of the embedded device – e.g. 16 KB RAM and 128 KB of EEPROM, the deep learning/the training and the model of the neural network is processed in cloud – e.g. Google Cloud Platform – AI – Artificial intelligence, as shown in second section. After this step, the trained neural networks model, values and tensors are translated with TinyML into native code for the embedded devices and deployed on a specific hardware platform – e.g. Arduino Nano 33 BLE Sense or SparkFun Edge Development Board Apollo3 Blue - for the neural network inferences – e.g. person detection or NLP into specific area, as described in third section. The last section shows the conclusions and the security challenges for deploying neural networks into embedded systems which are used for security systems such as: monitoring and surveillance cameras, drones visual computing for securing field areas, IoT systems etc.

INTRODUCTION

There are multiple software development kits, libraries and frameworks for developing Neural Networks and Deep Learning applications. Most of them are pushing Python based code, but Python has poor results for the performance benchmarking on real CPU and GPU cores. Thismaybe an advantage for the cloud providers but not necessary an advantage for the companies or software integrators who are renting processing power into the Cloud. Most used framework/API is Keras. are which can be accessible from the Keras API. Keras API may address via API multi-back-end Artificial Intelligence Cloud solutions, such as: Tensorflow, Theano, MxNet. Tensorflow is polyglot and is supporting Java and JVM based languages as well, but for the moment, Python is pushed into a lot of books and tutorials. Additionally, in the A.I field are various libraries/frameworks/even OS-es for dedicated processing from NLP – Natural Language Processing – e.g. Apache NLP to Visual Computing and generic deep learning – e.g. Eclipse deeplearning4j, Apache Spark or ROS – Robot Operating System

6G: A Comprehensive Survey on Technologies, Applications, Challenges, and Research Problems

L.N.Sarangi[1], K Patil[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The inherent limitations of the network keep on going to be revealed with the continuous deployment of cellular networks. The next generation 6G is motivated by these drawbacks to properly integrate important rate-hungry applications such as extended reality, wireless brain-computer interactions, autonomous vehicles, and so on. Also, to support significant applications, 6G will handle large amounts of data transmission in smart cities with much lower latency. It combines many state-of-the-art trends and technology to provide higher data rates for ultra-reliable and low latency communications. By outlining the system requirements, potential trends, technologies, services, applications, and research progress, this article comprehensively conceptualized the 6G cellular system. Open research issues and current research groups in their field of research are summarized to provide readers with the technology road-map and the potential challenges to consider in their 6G research.

INTRODUCTION

The need for higher rates is the primary driver for the wireless network evolution. It is expected to mandate a continuous 1000x increase of the network capacity based on the continuous demand. The reason behind this tremendous need for higher rates is the emergence of the Internet of Things (IoT) in almost all industries to form industry 4.0. Millions of people and billions of machines will be connected to contribute to a revolutionary shift from rate-centric enhanced mobile broadband (eMBB) services to ultra-reliable, low latency communications (URLLC). However, one of the fifth-generation key features (5G) is enabling IoT and industry 4.0. Its initial premise of 5G has proved the right carrier of IoT services, but it still requires a lot of development to cope with the significant number of networks. No one can argue that 5G is an evolutionary generation for connecting, supporting IoT networks, and providing new services (ie, supporting eMBB services), yet it is still questionable whether it will deliver smart cities and smart utility services.

From 5G to 6G Technology: Meets Energy, Internet-of-Things and Machine Learning: A Survey

L.N.Sarangi[1], Manjulata Bhoi[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Due to the rapid development of the fifth-generation (5G) applications, and increased demand for even faster communication networks, we expected to witness the birth of a new 6G technology within the next ten years. Many references suggested that the 6G wireless network standard may arrive around 2030. Therefore, this paper presents a critical analysis of 5G wireless networks', significant technological limitations and reviews the anticipated challenges of the 6G communication networks. In this work, we have considered the applications of three of the highly demanding domains, namely: energy, Internet-of-Things (IoT) and machine learning. To this end, we present our vision on how the 6G communication networks should look like to support the applications of these domains. This work presents a thorough review of 370 papers on the application of energy, IoT and machine learning in 5G and 6G from three major libraries: Web of Science, ACM Digital Library, and IEEE Explore. The main contribution of this work is to provide a more comprehensive perspective, challenges, requirements, and context for potential work in the 6G communication standard.

INTRODUCTION

Many researchers have anticipated that the year 2030 will bring tremendous changes in technology and business landscapes [1]. The world is moving towards a data-driven, highly digitalised and intelligent environment. The new revolution will introduce new technological challenges and requirements. In order to cope with these technical requirements, the existing communication networks should be improved and enhanced. The sixth-generation (6G) mobile communication network is expected to play a vital role in supporting the required connection speed, reliability, coverage and infrastructure in the future. Based on existing reports, the sixth generation will furnish a full dimensional wireless range and support all industrial functions, including sensing, communication, computation, caching, control, location, radar, navigation, and imaging full-vertical applications.

The Development of Mobile Communications in 5G and 6G

R.Siva Kumar[1], Ajit Pati[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Extensive use of communication and information technologies has led to the introduction of different generations of mobile communications. The first to fourth generations (1G-4G) of communication are fully recognized in the world, the fifth generation (5G) is gradually being implemented in different countries, and studies and research on the sixth generation (6G) are in the early stages. The development and deployment of the new generation of mobile communication will have a significant influence on the development and presentation of mobile communications. In this paper, a brief review of the development trend of mobile communication generations with a focus on 5G and especially 6G has been done with respect to the visions, technologies, challenges and issues related to these two generations.

INTRODUCTION

In recent decades, much progress has been made in the field of mobile communications. By changing the nature of the system, rate, technology and frequency, a new generation (G) of communications is introduced. Each generation has new standards, capacities, techniques and features compared to the previous generation. The first generation (1G) was fully analog and offered only voice calls to users. With the introduction of the second generation (2G) which was a digital technology, it became possible to send text messages to users. Third generation (3G) supports multimedia messaging service (MMS) with higher data transfer speeds and increased capacity. The fourth generation (4G), by combining 3G mobile internet and fixed internet, was able to support wireless mobile internet, also increases QoS and bandwidth and reduces resource costs. The fifth generation (5G) offers Wireless World Wide Web (WWWW), while the sixth generation (6G) proposes to integrate 5G and satellite networks to provide full global coverage of mobile communications [1]. Currently, 5G wireless communication systems are being implemented in various countries

Vision, Requirements, and Technology Trend of 6G: How to Tackle the Challenges of System Coverage, Capacity, User Data-Rate and Movement Speed

Subrat Kumar Mohanty[1], Narayan Himirika[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Since 5G new radio comes with non-standalone (NSA) and standalone (SA) versions in 3GPP, research on 6G has been on schedule by academics and industries. Though 6G is supposed to have much higher capabilities than 5G, yet there is no clear description about what 6G is. In this article, a comprehensive discussion of 6G is given based on the review of 5G developments, covering visions and requirements, technology trends and challenges, aiming at tackling the challenge of coverage, capacity, the user data rate and movement speed of mobile communication system. The vision of 6G is to fully support the development of a Ubiquitous Intelligent Mobile Society with intelligent life and industries. Finally, the roadmap of the 6G standard is suggested for the future.

INTRODUCTION

Mobile communication systems upgrade to a new generation in every 10 years. In particular, research on a new generation will formally start right after the earlier generation is standardized. For the present fifth generation (5G) mobile communication system, the standard for the non-standalone (NSA) version was finished at the end of 2017 and a standalone (SA) version was finalized in the middle of 2018 by the 3rd Generation Partnership Project (3GPP). Though further enhancements for 5G new radio (NR) are still ongoing, research on the next generation, namely 6G, has been discussed by academics and industry. For example, in the European Union, some research projects such as Terapod and Terranova were sponsored by 5GPPP Phase 1 in 2017, then more projects were followed in Phase 2 and Phase 3 aiming at 6G innovations. In the U.S., following the joint university microelectronic project (JUMP) launched by the Defense Advanced Research Projects Agency (DARPA) in 2016, the frequency band from 95GHz to 3THz was granted by the Federal Communications Commission (FCC) for research on 6G. Also, in the Chinese Communication Standardization Association (CCSA), two study items were launched in 2018, one focusing on the vision and requirements of 6G and the other on the key technologies for 6G.

Trial of a New Distributed Energy Resource Management System for Coordination to Supply Reactive Power Services

Eepsita Sridevi[1], Basudev Swain[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In order to supply reactive power services to the transmission network from distributed energy resources, this study offers the end-to-end design solution of a revolutionary distributed energy resource management system (DERMS). These investigations are a component of the pre-commissioning testing that will take place before to the start of the wave 1 trial of the Power Potential innovation project, which is a collaboration between National Grid Electricity System Operator and UK Power Networks. A synopsis of the integration test scenarios to run the system under both normal and failure settings follows the description of the system integration and all of the interfaces. Additionally, the simulation results of the lab-integration testing in a preproduction setting are given, taking into account a variety of events that may cause the DERMS to issue a reactive power dispatch command.

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

INTRODUCTION

Through the Power Potential initiative, the UK's electricity system operator (ESO) is testing a new reactive power market for distributed energy resources (DERs). This project, which is partially sponsored by the Electricity Network Innovation Competition (NIC), intends to control transmission network bottlenecks through generators linked at the distribution level. It is a world-first trial of dynamic reactive power services from DERs.

In order to replace existing Grid Code-compliant suppliers of reactive power services and postpone the necessity for network reinforcement at transmission, this might be an inventive, flexible, less expensive, and carbon-saving option. The study is set to take place at four Grid Supply Points (GSPs) that are currently operational in the South-East region of the United Kingdom. By 2050, energy customers may save more than £400 million and generate up to 4 GW of DERs by maximizing network capacity [1].

Effective Coagulation Process for the Turbidity Removal of Muddy Water using Alum and Assorted Coagulants

Nibedita Sahoo[1], Ipspita Sahoo[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

One important and economical procedure in water treatment facilities is coagulation. In ideal circumstances, it not only effectively eliminates turbidity but also lowers the volume of sludge, which lowers sludge management expenses. To remove turbidity, highly turbid water from streams, canals, rivers, and rain runoff was put through a jar test. When alum and other coagulants were used to coagulate brown water with a turbidity of 250 NTU, it was shown that alum doses of 0.25 g/l at pH 6 and sedimentation times of 30 minutes resulted in the greatest turbidity elimination.

Keywords: Coagulants · Turbidity · Muddy water · Alum

INTRODUCTION

Alum is one of the coagulants that is most frequently employed in the water treatment sector. Inorganic salts of aluminum are the most commonly utilized coagulants for wastewater and water treatment. Al ions quickly hydrolyze when added to water, forming a variety of metal hydrolysis products. The negatively charged particles are adsorbed onto by these cationic species, which neutralize the charge. Particles become unstable in this mechanism, leading to aggregation. Both the pH and the coagulant dose affect coagulation. Because of electrical repulsion, nearly all of the negatively charged colloids in water have the potential to remain stable. Salts or cations that interact with negative colloids to neutralize their charge could be added to cause destabilization. When hydrolysis occurs, an aluminum hydroxide precipitate is produced. This precipitate, known as the sweep-foc coagulation, removes the colloidal particles from the suspension. This study compares the effectiveness of alum with several coagulants, including potassium hydroxide, sodium carbonate, calcium oxide, and potassium carbonate, at different pH levels, in clearing turbidity from muddy water in streams, canals, rivers, and runoff from rainfall. For charge neutralisation, a precise coagulant dose is necessary; overdose may cause charge reversal and particle stabilisation.

Experimental Investigation on Concrete by Partial Replacement of Fine Aggregate by Effluent Treatment Plant Waste

Salini Patra[1], Pritam Dash[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Many imitators have tried successfully incorporating various materials into concrete in recent years. Environmental issues are directly caused by discarding rubbish into the ecosystem. In order to safeguard the environment from waste deposits and to use natural resources more efficiently, trash can be recycled into new goods or used as admixtures. Large amounts of sludge are produced in India and dumped nearby or in landfills as a means of disposal. Growing populations and the production of non-decaying waste materials have led to a waste disposal crisis that is causing problems for the environment and economy. These modern-day trash will linger in the environment for hundreds or maybe thousands of years. For each of these wastes, there are significant economic and environmental issues, such as landfill management costs and air, surface, and groundwater pollution.In this study, the mechanical properties such as compressive strength, split tensile strength, and flexural strength will be tested using waste ETP sludge powder in place of cement, the component of concrete. Cement is substituted at percentages of 5%,10%,15%, and 20% with ETP sludge waste powder, which has a particle size of 90 microns, to test the strength of the replacement.

Keywords: Sludge, ETP, CETP, TNPCB, High strength concrete

INTRODUCTION

The massive volume of industrial wastes and by-products is starting to pose a serious issue for clients due to rising environmental degradation and the creation of a significant amount of wasted resources. In light of the aforementioned, the goal of this research is to determine how to use such items, resources, and industrial by-products for value-added applications while also aiding in the resolution of environmental issues. The goal of my current research project is to give industrial waste and by-products a valuable input or utilisation. The goal is to develop a novel composite material that can be made from waste materials that are now harmful and non-biodegradable. Ordinary Portland cement and The new composite material are combined to create the new composite material.

Secure Hybrid Bio-Inspired Congestion Control Mechanism in Energy-Efficient WSN

G.Arul Dalton[1], T.R Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In wireless sensor networks, congestion control is a major issue. When incoming packets increase beyondthe actual ability of the network, otherwise node, it leads to congestion in the network. Network congestion can reduce bandwidth, increase network delay, as well as increase packet loss along with sensor power loss. Therefore, better methods are needed to deal with congestion. There is a need to understand congestion as well as supervise congestion resources in the wireless network to improve network performance. In recent years, various methods for recognizing and preventing congestion have been introduced. To address some of these issues, biodiversity monitoring system called Lion FuzzyBee is proposed . The Lion FuzzyBee is compared to a lion and a bee methods by a variety of metrics, for instance packet delivery ratio, detection accuracy, average throughput along with energy consumption etc. Evaluation outputs demonstrated that the Lion FuzzyBee provides enhanced outputs than the Lion as well as Bee algorithm**.**

Keywords: Wireless sensor networks (WSNs); Congestion Control; Bee Optimization; Lion Optimization and LionFuzzyBee.

INTRODUCTION

WSN on a wireless sensor network is a network of systems that can be able to densely located in an aggressive as well as unreachable environment to sense this atmosphere along with the collected information through high accuracy. It incorporates sensors, calculations, as well as communication into a tiny system called a sensor node [1-4]. WSN consists of thousands of device nodes. The sensor unit consists of single or additional sensors associated with the application, the vital device being a microwave, a battery memory relay [5,6]. A collection of sensors connected via a wireless storage device to perform distribution recognition tasks. The major job of the sensor is to know the data in the surroundings, process this data as well as transmit the information to the sinking unit.

Control Strategies for Smart Grid Dispatch Optimization in Transactive Energy Systems

Gopal Krishna Mohanty[1], Rashmi Ranjan Barik[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In order to handle services like forecasting, dispatch optimization, feeder dynamic segmentation, interconnect and micro-grid operations analysis, and others, transactive smart-grid systems need control mechanisms. The same input data is used to compare two dispatch optimization tools used in a virtual controller: an artificial neural network (ANN) dispatch system and a mixed integer linear programming micro-grid dispatch system. Both systems were created in accordance with the transactive energy nodal system model specifications of the Pacific Northwest National Laboratory Smart Grid Demonstration (SGD) project. A distribution substation communications compliant service architecture is developed to use either simulator output set based on an operations context or grid-operator preference, such as timing or least-cost. The characteristics of these distinct optimization techniques are documented from a control perspective.

Keywords: Smart grid, transactive energy control, microgrid operations, dispatch optimization.

INTRODUCTION

The modular smart grid system controller technique described in this research may also be used to evaluate and compare data sets from many transactive energy system dispatch tools that are mutually incompatible. In situations where a single transactive market participant may require different optimization or dispatch strategies, a controller architecture is advised as an effective way to manage transactive node operations. This allows the output of a dispatch simulator run to be taken into consideration when developing a layer of context-driven control logic or grid operator strategy [1][2]. Three components are used to first examine the system: background, system structure, and study technique (sections a, b, and c). For load serving entities (LSE) and other retail service-oriented electric utilities, transactive energy systems represent a novel endeavor.

Multi-area Power Systems and Damping Load Frequency via Wind Farm Cooperated Primary Load Frequency Control

Gopal Krishna Mohanty[1], Shishir Muduli[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

ABSTRACT

This research proposes and investigates wind farm cooperative load frequency control to reduce load frequency variations in multi-area power systems. Three different types of conventional power plants—thermal, nuclear, and hydro—as well as two wind farms with variable speed wind turbines—PMSG and DFIG—make up a multi-area power system. The PMSG control system is thought to include an incorporated Primary Load Frequency Control (PLFC) mechanism. The PLFC operates by managing the power output reference of the PMSG, which reduces power fluctuation on the tie line and frequency variations on each region. This control is based on the kinetic energy stored in the rotating mass of the wind turbine.
Keywords: Multiarea power system, primary load frequency control, wind farm.

INTRODUCTION

Due to their output power swings, large-scale wind farms are becoming more and more integrated into the electrical system, which has led to stability issues [1-3]. Power system operators should adjust their grid code connection criteria in many countries where wind farms have already become large, as frequency stability is a crucial component of power system security [4]. The stabilization of power system frequency through the use of synchronous generators in conventional power plants is a well-established technique that is utilized globally. Automatic generation control (AGC) is a standard way for the controlling systems of traditional power plants to reduce load frequency variation [5]. Wind generators have no effect on grid frequency regulation while they are operating normally. They only generate as much electricity as they can, based on wind energy availability. The wind turbine generator control system must have Primary Load Frequency Control (PLFC) in order to smooth out the wind farm's power production. The basis of PLFC is the local controller setting of wind turbine generators, which adjusts their active power reference generation in response to frequency fluctuations by lowering and raising it.

Based on Opinion Classification (Fboc) Technology for Customer Reviews

GSS Rao[1], Anup Sahu[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

E-commerce websites are becoming increasingly significant in today's Web 2.0 world. When deciding which product to buy from an online retailer, reviews are a crucial factor in the consumer's decision-making process. Because there is no set format for the reviews, they are unstructured. format in which customers can submit their reviews. Owing to the vast amounts of unstructured reviews, a method for extracting features from reviews and providing an opinion regarding such features needs to be developed. This proposed strategy, called Features Based Opinion Classification (FBOC), involves first identifying the features. Following feature identification, the characteristics are classified as good, negative, or neutral based on the opinions of the users using two methods: specifically the Valence Aware Dictionary for Sentiment Reasoning, or VADER, and AFINN. A feature summary is created, displaying the overall number of favorable, unfavorable, and neutral user opinions for the feature. It is then shown in a way that makes it simple for the end user to comprehend.

Keywords: FBOC, AFINN, VADER, FE(Feature Extraction),

INTRODUCTION

Opinion mining is getting more and more interesting as Web 2.0 gains traction. Opinion-rich sources have taken on new forms, including social networks, wikis, and reviews on websites, e-commerce, forums, and so forth. The largest amount of such data that is currently available requires us to self-regulate their extraction and organizing. Previously, when the If a customer wishes to purchase goods, they must first inquire about the product's features from others. The purchaser must locate those who have used the product and then interview a large number of individuals regarding the characteristics of the product. When purchasing a product, features are crucial since consumers want to know which characteristics make the product better. However, since the advent of web 2.0, online shopping has been extremely popular. Customers are now able to write reviews about the features of products, which buyers can read and use to determine whether or not to buy.

An Efficient Architectural Design for Collection of Heterogeneous Big Data

Hiren Kumar Praharaj[1], Lohit Kumar Singh[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The main issue with an organization's system variety is the variety of data. Data integration is impacted by variations in database design and implementation. Over thirty systems are investigated using various technologies and eras. The generation of the dashboard is distinct even though the system and data are dispersed. Using new devices and new behaviors to access web applications is challenging. The intermediate node known as "middleware" serves as a stand-in for gathering, combining, and re-formatting data into the standard format. The software architecture and workflow of middleware, which is used to gather data from the various systems within the company, are presented in this paper. Seven experts assess the middleware using seven performance metrics. The outcome demonstrates that the average overall score of 3.00 metrics is 2.47. With a micro service model, this middleware can be easily programmed and implemented to improve scalability, availability, and extensibility.

Keywords: middleware design: heterogeneous data: data collection: big data.

INTRODUCTION

Web applications and web sites are important tools that support internal operations for the Thai government for a long time. Walailak University is a Thai government organization that implemented many web-based systems such as human resources management, finance management, e-document and central student registration. All systems are designed and implemented as web-based applications. All applications are accessed via the internet web site. Web applications increase the flexibility, comfortability, and productivity of workflow since 1998. Whereas the evolution of smartphone technology is rapid. Users access the internet via the varieties of mobile devices and screen sizes such as mobile phone and tablet. In addition, the software system of mobile devices is transformed from embedded software to a multitasking operating system comparable to a personal computer.

Evaluate Kidney Ultrasound Image Performance using De-speckling Algorithms

Hiren Kumar Praharaj[1], Praksah Pati[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Over the last three decades, several despeckling filters have been developed by researchers to reduce the speckle noise inherently present in ultrasound B-scan images without losing the diagnostic information. This paper compiles and compares well-known techniques mostly used in the smoothing or suppression of speckle noise in ultrasound images. A comparison of the methods studied is done based on an experiment, using quality metrics, texture analysis and interpretation of row profiles to evaluate their performance and show the benefits each one can contribute to denoising and feature preservation. To test the methods, a noise-free image of a kidney is used and then the Field II program simulates a B-mode ultrasound image. This way, the smoothing techniques can be compared using numeric metrics, taking the noise-free image as a reference. In this study, a total of seventeen different speckle reduction algorithms have been documented based on spatial filtering, diffusion filtering and wavelet filtering, with fifteen qualitative metrics estimation. We use the tendencies observed in our study in real images. A new evaluation metric is proposed to evaluate the despeckling results.

Keywords: Speckle noise, speckle reduction, ultrasound images, quality metrics.

INTRODUCTION

Image quality metrics are figures of merit used for ultrasound speckle reduction evaluation. In this study we consider several image quality metrics and study their behavior when evaluating various ultrasound despeckling filters. Medical ultrasound imaging is a technique that has become much more widespread than other medical imaging techniques since this technique is more accessible, less expensive, safe, simpler to use and produces images in real-time. However, ultrasound images are degraded by an intrinsic artifact called 'speckle', which is the result of the constructive and destructive coherent summation of ultrasound echoes (Ortiz 2012).

Randomized Economic Scheduling Including Commercial Electric Cars and Variable Energy Sources

Jagatjyoti Ranjan Das[1], Manoj Dev[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The use of renewable energy sources (RES) and the growth in the use of electric cars have a larger influence on conventional power networks. The unequal consumption patterns of electric cars and the intermittent production from renewable energy resources have a significant influence on the power system's ability to operate economically. This article addresses a stochastic Dynamic Economic Dispatch (DED) problem that involves intermittent renewable energy supplies and commercial electric vehicles (CEVs). Peak demand for power systems is significantly influenced by the way that CEVs are charged as well as the erratic nature of solar and wind energy. These CEVs' and RES's seasonal behavior is taken into account and evaluated using a real-time, practical test system in South India.

Keywords: Economic dispatch, electric vehicles, improved moth flame optimization, renewable energy sources, solar, wind.

INTRODUCTION

One of the main concerns in the design and operation of contemporary power systems is Economic Dispatch (ED). The most effective generator combination is used in ED to save fuel costs. Moreover, ED contributes to increased power system dependability and security. With several limitations, ED has emerged as a crucial tool for closing the demand-generation gap. In addition, the ED issue is further constrained by the inclusion of large-scale intermittent energy sources like wind and solar power. The exponential growth in limitations has made the ED issue very nonlinear, confined, and difficult. Heuristic optimization techniques are commonly utilized to solve nonlinear issues. There are three categories for optimization techniques: analytical, metaheuristic, and classical. These techniques are used to handle a variety of power system issues. The ED issue is solved using traditional techniques such as the Gradient Method (GM) [4], Quadratic Programming (QP) [3], Linear Programming (LP) [2], and Lambda Iteration Method (LIM) [1]. These approaches' shortcomings include high computing times, a high number of iterations, and subpar constraint management.

An analysis on the Penetration of Renewable and Sustainable Energy in Asia

Jagatjyoti Ranjan Das[1], Kabita Singh[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The depletion of conventional fossil-fuel energy resources is accelerating, making the present transition towards renewable energy (RE) resources necessary. Nonetheless, there are other barriers to the widespread use of renewable energy sources. Policies that promote the use of sustainable energy sources can help remove these obstacles. For example, the net-metering policy can offer the required incentives to support the growth of dispersed energy sources locally, namely wind and solar power plants. Despite the fact that net-metering has significantly advanced and developed in Asia due to the greater use of RE, a thorough evaluation in this field is still lacking.

Keywords: Renewable energy shares, renewable energy targets, net-metering policy, net-metering in Asia.

INTRODUCTION

The production and use of energy are essential to a country's growth. One measure of a country's rate of development is the quantity of energy consumed per person. The accessibility and availability of energy has a significant impact on the level of living and way of life for citizens in every nation. Conversely, energy scarcity can impede a nation's industrial and economic development [1], [2]. The energy needs of contemporary civilizations are rising along with the economy, and the depletion of fossil fuel energy supplies is occurring at an alarming rate [2]. The growing use of fossil fuels has led to an alarming increase in the task of addressing climate change. For example, the release of greenhouse gases during the processes involved in producing fossil fuels has sparked widespread worries about global warming. Human activity is thought to have caused a 1°C shift in global temperature [3]. Decision-makers in the public and corporate sectors now agree that it is critical to move toward sustainable and renewable energy sources because of these ground-breaking factors. As a result, resources for renewable energy (RE) have attracted enormous interest in recent years [4]–[14]. A 27% proportion of renewable energy consumption by 2030 was the aim set by the European Council in the 2014 Framework for Climate and Energy [15], [16]. Similarly, in 2015, over 30 countries signed the Paris Climate Change Agreement, which will go into force in 2020, in an effort to keep the increase in the global mean temperature from rising over 2C [17].

Use of Micro-Resilience to Deliver Flexibility in Distribution Systems

Jagatjyoti Ranjan Das[1], Gouri Kumari[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This study provides an overview of the innovative technology approaches that have been employed to improve grid flexibility and resilience as well as the customer experience for distribution system operators. It also describes the distinct grid problems at every one of the four micro-resilence sites. These sites were chosen due to their remote locations and dependence on a stable electricity supply for critical life-supporting operations or dependent users. Thus, in addition to providing flexible grid services while the grid is connected, there is also the opportunity to provide a stable electrical supply to islanded pockets during high-voltage grid disruptions. Along with the solution design, the technology is described in depth. This includes the two-terminal power electronic devices (PEDs) and the micro grid controller (MGC).

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, micro grid, renewable energy sources (RES).

INTRODUCTION

Due to the sparser networks and greater cost per customer of traditional "steel and copper" grids in these places, consumers in rural or distant areas frequently face higher outage frequencies, reflecting the nature of the local grid infrastructure. Innovative microgrid (MG) solutions are being shown by Northern Powergrid, Smarter Grid Solutions, and Turbo Power Systems. These solutions will boost low-voltage (LV) customers' resilience while providing flexibility to serve the larger high-voltage (HV) network. Distributed energy assets that provide phase balancing, voltage support, power factor correction, and islanding operation during scheduled (maintenance) and unexpected (failure) outages are part of this flexibility. Modifications to the current electrical network are required for each deployment location in order to provide micro-resilience functionalities through the moved ESS, PED, MGC, switch controls, and monitoring equipment. It is ideal for every item to be located inside a compact substation building designed specifically to house MG management and control equipment in addition to LV distribution equipment.

An Efficient Approach to Security Enhancement using Cryptography Technique and Its Performance Evaluation on Avalanche Effect

Jagdish Kumar KB[1], Daneswar Thakur[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Cryptography has emerged as a critical component of an information security system's protection against malicious attacks. Cryptography is the technique or method by which a person or users sends information or a message to another person or users in such a way that only the approved person or users can read it. This encryption mechanism encrypts the data and transforms the data into unreadable text that only a party with the associated key can decode or decrypt. These algorithms use a large number of computer resources, including CPU time, memory and time of processing. This research proposes a Custom-AES algorithm for data transmission to meet different security objectives. This latest algorithm is based on the Advanced Encryption Standard's symmetric key encryption (AES). The avalanche effect is used to measure the security of the Advanced Encryption Standard (AES). Before the encryption method, plaintext and the phases of encryption underwent numerous changes. By modifying one bit in plaintext while holding the key unchanged, the Avalanche effect can be determined. The introduction of this methodology was carried out for the purpose of testing. After a comparison analysis with existing encryption algorithms, the experimental results show that Custom-AES has a significant high Avalanche impact.

Keywords: AES; Avalanche Effect; Encryption; Ciphertext; Decryption; Custom-AES.

INTRODUCTION

Confidential digital data delivery through communication mediums has shown the need for fast and trustworthy digital communications networks to meet the data integrity, confidentiality, and unreproduction requirements.

Sentiment Analysis of Product Reviews on Twitter using Naive Bayesian Classifier

Karunakar Reddy[1], Rupali Rai[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

By examining reviews and making product recommendations to customers, profitable and well-timed analytics over "Social Networks" are now a lead for gain in many industries to boost brand exposure and expand customer reach. The goal is to take Twitter's unstructured conversations and posts and turn them into a methodology for sentiment analysis on the platform that evaluates products by taking into account the opinions of customers. Bayesian classifier without prior knowledge. Upon analysing the tweets, six distinct sentiments were found to be possible: joy, surprise, anger, disgust, fear, and sadness. Samsung smartphones were used in this experiment. According to the experiment's findings, 80% of consumers had positive things to say about the product, 20% had negative things to say, and the degree of ninety percent of the suggested method is accurate.

Keywords: Social Networks; Twitter; Sentiment Analysis; Naïve Bayesian Classifier.

INTRODUCTION

Sentiment analysis is the progression of extracting the public's attitude and emotions from English language. It is an enduring research domain of text-mining, which mainly concentrates on predictions. An enhanced consumer behaviour prediction can be achieved by combining machine learning algorithms with data mining techniques. In real-time applications and businesses, the sentiment analysis plays a vital role for behavior (consumer) predictions. Sentiment analysis focuses to get the feelings of a person with respect to an area of interest or the complete lexical polarity in a text document. Attitude can be a person's judgment or assessment, emotional state of the author while posting the message, or the intentional emotional transformation i.e., the review outcome of the customer. Since the data for the reviews are fetched from social media, the data will be in "Huge Volume" and can be either structured or unstructured data ("Variety"). "Velocity" deals with the intensity at which data floods from source like social media sites. The flow of data is massive and continuous.

Using Super Shapes, SWARM Optimization for Three-Dimensional Point Cloud Reconstruction

M. Pavan Kumar[1], Jagadish Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Reconstructing three-dimensional objects using point clouds is a challenging and ill-posed challenge. Numerous applications, including object detection and identification, robotic navigation, medical diagnostics, etc., rely on this fundamental problem. In this research, we propose to use swarm intelligence techniques to reconstruct a 3D object from its 3D point cloud. Our method models the 3D object using new primitives known as super forms, which are an extension of super quadrics with a more conspicuous constraint on displaying complex things. Our work is based on the core principle of modeling a 3D object using novel primitives, and treating the challenge of three-dimensional reconstruction as an optimization problem. Thus, the variety of super forms and the effectiveness and resilience of meta-heuristics are advantageous to our method. For the goal of tridimensional reconstruction, we modified and adapted the artificial bee and chicken swarm swarm intelligence algorithms. The definition of the utilized error function is predicated on the Euclidean radial distance. The selection of this function is crucial since it will later serve as an indicator of the differences between the original and rebuilt item. Comparing our approach to other existing approaches in the literature, it has proven to be quite persuasive and effective in producing good results.

Keywords: 3D reconstruction; point cloud; super shape; swarm optimization; meta-heuristics; artificial bee algorithm; chicken swarm optimization.

INTRODUCTION

These days, data of all kinds—text, images, audio, video, and more—serves as an indispensable resource for a wide range of computer applications, especially those related to artificial intelligence. Therefore, natural 3D object processing plays a significant role in computer vision and addresses a number of technological issues pertaining to the taking of images, their reconstruction, their identification, etc.

Moving Towards Coordination-Based Energy Efficiency-Aware Renewable Energy Management in Green Cellular Networks

N Veda Kumar[1], Jharana Pati[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This research focuses on a crucial energy management strategy that can improve energy efficiency (EE) and decrease fuel consumption in off-grid cellular networks. These networks' base stations (BSs) are powered by hybrid power sources, such as diesel generators and solar PV arrays. In addition to EE, this research looks at the reliability performance and carbon footprint consequences of PV technology in order to fully realize its potential. This study also looks at the advantages of an unevenly collected green energy sharing mechanism under a zero fuel scheme using physically built resistive power lines, accounting for the dynamic nature of the generation of renewable energy (RE) and the density of traffic arrivals.

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

INTRODUCTION

The proliferation of reasonably priced devices with large data consumption capacities and their many uses, including social networking, cloud storage, video streaming, and multimedia services, significantly increase the demand for data traffic in wireless networks. According to a recent Cisco research, there has been a 69% rise in the amount of data transmitted between mobile devices—roughly 2.5 exabytes every month. This analysis also highlighted the likelihood that the steadily increasing mobile traffic will continue to rise at a pace of about 10 times over the next five years, rather than reaching saturation [1][3]. Researchers predict that individuals would primarily use their mobile phones for communication, particularly in rural regions, which will lead to a large number of mobile phone subscriptions [4]. Cellular carriers must install more radio access networks (RANs) and core infrastructure to manage the startling expansion of wireless traffic.

A Secure Public Cloud Environment Using an Improved Data Protection Technique

Naba Kumar Rath[1], Sasmita Das[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Cloud computing can store and manage the large amount of data. Storing the data on to cloud is widespread among companies additionally as private users. It permits its users to access the cloud services from the different locations. It wants solely a working internet connection to access the cloud services. A lot of attention is gained by cloud still there are some problems that need to be taken in considerations(i.e. data security, privacy and reliability)in which data security is one in all the most problems. The biggest challenge in the cloud is to maintain the integrity and confidentiality of data. Many techniques are urged for data protection in cloud. This paper focuses on the present security techniques for shielding the data in cloud. The paper has been carried out on the basis of cryptography, intrusion detection, attacks solutions, Data integrity and privacy as well as authentication and identity.

Keywords- Cloud Computing, Data protection, Security techniques.

INTRODUCTION

According to definition of the term cloud computing given by National Institute of Standards And Technology (NIST) "Cloud Computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared a pool of configurable computing that can be rapidly provisioned and released with minimal management effort or service provider interaction [1].During this quick paced life, people are greatly inclined to the technology and also the world can become additional tech savvy as compare to former timings and during this time, cloud has been one among the favorite technical paradigm within the field of computation and provides a varied services as required by users which incorporates data centers using the Internet to fulfil the demands of their clients. The cloud model consists of five characteristics, four deployment model are as follows: a) Community Cloud b) Public Cloud c) Private Cloud d) Hybrid Cloud The three service model are (a) Infrastructure as a Service (IaaS) (b) Platform as a Service (PaaS) (c) Software as a Service (SaaS) The two security issues in cloud are: (1) Security threats faced by their customers (2) Security related problems faced by the cloud providers

Yemen's Use of Renewable Energy for the Power Sector: Present Situation and Future Prospects

P. Jagannatham[1], Deepak Goel[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Yemen has had a serious energy issue for many years, and the majority of the people do not have access to power. The nation's industrial, social, and economic development has suffered as a result. Yemen has a great potential for renewable energy, however it mostly produces power from fossil fuels. Regretfully, the continuous conflict in the nation, which began in early 2015, has lately made matters worse. It has had a detrimental effect on the nation's energy infrastructure, leading to blackouts. Thus, the purpose of this essay is to give a contemporary analysis of Yemen's energy situation, including its main problems and possible remedies. Additionally, it looks at the potential, advancement, and status of renewable energy sources, including biomass, solar, wind, and geothermal energy.

Keywords: Renewable energy sources, Yemen electricity, energy access, power sector, barriers, wind energy, climate change, Yemen's solar revolution.

INTRODUCTION

Yemen has the lowest economy, education system, trade, and tourism in the Middle East as a result of its lack of power [17]. Therefore, a complete solution to the electrical problem is needed in order to grow the country and ease its difficulties. Yemenis, fortunately, hold the key to the answer due to the abundance of renewable energy sources found there, including biomass, geothermal, solar, and wind [18]~[20]. Theoretically, there would be enough of these abundant renewable resources to produce power and close the existing energy deficit. Utilizing these renewable resources can also help achieve the Sustainable Development Goals (SDGs) and offer a number of long-term advantages, such as the avoidance of global warming, the creation of jobs, energy security, and economic opportunities [21]. Furthermore, a number of obstacles or limitations (such as technological, social, economic, and policy-related issues) prevent Yemen from developing RE effectively. A few review and research papers on Yemen's renewable energy axis have been published to emphasize the role of RE, such as those in [10], [18], [15], [22], and [25]. However, these studies are old, and there is not enough coverage of the RE sector.

The Effect of Twin–Twin Interactions on the Nucleation and Propagation of f10_12g Twinning in Magnesium

Tapas kumar Chand[1], Ritu Tandi[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Analysis of electron backscattered diffraction serial image analyses on compressed AM30 magnesium alloy under profuse f10}12g twinning settings at varying strain levels indicates that the number of activated twins within a grain has a significant impact on both twin nucleation and twin propagation rates. By comparing the twin growth evolution in two grains with almost the same high Schmid, this behavior was found.elements that lead to twinning. In one grain, a single twin version caused deformation, whereas in the other grain, two intersecting twin variants expanded roughly at the same rate. While the nucleation rate in the two variation twinning condition was significantly faster, the twin thickening rate was higher in the predominant twinning condition. Despite this, the overall volume fraction of twins in both grains was roughly the same.

Keywords: Deformation twinning; Twin boundary; Slip; EBSD; Twin–twin hardening

INTRODUCTION

In addition to the conventional slip-slip interactions, slip-twin and twin-twin interactions also occur when a metal grain deforms via both slip and twinning. Every one of these systemsis anticipated to impact strain hardening in a unique and significant way. The work hardening sensitivities of polycrystals are further complicated by the interactions of slip and twinning with grain boundaries (GBs), which includebackstress and accommodation effects at twin–GB impingements. A century-long emphasis on cubic metals, specifically body-centered cubic (BCC) and face-centered cubic (FCC),The prevalent crystal forms found in commercial metal components, primarily those based on Fe, Al, Ni, and Cu, have contributed to a remarkable comprehension of the principles behind slip–slip and slip–GB interactions. This has made it easier to develop cutting-edge ideas for multiscale modeling that seek to forecast the mechanical behavior of the microstructures of cubic metals [1-3]. It is currently unclear how slip-twin, twin-twin, and twin-GB interactions affect strain hardening.

Influence of Deformation Twinning on Static Annealing of AZ31 Mg alloy

Jagannath Mohapatra[1], Manas Pati[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In order to determine the potential of extension and contraction twins to modify the recrystallized texture and to critically assess their contribution to the recrystallized microstructure following room temperature deformation, the microstructure evolution during isothermal static annealing of magnesium alloy AZ31 was studied. It was noted that contraction twins were effective locations for recrystallization.Extension twins were ineffective as recrystallization nucleation sites, although nuclei with numerous advantageous new orientations The final texture was not greatly affected by the new grains, even though recrystallization nucleated preferentially inside the contraction twins, resulting in a spread of new orientations (far from the unsatisfactory beginning c-axis fiber texture). Four reasons were given for this:(1) remarkably prolonged recovery prior to recrystallization following c-axis compression in the majority of grains; (2) partial

Keywords: Static recrystallization; Deformation twinning; Electron backscatter diffraction; Texture; AZ31

INTRODUCTION

Because of its low mass and high specific strength, magnesium alloys are preferred by automakers who want to drastically cut vehicle weight and improve fuel efficiency.and cut back on emissions of $CO2$. Magnesium alloys have been used in many cast applications [1], but because they do not yet have the room temperature formability required for wrought applications, their promise for weight savings has not been completely realized. It is commonly believed that the limited formability at room temperature results from the challenge of triggering the five separate shear modes required to allow for an arbitrary isochoric plastic strain that is imposed. The lattice structure of the majority of magnesium alloys is hexagonal close-packed (hcp), which allows for plastic deformation by slipand/or deformation twinning.

The Effect of Strain Path on the Recrystallisation of an Aluminium-Manganese Alloy

Subhakanta Nayak[1], Nibedita Lenka[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The strain path undergone by a material can have a significant influence on the deformation behavior, re crystallization kinetics, grain size and crystallographic texture. To study the influence of strain path, samples of an aluminium-1%manganese alloy have been subjected to a number of strain path changes. These have been achieved using combinations of plane strain and free compression to give strain paths of 0, 90, and 180°. The development of the dislocation substructure resulting from each stage of deformation was studied using Electron Back ScatterDiffraction (EBSD) and Transmission Electron Microscopy (TEM). Following deformation annealing was carried out to determine the effects of the strain path changes on the re crystallization kinetics and grain size. Results have shown that the strain path angles cannot be used to satisfactorily describe the material behaviour when mixtures of deformation modes are used.

Keywords: Strain Path, Recrystallisation, Electron Backscatter Diffraction, Dislocations

INTRODUCTION

"Stretch path" refers to the deformation path a material takes through strain space. Even when straightforward linear deformations like tension/compression or torsion/reverse torsion are taken into account, its description can still be complicated. When performing metal forming processes, theThe material's strain path across a component is not uniform or linear. Gradients of strain are created throughout the thickness of the section even in relatively simple cases like flat rolling because of the interaction between the compressive forces and the shearing caused by the roll contact. Through the thickness of the section, these gradients result in microstructural, textural, and eventually property gradients [1,2].The first person to record an observation of the impact of strain route on mechanical behavior was Bauschinger [3]. He demonstrated that after[5] looked at how strain path reversal affected the sub-grain structure and demonstrated how sub-grain boundaries "dissolved" after a reversal.

Orientational Analysis on Static Recrystallization at Tension Twins in AZ31 Magnesium Alloy

Biplab Mohapatra[1], Debasis Mohanty[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In magnesium alloys, twinning is necessary for deformation, and twins will serve as the primary location of recrystallization nucleation. Tension twinning is far easier to proceed with than compression twinning because of its significantly higher volume proportion compared to compression twins, which could have a encouraging effect on the process of recrystallization to some extent. Based on the previous research on the static recrystallization at compression twins, the evolution of microstructure and texture in AZ31 magnesium alloy during its static recrystallization at tension twins was further investigated; and the orientational characteristics of new grains formed at tension twins in the early stage of static recrystallization were analyzed by EBSD technique. The findings demonstrated that no new texture component was found, and the robust basal texture was both retained and weakened. They diverge greatly from the initial tension or compression twins' orientations, which are comparatively random. It was also determined to compare the recrystallization at compression and tension twins.

Keywords*: magnesium alloy; tension twin; recystallization; texture; orientation

INTRODUCTION

Magnesium alloy deformation is significantly influenced by twinning[1-3].The two types of twins that constitute the predominant nucleation site for recrystallzation are the {1012}-type tension twins and the {1011}-type compression twins [4-6]. The former developed in the latter half of In basal-oriented grains, deformation results in comparatively uneven, localized deformation regions. These regions can function as efficient nucleation sites since they are still undergoing microstructural and orientational modifications. However, because the latter's volume fraction is significantly higher than that of the compression twins, it progresses far more quickly than the former. As a result, it might somewhat stimulate recrystallization. Despite the fact that dynamic recrystallization in the industrial manufacture of wrought magnesium alloys has been extensively studied [7–12], thorough research on static recrystallization has not been done.

Effect of Cold Forging and Static Recrystallization on Microstructure and Mechanical Property of Magnesium Alloy AZ31

Shanta Mohapatra[1], Sunil Majhi[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

We perform a cold forging and annealing technique on Mg alloy AZ31 and investigate the impact on microstructure evolution andmechanical property. In particular, we focus on how twin and static recrystallization behave during the forging process followed by theannealing. Interestingly, we find that a large number of thick-lenticular {10_112} twins emerge at initial stage of deformation and subsequentlyevolve into narrow-band {10_111} and {30_332} twins. The transformable twins are found to be crucial for inducing static recrystallization viaproviding recrystallization sites and refined grains. Moreover, the alloy forged at room temperature andannealed at 623K is found to haveoptimal microstructure due to the complete recrystallization and therefore exhibit the highest micro-hardness, largest compressive strength, andmost significantly enhanced compressive ratio. The improved mechanical properties are comparable or even superior to those of the alloydeformed using other techniques, rendering the cold forging a promising way for further tailing properties of Mg alloy.

Keywords: magnesium alloy AZ31, cold forging, static recrystallization, microstructure, mechanical property

INTRODUCTION

Magnesium is a plentiful natural resource, which is encouraging in-depth research on its alloy to enhance the mechanical and physical characteristics. Actually, theMagnesium alloy is of double interest. It is an attractive metal with good intrinsic properties like high specific resistance, good damping, good heat dissipation, and electromagnetic shielding.1-3 But, it is a low-density structural material, proving its usefulness in scenarios where weight reductions directly save expenses and boost productivity. However, the large-scale use of Mg alloy as a construction material (e.g., AZ31B sheet) is currently hampered by its low formability at room temperature due to the restricted number of slip systems in hexagonal close packed structure of Mg alloy.

Recrystallization Nucleation in Stable Aluminium-base Single Crystals: Crystallography and Mechanisms

Pradipta Kumar Rout[1], Samrat Dev[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The main crystallographic relationships between nuclei and simple deformation structures have been identified in single crystals of stable Goss$\{011\}\langle001\rangle$ and brass$\{110\}\langle112\rangle$ orientations of Al and Al-1%wt.Mn alloys. Samples were shaped in a channel-die to create a uniform structure made up oftwo symmetrical microband sets, followed by a gentle annealing process that produced 10%–20% recrystallization. The misorientation angles across the recrystallization interfaces are concentrated around axes that are close to, but seldom at, the normals of $\{111\}$ planes, according to SEM/EBSD measurements, which show a maximum at 35e45}. When compared to the as-deformed condition, these misorientations are significantly higher. Additionally, there is a high correlation between the small number of recrystallized grain orientations—some of which showed growth anisotropy along $\{111\}$ planes—and the as-deformed orientations. The findings are talked about.

Keywords: Recrystallization, Grain growth ,Single crystal Plane , strain compression

INTRODUCTION

For many years, there has been discussion on the textural change that occurs when deformed face-centered cubic (fcc) metals are annealed; see, for example, Refs. [1e7]. It is generally acknowledged that the orientationsThe recrystallized grains come from the directions of the distorted regions where they develop, as seen in Refs. [1,2,8].The "route" by which the orientations of the distorted matrix are converted into primary nucleus orientations—especially those of rapid growth—is still up for debate, though. According to Cahn's idea [9], "the recrystallized grains grow from preexisting sub-grains and cells rather than nucleating in the classical fashion" [4]. Low-angle boundary subgrains/cells start to amass dislocations and get more disoriented in relation to their neighbors. Barrett [10] was the first to propose that the orientation difference across the migrating recrystallization determines the growth potential of a given nucleus/grain.in front. It is evident that the ultimate texture of recrystallization is influenced by the fastest growing nuclei. Nuclei with a misorientation of ~40} around a common $\langle111\rangle$ grew the fastest, as demonstrated by previous groups, e.g. Refs. [11e14]. The preferential growth advantage varies on material, e.g. Refs. [15,16], and process parameters, e.g. Ref. [17].

The influence of Ce on the Microstructure and Rolling Texture of Mg-1%Mn Alloy

Pili Kumari Sahoo[1], Dillip Khuntia[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The microstructures and textures of rolled and rolled/annealed Mg-1wt%Mn-based alloys with varying Ce concentrations (from 0.05 to 1.0wt%) were investigated in this work. The Mg-1wt%Mn alloy's ascast and rolled/annealed grain structure was improved by the Ce addition. Additionally, the total texture intensitycompared to the Mg-1wt%Mn (M1) alloy, the basal pole of the rolled and rolled/annealed Mg-Mn-Ce alloys was weakened. Rather than being caused by a change in the c/a ratio or particle stimulated nucleation (PSN), the texture weakening was linked to Ce's solid solubility in magnesium.

Keywords: Magnesium, Rolling, Microstructure, Texture

INTRODUCTION

Magnesium alloy uses in automobiles have drawn a lot of interest due to their potential to reduce vehicle weight. Magnesium alloys have only been used in die-cast components like instrument panels, engine covers, brake pedal brackets, and steering wheel cores in automobiles up until this point.engine block, transmission cases, panels, and seat frames [1-4]. Magnesium has a lot of potential to be used in car body structure to reduce weight further [5]. Currently, AZ31 (Mg-3wt.%Al- 1wt.%Zn) is the most common Mg sheet alloy commercially manufactured by hot rolling of direct-chill (DC) cast ingot. The hot-rolled sheet with non-uniform grain sizes is often referred to as AZ31-H24 [6, 7]. Additionally, rolling aligns the sheet surface with the [0 diagonal axis parallel to the {0002} basal planes of the Mg hexagonal closed packed (hcp) crystal structure. Since they can provide at least five separate slip systems, it is well known that cubic metals with body-centered and face-centered cubic structures (BCC & FCC) are more formable than HCP metals like magnesium.required by von Mises criterion for formability. Since HCP Mg only has two separate slip systems operating at normal temperature, more slip systems must be turned on in order to preserve the grain's integrity.

Influence of Aluminum Content on Twinning and Texture Development of Cast Mg–Al–Zn Alloy During Compression

M Selvom[1], Padmini Triphaty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The aim of this study was to determine how the amount of aluminum in cast magnesium alloys affected their twinning and texture evolution under compression. The orientation of the as-cast magnesium alloys AZ31, AZ61, and AZ91D was essentially arbitrary. Compressive deformation produced the following formation:{12}10}h0001i and {01 10}h0001i texture components, suggesting that the occurrence of extension twinning caused the c-axes of hcp unit cells in the majority of grains to spin into the anti-compression direction. As compressive strain grew, so did the texture components' intensity. Due to the increased Al concentration in alloy AZ91D, there were more b-Mg17Al12 precipitates present, which prevented twin formation and growth and weakened the deformation texture of the high Al-containing magnesium alloy at higher

Keywords: Cast magnesium alloy,Texture ,Aluminum effect,Twinning

INTRODUCTION

The constant pressure to increase fuel economy and lower emissions in the transportation sector that harm the environment, alter climate, are expensive, and cause human death1.Extensive study in the field of lightweight materials has been sparked by industry [1–9]. Given that a 10% reduction in weight can increase a passenger vehicle's fuel efficiency by 6-8% [10–13], magnesium alloy, the lightest structural metallic material, has recently come under scrutiny as a potential contender for weight reduction in automotive and aerospace components [14–18]. Nevertheless, a significant drawback to their extensive usage is their inadequate ductility at room temperature [19–21]. Thus, a great deal of study has been done to control slip and twinning behavior inside the grains and to enhance the room temperature formability of magnesium alloys through alloying additions Magnesium's low temperature formability is restricted by the lack of suitable slip mechanisms for deformation [23].

Orientational Analysis of Static Recrystallization at Compression Twins in a Magnesium Alloy AZ31

D Subhramani[1], Pabitra Mallick[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Compression twins, or the shear bands that developed from them, are the primary recrystallization nucleation site of hexagonal magnesium, in contrast to cubic metals. The macrotextures and microstructures of a magnesium alloy, AZ31, during static recrystallization are determined in this research. We make sense of themdata from a microtexture examination of newly produced grains at compression twins during the early stages of static recrystallization that was carried out using the EBSD technology. The findings demonstrate that the orientation features in discrete areas during nucleation resemble subgrains found in shear bands or compression twins. But the orientations of the subgrains—which have undergone intricate orientation rotations—are mostly adopted by the newgrains. Their high energy reserves are thought to be the cause of this phenomena. Even if there are differences between

Keywords: Magnesium alloy,Compression twins,MicrotextureRecrystallization

INTRODUCTION

Magnesium alloy deformation is significantly influenced by twinning [1-6]. Magnesium has at least two different kinds of twinning modes: the $\{10^{12}\}$-type tension twinning and the compression twinning of the $\{10^{11}\}$ type [7–10]. While tension twinning is significantly easier to form than compression twinning because of its larger volume fraction [11–15], compression twins are the favored nucleation site for both fracture and recrystallzation. At room temperature, magnesium alloys have a poor plasticity of 15%, which results in low and reasonably uniform deformation strain caused by basal slip and tension twinning. A stable, layered microstructure is produced via basal slip, and the massive lenticular tension twins have very dynamic twin borders.

A New Methodology for Modeling and Free Vibrations Analysis of Rotating Shaft Based on the Timoshenko Beam Theory

N.K Vadivel[1], Jiban Jyoti Patra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The rotor's linear lateral free vibration analysis is carried out using a fresh understanding of the Timoshenko beam theory. A novel dynamic model is proposed, ignoring torsion, and accounting for gyroscopic effects, shear deformations, and rotary inertia. It is demonstrated that some terms are absent from the modeling of the system's global dynamics if the whole rotation angle of the beam cross section is taken into account as one of the Timoshenko rotor's degrees of freedom, as is frequently done in the literature. There are two processes involved in determining the overall deflection of the beam cross section. Firstly, the Euler angles relations are utilized to determine the curved geometry of the beam resulting from the elastic deformation of the beam centerline

INTRODUCTION

In many different areas of engineering, rotating machines are becoming more and more important. They are widely utilized in many different types of machinery, including compressors, machining tool spindles,helicopter rotors, fans, pumps, motors, industrial turbines, and gas turbine engines used in aircraft Rotordynamics is a significant area of mechanical engineering because of its broad applicability and the fact that the findings of vibration analysis of rotor systems are essential to the design of engineering equipment. In rotordynamics, the correct prediction and study of the dynamic behavior of rotating machines are of major importance because the huge values of energy of the spinning components can be transformed into the vibrations and leads to irreparable damages to the systems.

Effect of Particles on the Formation of Deformation Twins in a Magnesium-based Alloy

Chandru J[1], Raghu Raj[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

After varying precipitation treatments, the deformation behavior of the age-hardenable alloy Mg–5%Zn has been investigated. It has been discovered that while tiny particles decrease the size and total volume percentage of twins, they increase the number of twins that form during compressive deformation. plastic that is visco-consistent Modeling has demonstrated that the twin and prismatic slip systems are more resistant to precipitate presence than the basal slip system. It is suggested that the $\{10\ ^-12\}$ twin will always harden to a level equal to or greater than the basal slip system in response to precipitation because it needs basal slip to accommodate the twinning shear.

Keywords: Magnesium alloys,Precipitation,Twinning,Deformation

INTRODUCTION

Both slip and twinning can cause deformation in magnesium and related alloys [1]. Among the numerous twinning modes in hexagonal metals, magnesium alloys frequently exhibit $\{10\ ^-12\}$ and $\{10\ ^-11\}$.$\{10\ ^-13\}$ can be found in single crystals with certain orientations [3] and coarse-grained materials [2].The interaction between particles and twins is not as well characterized as the twinning behavior of magnesium, despite extensive research on the subject.Actually, only three studies [4-6] have looked at magnesium twinning when precipitates are present. In their study of a Mg–7.7 at.%Al binary, Gharghouri et al. [6] demonstrated that no rotation of the precipitates was seen once the matrix surrounding them experienced twinning. This directly contradicts what Clarke has observed. Mg–Al and Mg–Zn.These investigations revealed that the twinning process might shear certain particles and that $\{10\ ^-12\}$ twins could besuppressed at sufficiently high volume percentages by the particles. The latter observation is of relevance since the relative contribution of slip and twinning to the deformation will affect not only the flow stress butmay also effect on the ductility of the alloy. Nevertheless, the study's twin fraction findings were qualitative.

Vibration of A Cracked Cantilever Beam Under Moving Mass Load

Shri Gangadhar Mande[1], Tikan Pati[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The investigation of a cracked cantilever beam's vibration under a moving mass load is the focus of this work.The current formulation takes into account the mass and velocity of the moving load when calculating the inertial, centripetal, and Coriolis forces. Its vibration is altered by the presence of a fracture, which causes a local flexibility that depends on the depth of the crack.conduct and the system's eigenvalues. The system's reaction is found using the Duhamel integral.The differential equation on the right side, which has complex terms, is solved iteratively. Research has demonstrated that the centripetal and Coriolis forces have an impact on reducing the deformations on the beam because the deformed beam maintains its concave shape throughout the

Keywords: beam, centripetal, Coriolis, crack, moving mass, vibration.

INTRODUCTION

Since the crack affects the mechanical system's static and dynamic responses, a lot of work has been done on cracked structures. The development of fracture at thebeam modifies the system's dynamic behavior and eigen-values by causing a local flexibility that is dependent on the crack depth. Various methods were suggested to ascertain the eigen-functions of the fractured structures. While some of these researchers (Rizos, Aspragathos 1990; Liang et al. 1991; Chondros, Dimarogonas 1980) focused on crack detection, others (Dimarogonas 1996; Lin, Chang 2006; Shifrin, Ruotolo 1999) examined how cracks affected beam frequencies. Reis et al. (2008) looked at how supported bridges might react dynamically to a changing load.In 2008, Khalfallah examined fractured flexural reinforced concrete constructions with special attention of modeling the interaction between concrete and reinforcement. Parhi and Behera (1997) determined the deflection of a broken circular shaft under a moving load using the Runge-Kutta method. Mahmoud and Abou Zaid (2002) determined the response of the cracked beam by use of an iterative modal analysis approach.

Activation of Multiple Twins by Pre-Tension And Compression to Enhance the Strength of Mg–3al–1zn Alloy Plates

Sujit kumar khuntia[1,] Trilochan Badjena[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

{10-12} twins may be produced for basal textured galley plates with ease by pre-compression perpendicular to the grain c-axis.Therefore, it should be feasible to reinforce malloy plates by erecting dual limits.Our analysis demonstrates that control over the a-axis distribution is also vital for boosting the strengthening impact through the pre-induction of {10–12} twins.A rolled AZ31M galley plate is pre-tensioned along the rolling direction (RD), and the sample is then compressed along the transverse direction (TD) to yield {10–12} twins.Pre-tension induces ⟨10-10⟩ orientations focusing toward RD, according to the experimental data, which encourages the activation of many twin variations inside each grain for future compression along TD.Consequently, the number of twin lamellae per grain increases and twin nucleation is preferred over twin development, which strengthens the fine-hardening effect during compression of the twinned sample along RD.Analysis of the underlying mechanism can also shed light on the McGilloys deformation process.

Keywords: Magnesium alloy Twinning Variant selection Texture control Strengthening

INTRODUCTION

The application of twin boundaries has been utilized to reinforce the properties of metals like copper and steel, hence reinforcing the grain subdivision process [1, 2]. Galleys with textures, {10–12} It is possible to easily construct extension twins at room temperature by pre-straining them in suitable directions [3], indicating that it could be feasible to strengthen Mallochoys by pre-inducing twin boundaries. Recently, some researchers have shown that pre-induced{10-12}twinboundariescancausesignificant refinement hardeningintexturedMgalloys [4–8].The quantity and kind of pre-induced {10–12} twins are related to the refinement hardening effect via twin boundaries [4–7]. The activation of {10-12} twins in magnesium alloys is primarily dependent on the strain route [7, 8].

Particle Effects on Recrystallization in Magnesium–Manganese Alloys: Particle-Stimulated Nucleation

Tapas kumar Chand[1], Narayani Panda[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Research has been done on the impact of big (diameter more than 1 lm) particles on the recrystallization behavior of magnesium alloys deformed in compression under plane strain. Large particles were found to be surrounded by deformation zones with a misorientation gradient. These zones resembled those seen in other alloys where particle-stimulated nucleation (PSN) of recrystallization takes place. While annealing,PSN produced new grains, but only at a tiny percentage of the coarse particles. Recrystallization was instead driven by growth of existing dynamically recrystallized grains and nucleation of new grains from the deformed grain mantle region.

Keywords: Magnesium alloys; Recrystallization; Particle-stimulated nucleation (PSN)

INTRODUCTION

Over the last ten years, there has been a renewed focus on research into wrought magnesium alloys due to the possibility of achieving significant weight reductions.by using magnesium alloys instead of aluminum or steel.Furthermore, it has become evident that the present generation of steels and highly developed wrought aluminum alloys are not best suited to compete with wrought magnesium alloys like AZ31, which are essentially derived from casting compositions.Three major issues with contemporary wrought magnesium alloys include substantial levels of anisotropy, asymmetry in tensile and compressive characteristics, and poor low-temperature formability. Nonetheless, it is also evident that notable enhancements in efficacy can be achieved through regulating (diminishing) the size of the grain [1], adjusting the texture (for example, by processing methods that cause a lot of shear [2]), or alloying (by adding lithium, for example) to encourage non-basal slide [3].

Comparative Study on the Densification of Chromium Pre-Alloyed Powder Metallurgy Steel Through Nanopowder Addition Using Design of Experiments

Jagannath Mohapatra[1], Subhagya Pani[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

High density press and sinter powder metallurgical components for automotive applications are always in demand. For these kinds of applications, pre-alloyed steel powder with chromium is an appealing material; nevertheless, in order to successfully process these powders to high density, new methods for raising the sinter density are needed.One such sintering aid that might be utilized to increase the densification of the steel powder compact is nanopowder. In this work, base powder—which was then supplemented with nanopowder—was steel powder that had been pre-alloyed with chromium, both with and without additional nickel. Thermogravimetric analysis was used to investigate surface oxide removal, which is essential for the effective sintering of these materials, and to determine how the addition of nanopowder affected the oxide reduction. Nanopowder-containing particle compacts demonstrated

Keywords: Water-atomized steel powder ,Dilatometry, Nanopowder, Thermal analysis

INTRODUCTION

A tried-and-true method for producing intricately formed components for automotive applications is ferrous powder metallurgy (PM). These goods include PM gears, which are utilized in several industries, as well as within the auto industry. The PM gears are mostly utilized for oil pump gears, gears such as spur, helical, and bevel gears, gear shift components, and engine elements such as sprockets and pulleys. The PM approach is recommended over the conventional one for large-scale gear production due to its cheaper prices, lower energy consumption, and less material waste.With specific types of gears, it is possible to achieve compaction and sintering to a final density of 7.5 g/cm3, or around 95% of the theoretical density of steel [1].

Twinning, Dynamic Recovery and Recrystallization in the Hot Rolling Process of Twin-Roll Cast AZ31B Alloy

Subhakanta Nayak[1], Sunita Hati[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Hot-rolling tests on AZ31B twinroll cast sheets were carried out with a reduction from 10% to 60% in a single pass. To examine twinning and DRV/DRX behaviors at various stages, transmission electron microscopy (TEM), electron backscattered diffraction (EBSD) tests, and optical microscope (OM) were utilized.in the process of rolling heated. There were two different kinds of twinning during the first hot-rolling phase.DRV and discontinuous recrystallization prevailed at moderate strain while continuous DRX took place homogeneously throughout original grains at the greatest strains..

Keywords: Magnesium alloy ,Thermo-mechanical processing ,Twinning ,.Recrystallization, Transmission electron microscopy

INTRODUCTION

The automotive and aerospace industries have shown a growing interest in magnesium alloys in recent years because of its exceptional qualities, which include low densities, heat dissipation, and electro-magnetic shielding, and so forth.However, magnesium alloys demonstrate weak plasticity due to their limited slip systems in the less symmetric hcp structure particularly at ambient temperature [1–3]. The most desirable slip system (0002) {1120{ could only offer two separate slip directions; strain along the C-axes could not be accommodated. As a result, twinning might easily contribute as a useful deformation mechanism. There have been numerous reports of two types of twins in magnesium alloys: {1012} tension twins and {1011} compression twins [4–8]. However, the majority of investigations focused on twinning orientation at low temperatures or minor strains [9–15]. The impact of twinning behaviors onWhen processing magnesium alloys warmly or thermally, dynamic recovery (DRV) and recrystallization (DRX) are two common features [16–20]. Usually, they wereshown as the appearance of a constant flow stage or peak stress in stress-strain curves, which were commonly seen in magnesium alloy tensile tests and isothermal compression tests [21–23].

Use of Master-Slave Game for the determination of the Best Approach for Large Scale Electric Vehicles

Prakash Kumar Sahoo[1], Ramesh Jana[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Global energy and environmental issues have improved with the quick growth of renewable energy sources. Nonetheless, ensuring the use of renewable energy and the dependable functioning of power systems with a high percentage of renewable energy is a significant problem due to the high unpredictability of renewable energy. In order to address this issue, this paper suggests a renewable energy tracking absorption strategy that takes into account the interaction between the supply and demand sides. This strategy modifies the electric vehicle aggregator (EVA) charging process to enable the tracking absorption of renewable energy abandoned electricity. We examine how the power grid, energy-vesting assets (EVA), and renewable energy generation (REG) interact, together with the features of their respective markets, in light of this process. According to the example study, the suggested approach can support around 93.89% of the power abandonment usage of wind power systems, 96.00% of photovoltaic systems, and 97.41% of wind-solar systems at the same scale of electric cars. This approach lowers the EVA's electricity purchase cost, encourages communication between renewable energy sources, cars, and the power grid, and boosts the effectiveness of renewable energy use.

Keywords: Reinforcement learning, electric vehicles, renewable energy abandoned power consumption, curve tracking, V2G.

INTRODUCTION

China's renewable energy sector is expanding quickly; by the end of 2020, installed capacity for renewable energy in the country accounted for 930 million kW, or 42.4% of total installed capacity. The National Energy Administration projects that by the 14th Five-Year Plan period, clean energy will account for 80% of all incremental energy consumption. One of the main challenges for China's renewable energy industry will be how much energy is consumed, and the combined deployment of EVs can help achieve this goal. China will have 4.7 million electric vehicles (EVs) and 1.148 million charging stations by the end of 2020.

LTI System Modeling Equipped with time delay Estimation

Prasanta Kumar Sethi[1], Deepankar Dash[2]
[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This paper proposes an impulse response modeling in presence of input and noisy output of a linear time-invariant (LTI) system. The approach utilizes Relative Entropy (RE) t o choose the optimum impulse response estimate, optimum time delay and optimum impulse response length. The desired RE is the Kulback-Lielber divergence of the estimated distribution from its unknown true distribution. A unique probabilistic validation approach estimates the desired relative entropy and minimizes this criterion to provide the impulse response estimate. Classical methods have approached this system modeling problem from two separate angles for the time delay estimation and for the order selection. Time delay methods focus on time delay estimate minimizing various proposed criteria, while the existing order selection approaches choose the optimum impulse response length based on their proposed criteria. The strength of the proposed RE based method is in using the RE based criterion to estimate both the time delay and impulse response length simultaneously. In addition, estimation of the noise variance, when the Signal to Noise Ratio (SNR) is unknown is also concurrent and is based on optimizing the same RE based criterion. The RE based approach is also extended for online impulse response estimations. The online method reduces the model estimation computational complexity upon the arrival of a new sample. The introduced efficient stopping criteria for this online approaches is extremely valuable in practical applications. Simulation results illustrate precision and efficiency of the proposed method compared to the conventional time delay or order selection approaches. Not only RE based method outperforms these approaches, but also is shown to be more robust to the variations of noise signal to noise ratio (SNR). The results also illustrates the role of the data length and the SNR in this typ e of data based LTI system modeling.

INTRODUCTION

Linear Time-Invariant (LTI) systems characterize a wide range of dynamics around us. Modeling impulse response of these systems by the use of a finite length input and noisy output is the focus of this work. In practical applications, due to the uncertainty caused by the noisy observation, issues such as underparamatrization or overparametrization of the impulse response estimate cause very challenging problems.

Swarm Intelligence Hybrid Network for Recognition of Facial Emotion

Sakar G[1], Bharat Behera[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In this work, a hybrid approach which carries the Radial Basis Function Neural Network and Multilayer Perceptron Neural Network have been applied in a cascaded manner to recognize the face and associated emotions. The variability of individual classifier performances has been reduced by providing the ensemble approach. The formation of ensemble has been developed using the intelligent manner with the help of particle swarm optimization. The applied ensemble approach provided the weighted importance of individual entities according to their performances. The proposed ensemble approach has been proven to be useful over the development of ensemble classifier for XOR classification problem. Each face has been carried with a different form of emotion which has been tested and performance was compared against the individual classifier module.

Keywords: Face Recognition; Emotion Recognition; Neural Network; Radial Basis Function; Multilayer Perceptron; Ensemble and Particle Swarm Optimization.

INTRODUCTION

A human performs a task of face recognition continuously as well as effortlessly everyday as a routine. It includes human-computer interaction, biometric authentication, multimedia management and surveillance. As there is huge availability of desktops that are powerful and low cost as the embedded computing systems, this has led to a focus on automatic processing of digital images and videos in applications. The research and development is automated for face recognition. The basic challenges are not only the face recognition but also numerous practical applications which require human identification. One of the primary biometric technologies is face recognition and it has gained more importance owing to fast advancing technologies like internet, mobile devices and digital cameras and this has increased demands on security. Over the other biometric technologies, the face recognition has many advantages. It is non-intrusive, natural as well as easy to use. The highest compatibility in Machine Readable Travel Documents (MRTD) is scored by the facial features among the six biometric attributes depending on number of evaluation factors like machine requirements, enrolment renewal, public perception and the face recognition system, which identifies the faces automatically from the images and videos.

A Dual-Band Bandpass Filter using Single Unit Cell of Complementary Split Ring Resonator with Harmonic Reduction

Salil Kumar Malla[1], Rosalin Das[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

A Filter block has been highly attention due to it's highly importance in wireless communication systems. High harmonic level normally companies with the performance of the filter block. The use of both low-pass or band-stop filter and the step-impedance lines methods to reduce the spurious characteristics of the filter are not a practical solutions since that adds more complexity and large in size. On the other hand, multiband components are preferable in most modern wireless system applications. In this paper, a single unit cell of a complementary split ring resonator designed on the ground plane of the conventional five pole bandpass filter has been proposed and considered as more practical method to excite the second bandpass frequency band and to solve the important filter problem in terms of third order harmonic characteristic suppression (3fo). The final structure has been simulated using the CST Microwave Studio. The simulated result for the proposed construction was extracted and displayed together with the measured result of the conventional five pole prototype structure. The outputs showed good agreement between them also return loss enhancement is very clear through the combination between the complementary split ring resonators and band pass filter. Other advantages no complexity adds, and low in effective cost.

INTRODUCTION

Recently, among many electromagnetic subjects, ring resonators have become the focus of attention researchers. That interest is because of its enormous military and its civil applications. The split ring resonator is used in immense applications to improve suppression, selectivity and miniaturize characteristics for many RF/Microwave devices. In this literature, among these RF/Microwave devices, RF/Microwave microstrip band pass filter (BPF) is combined with split ring resonator unit cell. Most of the proposed articles use split ring resonators (SRR) and complementary split ring resonators (CSRR) as a major component in different types of metamaterial circuit design .

Determination of Local Quality Techniques for Enhancing Image Compression in Medical Science

Sambasiva Rao Pedapudi[1], Jitendra Prusty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The importance of image compression has increased in numerous medical procedures and diagnostic methods. The goal of image compression is to accurately distinguish between various organs, tissues, or diseases in volumetric image data. A "scattered" cluster problem (disconnected clusters) affects the majority of image compression algorithms currently in use. This is because many clustering techniques (agglomerative, k-means, Dbscan) do not account for the quality value and connectivity of points and regions with varying shapes. By using the initial cluster technique, the proposed LMV (Local Map View) technique focuses on determining the local quality for each point in all instances of the region in the comparative similarity view. Using this view, the user can select samples for in-depth analysis and remove outlier instances from the input before moving on to the specific feature selection procedure.

Keywords: Images, LMV, MSE, FRR, Image compression.

INTRODUCTION

Image division for the most part includes characterizing mammograms into a few areas, including the bosom fringe [4], [9], the areola [8] and the pectoral muscle. The important part on an image is the breast outskirt, also called the skin-air interface, or bosom limit. The breast form can be acquired by compression in the [15] imageinto breast and non-breast areas. The extracted breast contour should adequately model the soft tissue/air interface and preserve the nipple in profile. *A. Edge Detection Methods:* Edge identification is a basic field in the zone of picture taking care of. Since there is a sharp change in power in as far as possible, as far as possible and edges are immovably related. The base of another division technique is edge area framework. Michael A. Wirth [16], [14] depicts the use of dynamic shapes. The dynamic shapes can be utilized to extricate the bosom district in mammograms. Breast shape is one of the biggest single highlights of mammogram. [15] It is also called skin air interface. Bosom frame lies amidst the sensitive tissue and the non-chest locale. Extraction of the chest shape licenses finding the inconsistencies in the region of the bosom.

Comparative Study of the Real Effect of PCM, DM and DPCM Systems on Audio and Image Modulation

Sandeep Kumar Mishra[1], Debasis Sahoo[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In order for a message to be feasible for transmission, it has to pass through an essential process which is "modulation". Through years, Pulse Code Modulation (PCM), Delta Modulation (DM) and Differential Pulse Code Modulation (DPCM), in digital communication systems, have proven their unlimited advantages over analog communication systems, in terms of error minimization and distances of transmission enhancements. However, Pulse Code Modulation system still has some weaknesses limiting its advantages; these limitations cause quantization error, slope overload distortion and granular noise which are results of negative communication process. Since Delta Modulation is a simplified version of Pulse Coded Modulation, it has to have the same negative points related to noise and quantization. Consequently, communication engineers have developed additional digital communication systems, one of which is the Differential Pulse Coded Modulation (DPCM) in order to solve the aforementioned problems. This paper discusses the implementation of the aforementioned systems using Simulink (The Math Works, Inc., USA) on a multithreaded processor computer. The systems are to be tested on both image and audio inputs, to prove the importance of DPCM over PCM system in eliminating such effects and ensuring a successful transfer of data.

INTRODUCTION

Digital communications systems are communication systems that use a digital sequence as an interface between the source and the channel input and similarly between the channel output and the final destination. Besides, digital communication is the transfer of data over a point-to-point or even point-to-multipoint communication channel (copper wires, optical fibers, and wireless communications media) [1]. Nowadays, digital communication systems are considered as standards then trying to transmit data from a source to specific destination through a channel.

Optimal Back Bone Path for Energy Consumption in a Network Considering the Transmission Range

Sasmita Mishra[1], Rajesh Panda[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In the fields of engineering and communications, one of the methodologies that is expanding the fastest is wireless sensor networks, or WSNs. Depending on what kind of application a WSN is used for, its main goal is to find relevant environmental information and relay it to a single base station (BS) so that relevant actions may be made. There are numerous protocols that these sensor nodes use to communicate. The problem with the previous technique is that each node sends its felt information straight to a base station during the observation data collection process, quickly depleting the station's power. With two compelling features, this study proposes a Backbone Energy-Efficient Sleeping (BEES) management strategy: (i) the backbone's capacity is scalable by fundamental parameters; and (ii) the backbone nodes were distributed evenly, suggesting that the backbone is energy-efficient during routine activities on its own. In wireless multihop systems, reliable connections are expected to obtain QoS and routing protocols of such backbone nodes. The current virtualized backbone schedule's localized routing is therefore unable to guarantee energy-efficient pathways. For Virtual Back Bone Nodes (VBS), an energy-efficient routing approach extends the node's lifespan and reduces power consumption by turning off the radio while the node is sleeping. The effectiveness of BEES is assessed by contrasting it with two alternative topology management strategies. The outcomes demonstrate that BEES outperforms other algorithms. In addition to implementing the necessary communication range for backbone networks, it guarantees effective routing with minimal power consumption on the part of nodes.

Keywords: Link stability, transmission range, power consumption, residual energy, multi-criteria approach, backbone path, and multi-agent networks.

INTRODUCTION

The primary goal in implementing a wireless sensor network (WSN) is to detect or predict the state of a physically dynamic event from each individual, geographically separated sensor of the network.

Identification of Challenges in Text Mining

Sasmita Mishra[1], Kiran Majhi[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Document categorization is one among the prime successive and fundamental issues in viewpoints of information examination, with applications from data recovery as well as spam sifting to content personalization and etymological communication content measure. Automated text order classification is an especially difficult assignment in present day information investigation, both from an observational and from a hypothetical viewpoint. This issue is of focal interest in numerous web applications, and therefore it has received consideration from specialists in such assorted zones. Quickly streaming surges of text are created by online news, web-based media and perpetual various applications, along with subsequently the need to precisely and adaptively sort them into the sub-streams could be a significant one. The emphasis on exclusively making utilization of delimited resources could be a result of size of particular streams: each time and memory should be held under the influence. The economical analysis of the huge datasets is the one among the most challenges in trendy machine intelligence and data processing applications. In this paper, we extensively surveyed significant developments occurred in this domain over past years. We have listed some significant existing methods, tools, standard datasets for performing text mining and analysis. We also given an argument on the various open challenges involved in this domain along with the problem identification and our possible research directions / objectives to overcome these challenges.

Keywords: Text classification; Information retrieval; Machine learning; Feature selection; Language models.

INTRODUCTION

Learning sensible formulations of text plays a crucial role in several linguistic communication process / Natural Language Processing tasks, like docs grouping, positioning, sentimental investigation, etc.80-90% of all content information is held in different unstructured configurations. Helpful data can be obtained from this unstructured, raw information. Extraction of interesting information (or patterns) from this kind of data is – Text Mining

Traffic Control and Performance measure on critical Applications in Ubiquitous and IoT Computing using Path Selecting Algorithm

Satya Krishna[1], Dusmant Mallick[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Nowadays, networks use many different paths to exchange data. However, our research will construct a reliable path in the networks among a huge number of nodes for use in tele-surgery using medical applications such as healthcare tracking applications, including tele-surgery which lead to optimizing medical quality of service (m-QoS) during the COVID-19 situation. Many people could not travel due to the current issues, for fear of spreading the covid-19 virus. Therefore, our paper will provide a very trusted and reliable method of communication between a doctor and his patient so that the latter can do his operation even from a far distance. The communication between the doctor and his/her patient will be monitored by our proposed algorithm to make sure that the data will be received without delay. We test how we can invest buffer space that can be used efficiently to reduce delays between source and destination, avoiding loss of high-priority data packets.

Keywords: component; quality of service (QoS); buffer optimization; internet of things (IoT); medical surgery; smart-route control algorithm (s-RCA)

INTRODUCTION

Telemedicine, the better practice of applying medical and clinical surgery services remotely via telecommunications, is a recent development in ICT-based healthcare. With telemedicine, medical personnel can examine patients from a distance and obtain patient data via applications or communication links. For distant service consumers living in remote, rural places with few medical resources, telemedicine provides greater freedom. With the assistance and supervision of local medical staff who provide direct patient care, specialized healthcare professionals (HPs) can diagnose and consult with patients from a distance. In terms of mobile communication and video conferencing, the telecommunication link and related technical platform are the primary enablers of tele-medicine. The application of telemedicine has expanded in recent years due to the Internet's near-ubiquitous availability. The concept of telemedicine is implemented in the following three ways.

Prioritized GPU Algorithm for Optimized Resource Distribution in Fog Computing

Satya Krishna V[1], Prakash Lenka[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Internet of Things (IoT) is becoming a new socioeconomic revolution in which data and immediacy are the main ingredients. IoT generates large datasets on a daily basis but it is currently considered as "dark data", i.e., data generated but never analyzed. The efficient analysis of this data is mandatory to create intelligent applications for the next generation of IoT applications that benefits society. Artificial Intelligence (AI) techniques are very well suited to identifying hidden patterns and correlations in this data deluge. In particular, clustering algorithms are of the utmost importance for performing exploratory data analysis to identify a set (a.k.a., cluster) of similar objects. Clustering algorithms are computationally heavy workloads and require to be executed on high-performance computing clusters, especially to deal with large datasets. **Keywords**: clustering algorithms; IoT applications; intelligent systems; Fog computing; cloud computing; GPU algorithm; low-power

INTRODUCTION

Societies are advancing guided by the processes of digitalization [1]. These processes are revolutionizing several traditional economic sectors, such as agriculture [2], manufacturing [3], tourism [4], health [5], or even our daily life in the cities [6]. The digital revolution is mainly sustained by two main technological trends: Internet of Things (IoT) and Artificial Intelligence (AI) [7]. The integration of both is mandatory to enable the digital transformation that truly generates benefits for society [8]. AI-enabled IoT (AIoT) brings sensors, machines, cloud-fog computing, analytics, and people together to improve productivity and efficiency, which implies revenue growth and operational efficiency [9]. Sensors 2020, 20, 6335; doi:10.3390/s20216335 www.mdpi.com/journal/sensors Sensors 2020, 20, 6335 2 of 19 AI techniques, and particularly, Machine Learning (ML) models are computationally intensive tasks that also require a large amount of high-quality data [10]. This large data is needed to be processed, often in real-time, to extract valuable knowlfog that requires access to large computer facilities.

A Logistic Regression Based Hybrid Model for Breast Cancer Classification

SK Moulali[1], Soumay Triphathy[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Data mining techniques are being used for breast cancer classification and good performance accuracy has been obtained while using the techniques individually or as ensembles. A notable problem is the skewed nature of the data which leads to imbalance among the output classes. The minority class being the negative class usually are smaller in number than the positive majority class. This usually leads to a moderate accuracy value for the classifier. The correct classification of minority cases is a significant problem. All classes need to be given equal importance during classification. In this study a hybrid model based on Logistic Regression is implemented with class balancing and ant search techniques and the performance is evaluated on the two class Wisconsin breast cancer dataset. A performance accuracy of 99.4% was obtained.

Keywords: Synthetic Minority Over-sampling Technique (SMOTE), Oversampling (OS), Random Undersampling (US), Neural Networks (NN), Random Forest (RF), Logistic Regression (LR), Support Vector Machines (SVM), Naïve Bayes (NB), Ant Search (AS)

INTRODUCTION

Breast Cancer is the most common and frequently diagnosed cancer in women worldwide and is the leading cause of death in women. Early detection is the key to survival and better breast outcome. Machine Learning techniques are widely used for disease diagnosis and outcome prediction [Durga et al., (2020), Kotsantis, (2007), Arafat et al.,(2012), Sivapriya et al,.(2015), Mathew, (2019a), Mathew, (2019c)]. Classification is a machine learning technique that is used for producing class labels. In disease diagnosis, classifiers categorize the solution into respective classes based on the features space provided. In the training process, using the samples provided the classifier trains itself to produce the most optimal result. Once the model is constructed any new instance provided is expected to produce the finest result. The problem with the feature space in most cases is its large dimensionality. High number of attributes and large dimension of the feature space leads to the curse of dimensionality [Li et al., (2017)].

A Study on Advances in Creating 3D Holographic Images

Snehasis Dey[1], Itishree Nayak[2]
[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Nowadays, the most beautiful 3D pictures and movies are created by means of holograms. The most advantage of this technique is the possibility to observe 3D images without using glasses. The quality of created images by this method has surprised everyone. In this paper, the experimental steps of making a transmission hologram have been mentioned. In what follows, current advances of this science–art will be discussed. In another section of this paper the optical application of holography has been reviewed. Finally, the predictions for the future of holography have also been studied.

INTRODUCTION

Dennis Gabor found basic principles of holography while trying to improve the efficiency of transmission electron microscope in 1948 [1]. He performed his first experiments using mercury vapor lamp. After 23 years of experiments, Gabor won the Nobble Price in 1971. Digital holography was invented in 1900. The improvement of computer science led to delivering the recording and reconstructing processes to the computers and hence the creation of computer generated holograms (CGHs) in which artificial holograms are made by means of numerical methods [2]. Nowadays, holography has a broad range of applications in various sciences. No matter how much one is familiar with holography, a scientist or an ordinary person, he would soon engage with holography spontaneously. Increasing applications of holography will soon find their way through everyday life. This paper has done a theoretical and experimental study on creating 3D images by means of holography.

Block Chain Technology Based Framework for Learning

Sonali Pradhan[1], Anita Dash[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Blockchain is a structure made up of sequentially ordered data blocks that has several uses, including digital currency, smart contracts, credit encryption, decentralization, and reliability. Applications of blockchain technology are currently growing at a rapid pace, providing opportunities to address some of the challenges facing the online education sector, such as the lack of a single, universal standard for e-learning assessments, the complexity of e-learning assessments, and the issue of digital education certificates. The construction of a flexible and secure data delivery system that integrates with current educational data is suggested in this paper using a secured blockchain system. By removing trust issues between users and other institutions accessing services and applications, the suggested framework enhances data security.

Keywords: Blockchain, E-Learning, Framework, Online Education, Privacy, Security, Trust.

INTRODUCTION

Blockchain is the vital technology that generates Bitcoin and cryptocurrency by endorsing the absolute distributed ledgers in several nodes suggested by Satoshi Nakamoto in 2008. Blockchain is considering a part of the fourth industrial revolution since discovering electricity, the steam engine, and information technology [1-3]. In the 21st century, this technology offers a meaningful impact on institutional functions, national governance, education, business operations, and our daily lives [4]. On a global scale, this blockchain technology promotes the progress of the knowledge-based economy quickly, and it is estimated to transform the functioning means of education, business, and commerce. This advanced technology has many potential applications owing to its transparency, immutability, and reliability for all the communications accomplished in a blockchain network [5, 6]. In several fields, this blockchain technology has been applied presently, i.e., as cryptocurrencies in the commercial field, including Ethereum, Zcash (Zerocash), Bitcoin. Bitcoin is the first peer-to-peer payment network in this technology, electronic cash. In a distributed blockchain network, the vital task is to maintain consensus [7-10].

Rendering Layered Approach towards Data Aggregation in IoT

Sonali Pradhan[1], Nisha Singh[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University Of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Recently, there has been a significant increase in the popularity of using tiny sensors in the Internet of Things (IoT) for intelligent applications, which has made people's lives better. A major research challenge concerning data aggregation techniques for minimizing data transmissions has arisen from the necessity for energy-efficient mechanisms in Internet of Things communication. Most aggregation mechanisms are based on the fundamental idea of building the clustering or aggregation tree in an application layer over the Internet of Things, which results in high complexity. In order to maximize the use of network layer factors in data aggregation, the proposed MLDA creates an energy-aware aggregation layer that transparently accesses the network layer topology structure.

Keywords: IoT; data Aggregation; RPL; redundant Data Transmission; Multi-layer approach

INTRODUCTION

There is a growing interest in deploying the Internet of Things (IoT) in various smart applications. With the deployment of a huge number of smart devices and their applications, gathering and analyzing the data is becoming one of the main challenges [Dehkordi, *et al*(2020)]. As the tiny sensor devices are powered by batteries, energy-efficient operations are critical in IoT applications [Karamitsios, and Orphanoudakis, (2017)]. Large scale and dense IoT network creates a tradeoff between the waste of energy due to data redundancy and maintaining the data aggregation efficiency. The data aggregation scheme has to lessen the redundant readings of sensors in the surrounding area [Chandnani, and Khairnar, (2020)][Wala, et al (2020)]. The data aggregation efficiency is largely dependent on the network topology. Thus, the support from lower layers, especially from the network layer is essential to improve the data aggregation efficiency without wasting the energy of sensor devices. It necessitates the importance of a multi-layer data aggregation approach [Guimaraes, *et.al* (2019)]. However, there is a lack of providing load balanced and an energy-efficient topology structure in the network layer, thereby improving the data aggregation efficiency. Mapping the network topology structure to the aggregation activities is crucial.

A Convolutional Neural Network Model to Classify Brain Abnormality

Sonali Pradhan[1], Sisis Rout[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In this study, we introduce various CNN designs for the analysis and classification of brain abnormality into benign and malignant varieties using the MRI stands for magnetic resonance imaging. To increase the accuracy of the network, various CNN architectural optimization approaches are used, such as network widening and deepening and adding skip links. Findings indicate that a subset of these methods can be applied wisely to beat a standard CNN model in the identical situation.

Keywords— Brain Tumor Detection, Magnetic Resonance, Imaging, Convolutional Neural Networks, Skip Connections.

INTRODUCTION

One of the human body's most intricate organs, the brain is made up of a vast number of individual cells. The growth of brain tumors is correlated with the uncontrolled division of cells to create an asymmetrical mass. This cell type will harm healthy brain cells and interfere with the brain's regular functioning and function [1]. X-ray pictures are commonly used to assess and identify tumor growth within the body. Medical examination imaging methods like computed tomography (CT) and magnetic resonance imaging (MRI) can also identify brain tumors [2]. An essential step in MRI scan analysis is digital image processing. The growth of tumors occurs inside the skull. Growths generate extremely high brain pressure that permeated the whole cerebral area. A subset of these tumors may be malignant, which can result in cancer, one of the world's leading causes of mortality accounting for over 13% of all fatalities. These days, brain tumors are identified by visual inspection by a radiologist. The accuracy of the tumor classification process, which depends on the radiologist's training and expertise, can be quite time-consuming.

Poor Quality Video Feature Extraction on HCI Systems using Machine Learning

T Stephen Thangaraj[1], Lingaraj Pradhan[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In recent years, gesture recognition and speech recognition, as important input methods in Human–Computer Interaction (HCI), have been widely used in the field of virtual reality. In particular, with the rapid development of deep learning, artificial intelligence, and other computer technologies, gesture recognition and speech recognition have achieved breakthrough research progress. The search platform used in this work is mainly the Google Academic and literature database Web of Science. According to the keywords related to HCI and deep learning, such as "intelligent HCI", "speech recognition", "gesture recognition", and "natural language processing", nearly 1000 studies were selected.

Keywords: human–computer interaction; deep learning; speech recognition; gesture recognition; emotion recognition

INTRODUCTION

With the progress of science and technology, many pioneers of technology are trying to combine voice, vision, text, and other information, that is, multimodal information, to promote the upgrade of Human–Computer Interaction (HCI) technology. Multimodal interaction has also become a hot topic in academia and industry [1]. Multimodal technology will not be limited to speech and visual recognition but will gradually change the whole world in this revolution. For example, lip recognition, speech recognition, speech translation, speech synthesis, and several industry-leading multimodal interaction basic technologies have been applied in various industries. Gesture interaction technology, as a command, is transformed into a language that can be recognized by computers by capturing the movements of human hands and limbs. It has become another important method of HCI after keyboards, mice, and touch screens [2,3,4]. In terms of intelligent hardware, the mainstream method in the industry is processing signals by microphone arrays and eliminating noise by hardware.

Application of Electronic Security Systems in Libraries

Niranjan Nayak[1], Satabdi Routray[2]

[1]Department of Business Administration, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2] Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

Use and application of various electronic security systems in the library is become very essential. Due to increasing number of users, space and collection, it is possible to the library staff to overlook all the library premises with traditional security measures. Automated surveillance security system has to be adopted by all the libraries to prevent theft and illegal use of library materials. The Present paper highlights the point related to application of suchelectronic systems in the libraries and its advantages to upgrade the library services with better quality.

Keywords: Library Security Management

Introduction:

Library is supposed to be a important organ (Like, heart, brain, etc.) of any academic institution. It is because, it renders the curricular and knowledge based needs of the patrons. As the collection number of users and space of the library increase, the security and surveillance problems increase. It is beyond the ability of the library staff to supervise the overall library without help of any automated systems. Thus, the need of such electronic devices or automated system arises to overcome this problem. Nowadays, we find modern surveillance system in every super Bazar, Mall, Cinema theater, such as CCTV cameras, RFID detector tags on each product, Biometric machines at main entrance of the building like fingerprint scanning, iris scanning facial recognition, voice recognition and palm vein authentication. Such technology minimizes the threats of theft, mutilation or misuse of the material of the owner. In Libraries, books and other reading materialsare kept for its stakeholders for years. If these technologies are used in the libraries, there will be lot of advantages, in case of staff management, space management, and user management. It is important to secure library resources. It is equaled important to ensure that the security is performed as seamlessly as possible. Without interfering with the library's objective of providinga user-friendly environment. Electronic security system is devices that are used with the aid of Electrical apparatus to secure library materials.

Ant Colony Optimization and K-means Clustering Hybrid Sampling Algorithm

Bhimsen Moharana[1] , Suresh Kumar Pradhan[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract –
Class imbalance is a prevalent phenomenon in real-world datasets and a current area of study in data mining and machine learning. This paper proposes a hybrid sampling algorithm to address class imbalance while requiring less computational power and minimizing loss of existing information. By identifying within-class sub-concepts, the proposed algorithm under samples the majority class data. Ant colony optimization is then used to derive an optimal subset of the majority class data. Combining the best subset of minority class and majority class data yields a representative training dataset. If the imbalance in the representative training dataset persists, new synthetic instances are generated in the minority class. It is innovative in that it uses the majority class instances to address the imbalanced data classification issue.

*Keywords***:** Imbalanced data; Classification; k-means clustering; Hybrid sampling; Ant colony optimization

1. Introduction

Classification is important in data mining and machine learning and is an active research topic. The literature to date contains many classification algorithms, with logistic regression, decision trees, and support vector machines (SVMs) being some of the traditional ones. However, traditional classification algorithms struggle to achieve high classification accuracy when the data distribution is skewed. Data skewness is due to class imbalance in the dataset, and class imbalance exists when the classes of the data distribution have instances in different ratios. A class that contains only fewer instances is known as a minority class, while one that contains many instances is known as a majority class. Traditional classification algorithms are generally biased toward majority-class instances. However, because of their rarity, the relatively few minority-class instances can be very important in classification. The cost of misclassifying these rare instances is not the same as that for majority-class instances, thereby making classification more complicated. Other challenges in classifying imbalanced data include small sample size, within-class sub-concepts, class overlap, and high dimensionality. Imbalanced datasets are very common in many real-world applications, including detecting oil spills from satellite radar images [1,2], identifying post-operative life expectancy in lung-care patients [3], detecting software defects [4], classifying network traffic [5], and diagnosing faults in wind turbines [6]. The literature contains much research into handling class imbalance, and many methods have been proposed for classifying imbalanced data. These can be categorized as being either data-preprocessing methods, algorithmic methods, or cost-sensitive methods.

A Comprehensive Analysis of Renewable Energy Sources, Technologies, and Public Perceptions towards Sustainable Energy

B. Veera Murthy Pandian[1] , Sudatta Biswal[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: Utilizing alternative energy sources like biomass, wind, and solar won't make them less accessible. The ever-growing need for energy is met by using sunlight, a steady source of energy. This assessment addresses domestic renewable energy technology, the world's energy demands, and public attitudes toward renewable energy. From 2009 to 2018, the literature was thoroughly reviewed.42 papers were filtered for critical evaluation and almost 300 publications were classified throughout this procedure. The review of the literature revealed that, in 2017, 73.5% of the world's power output came from fossil fuels, despite concerted efforts at all levels to lessen dependency on fossil fuels and promote renewable energy as an alternative.

Keywords: Energy policies, public opinion, renewable energy sources (RES), renewable energy technology (RET), solar energy, wind energy.

INTRODUCTION

Experts and the general public are becoming more and more concerned about the topic of renewable energy (RE). The number of studies on renewable energy sources (RES) has grown recently, both proportionally and absolute [1]. By tackling the problems of global warming and the depletion of fossil fuels, RES can play a significant role [2]. The three primary energy sources are nuclear power, renewable energy, and fossil fuels. A recent research [6] on Western Greek villages examined the public's perception of and readiness to pay for electricity produced using renewable energy sources. With the ability to deliver energy services with zero or almost zero emission of air pollutants and GHGs, RES can meet household energy needs [12], [13]. With the growth of RE, crucial issues including the execution of requirements to fulfill international agreements pertaining to environmental preservation as well as the sustainable development of distant regions in desert and mountain zones are anticipated to be resolved [14][16]. RES are presently being used worldwide in place of conventional fuels to meet the overwhelming demand for energy [17]. A increasing requirement in today's environment is being filled by RE as a consequence of several issues, including energy security, climate change, greenhouse gas emissions, and greenhouse gas emissions [18][20].

Artificial Intelligence (AI) and Data Science for Developing Intelligent Health Informatics Systems

[1]Asit Kumar Satapathy, [2] Sanjeeb Pradhan

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: Artificial Intelligence is called the new nervous system of the healthcare domain. Application of Artificial Intelligence in Health information comprises of training databases for health data, health, medical data exchange clinical decision support system, creation, and use of knowledge. Artificial Intelligence has the potential to analyze immense volume and variety of data and reaching the unreached by augmenting the process of automation and filling gaps in a healthcare labour shortage. Medical data and healthcare statistics have now evolved as a separate domain called Health Informatics. Technology aids to achieve healthcare goals and improve the accessibility of healthcare information. This paper provides insights into the role of artificial intelligence and data science for developing intelligent health informatics systems, trends of advancing technologies such as machine learning, big data analytics. The need for a comprehensive training database for large scale health data, healthcare information systems, and medical data exchange, initiatives taken by the government for shaping the future of public health, community health and healthcare delivery from a personal level to a system-level have been discussed.

Introduction- The 21st century has witnessed transformation in the field of medical science. Health care organizations have adopted evolving technologies. The emerging use of Artificial Intelligence in the health care domain can be understood as a collection of technologies that enables machines to act, sense, and comprehend similarly to the human brain. Artificial Intelligence has the potential to perform administrative functions and is being used in research and training purposes as well. The digital revolution has the potential to improve healthcare quality. It has created new technology in order to tackle large data sets, solving complex Problems that previously required human intelligence. Artificial Intelligence has the potential to analyze immense volume and variety of data. It improves the capacity to collect vast sums of information and has led to the intervention of machine learning and big data analytics. The Application of Artificial Intelligence in healthcare is categorized into several broad categories, i.e., Descriptive, Predictive, and Prescriptive. The subcategories include support for physicians, automation of clinical documentation, image analysis, administrative workflow assistance, virtual observation, and patient outreach. The issue of information overload, which is being faced by healthcare professionals, is addressed by artificial intelligence.

Real-World Application, Challenges and Implication of Artificial Intelligence in Healthcare

Arpit Sourav Mohapatra[1], Naina Ahuja[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract- This essay examines the state of Artificial Intelligence (AI) based technology applications in healthcare and the impact they have on the industry. This study comprised a detailed review of the literature and analyzed real-world examples of AI applications in healthcare. The findings show that major hospitals use AI-based technology to enhance knowledge and skills of their healthcare professionals for patient diagnosis and treatment. AI systems have also been shown to improve the efficiency and management of hospitals´ nursing and managerial functions. Healthcare providers are positively accepting AI in multiple arenas. However, its applications offer both the utopian (new opportunities) as well as the dystopian (challenges) Unlike pessimists, AI should not be seen a potential source of "Digital Dictatorship" in future of 22nd century. To provide a balanced view on the potential and challenges of AI in healthcare, we discuss these details. It is evident that AI and related technologies are rapidly evolving and will allow care providers to create new value for patients and improve their operational efficiency. Effective AI applications will require planning and strategies that transform both the care service and the operations in order to reap the benefit.

Introduction-Artificial Intelligence (AI), a technology prevalent for almost 60-year has made it possible to create applications that have a profound effect on our life today. It seeks to reproduce and modify human intelligence leading to development of intelligent machines [1]. Some researchers AI has been welcomed by healthcare systems around the world, which struggle to fulfil the "quadruple objective" of improving the health and well-being of their patients, healthcare access, cost-effectiveness [6] and improving the lives of healthcare workers [7]. It is essential for healthcare providers to be well versed in the potential applications of AI technologies in different aspects of healthcare which may embark digital revolution in this sector [8]. This article will discuss numerous applications and issues of AI technology in the healthcare industry in the present times. The article also serves necessary recommendations which will help healthcare managers with strategic planning and execution of AI in healthcare. It believes that AI can think and act rationally. Others disagree that AI is capable of acting and thinking like humans.

A Recent Survey on 6G Vehicular Technology, Applications and Challenges

Anwesha Halder[1] , Bikash Padhi[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:—In the future, the majority of vehicles could be intelligent and autonomous. In order to achieve this, the 6G will play a predominant role in vehicular technology. Moreover, the next generation 6G wireless communication is an emerging technology that will revolutionize vehicular technology. In future, the new 6G technology is expected to connect more devices in our world. So, it needs to provide excellent performance over recent state of the art communication technology like 5G. The primary features of 6G technology are heterogeneous object connectivity, low power consumption, high throughput, high data reliability, ultra-low latency. Furthermore, it will provide intelligent and secure communication with the help of Artificial Intelligence (AI) and Block-chain technology. First, this paper presents the introduction of 6G technology. Later, we discuss the 6G enabling technology, which includes Internet of Everything (IoE), AI and Edge intelligence. Then, this paper mainly concentrates on how to help 6G based vehicular communication in various vehicular applications. Finally, we address the various research challenges on 6G based vehicular communication. Thus, it will be helpful for future research to carry out in the right direction.

INTRODUCTION:-Wireless communication technology has been advancing over decades. With the introduction of digital technology, fifth generation (5G) moves forward and necessitates future communication technology since it will not fulfill all future criteria [1]. There is a prospect for sixth generation (6G), an up-coming, drastic mobile communication technology in the next era that will empower the world from 2030 and beyond. Already in some countries, 5G has been deployed and generates large-scale economic growth. Researchers are presently focusing on 6G wireless communication technology. The 6G requirements highly vary from 5G communications. As a result, the factors of 6G will make possible tremendous innovative applications and expertise. In particular, 6G is a renowned pioneer in vehicular, healthcare, and commercial technologies. Emerging applications of 6G attracted many research community, developers and industrialists that leads to publications of many research ideas in various articles. Important trends of 6G communications have been identified and the major challenges in amalgamation of AI with 6G and the real picture of AI assisted 6G communication has been detailed in many literatures.

Maximizing power transmission in a renewable multisource system

Anjan Kumar Sahoo[1], Jaya Guru Barik[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: A multi-source DC-DC power system for renewable applications is suggested in this research. An interlocking pair of control loops is utilized to regulate a single-inductor power converter with multiple inputs. The intended system is subjected to small-signal and steady-state analysis. Such example of such application is a battery photovoltaic system. It is possible to attain high system performances by appropriately controlling the solar panels' output voltage and maximum power point. The system performances are discussed with the presentation of experimental findings on a 48 V laboratory prototype.

Keywords: Power systems, multi-input converters, renewable energy sources, renewable energy systems, power converters.

INTRODUCTION

In fact, multisource designs are being studied to effectively incorporate renewable energy sources into special power systems. The goal is to reduce reliance on fossil fuels and the electrical grid by combining solar, wind, fuel cell, and geothermal sources into a single energy system. Numerous applications are involved, including automotive, stationary, and consumer electronics. It is a frequent objective to achieve excellent performances despite the unpredictability and scarcity of renewable resources. The most important things to focus on are source matching and maximizing the power transfer from renewable sources. In order to operate in a high efficiency region and transfer the greatest amount of power while protecting the source from aging and damage, each renewable energy source needs to be carefully regulated. To ensure that the power load equipment operates properly, the power load bus should also eventually be precisely managed with the use of storage components. A number of power designs and control algorithms for multisource renewable energy systems have recently been introduced in the literature. The most widely used method, which is typically chosen because of its incredibly low complexity, offers a selected connection of renewable energy sources based on their real environmental state. Such a method results in the waste of environmental energy that is provided by other sources, even in cases when the load power is obtained from the greatest performance source and a special power management system is needed.

The Impact of Motivation on Employee Performance

Minati Das[1], Sneha Lenka[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

Objective: The objective of the study is to analyze the important role of motivation in improving the performance of company employees with the support of organizational commitment as a mediator.Design/Method/Approach: This study uses a causal model and explanatory method. A sample of 160 respondents was obtained by distributing questionnaires to employees of an Indonesian service company. Results: The results of this study show that motivation has a positive and significant effect on employee performance. Motivationally mediated employee success can control intrinsic factors and strengthen related extrinsic motivation because high performance is supported by affective, continuance, and normative commitment. Employee commitment as a connection of experience, values and beliefs indirectly affects employee performance because it is necessary to achieve organizational goals. Originality: This article is a comprehensive study that integrates the variables of motivation, organizational commitment, and performance into a comprehensive research model. The originality of this article shows the role of motivation, how it affects employee performance and organizational commitment.Implications for practice/policy: Employee success in achieving company goals is important because employee motivation to perform can change activities toward high performance. In addition, the findings show that the strength of the relationship between motivation and commitment mediates helping the needs of the company and changing the actions of employees, which results in better results in the achievement of the company and its goals.
Keywords: Motivations, Organizational Commitment, Performance

Introduction

Performance is often used to evaluate the results of an employee's work, for example, in activities related to the work performed. Employee performance evaluation is decided from the beginning to the end to fulfill the goals of the organization and it is profitable, but also from the point of view of the organization and the employees, because the work results desired by the employee and the company must meet. the goals of the organization. performance appraisal standards. (Alqudah et al., 2022). However, each employee and the results vary depending on their skills and motivation (Rachman et al., 2020). Individual skills and motivation determine job performance (Lee and Chen, 2013).

Best practice for performance appraisal

Minati Das[1], Sandhya Mohanty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

Employee performance is an important factor in organizational productivity. Employee performance is affected by many reasons and simply put, performance appraisal is a tool to understand employee performance and analyze the reasons for performance. The practices of the performance appraisal system were very different, from a simple method, where the performance of employees is evaluated only by the HR manager, to a 360-degree feedback system, where not only the supervisor, but also peers, colleagues and customers gets the chance to review. the performance of each other. There have been important developments in performance evaluation. Our article focuses on performance appraisal best practices and to identify the best practices, we have selected some of the practices followed by Fortune 500 companies. This article also focuses on the results these companies achieve by adopting new performance appraisal method.

Keyword: Best Practices, productivity, 360 degree feedback

Introduction

The purpose of personnel management is to constantly and effectively manage the qualification requirements of various individuals in the work assigned to them and to offer opportunities to develop their skills. Performance appraisal is an integral part of HR management and the HR manager works with HR as people. "People" is an important and valuable resource that every organization or institution has in the form of its employees. (Dr.S.Jansirani, Mr. R.Hatrikrishnan, Mrs.D.Jaya kani and Ms.A.Saisathya, 2013) Performance appraisal is often considered the most critical function of HRM (Selvarajan The organization is created to fulfill its goals, and the achievement of goals deepens in the work of individual employees. Therefore, it is quite important to understand that performance appraisal is an integral part of an organization. Performance appraisal is mainly used for three purposes [1]. As a basis for distribution of rewards such as salary increase, promotion and other compensations etc. [2].

Performance appraisal identifies the weaknesses of employees and identifies areas where development work is needed. done is needed. Performance evaluation is a tool to identify deficiencies [3] that can be used in a selection and development program. This separates the satisfactory performers from the unsatisfactory ones.

Employee perceptions of safety and health practices in a small organization

Minati Das[1], Subashis Nayak[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

This study investigated employee perceptions of implementing safety and health practices in a small organization. Data were collected through a series of questionnaires covering seven (7) variables including education, work environment, mechanics, ergonomics, personal protective equipment, electricity and noise. Responses were rated on a 5-point Likert-type scale. 1: strongly disagree 5: strongly agree. The study was conducted in a small food company and involved all employees with a total of 40 respondents. Data were analyzed using descriptive statistics to obtain mean scores and standard deviation. The perception of mechanical aspects received the lowest mean; In addition, it was found that 51.7% of employees had a negative attitude to the problems presented on this variable (combination of "disagree" and "strongly disagree"). The general results show that the employees' general understanding of the implementation of occupational health was low. However, these results were expected because previous studies have shown that small-scale industries are not committed to implementing occupational safety and health practices.
Keywords: Occupational safety and health, small and medium-size industry

Introduction

Organizations are at risk every time they open their doors to businesses, regardless of size. One day, an employee may be injured, a customer may have an accident, or a consumer may be injured by an organization's product. An effective and appropriate safety and health system is essential to creating a safe workplace in any industry. In organizations today, issues related to occupational safety and management effects in organizations, especially occupational health and safety management functions, have begun to receive attention (Nor Azimah et al, 2009). Good occupational safety management can have a positive impact not only on the number of accidents, but also on competitive variables and financial results (Fernández-Muñiz, Montes-Peón and Vázquez-Ordáz, 2009). It is very important to measure employees' perceptions of occupational health and safety practices in organizations so that the implementation of occupational health and safety can be continuously developed.

Energy and time management

Minati Das[1], Satish Pradhan[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

Time management is simply the process of organizing and planning how schedules are allocated and organized across specific businesses to effectively maximize efficiency. The purpose of this paper is to explore the importance, role and impact of some general ideas about time management principles and techniques to achieve organizational goals. Conscious control of the time spent on daily activities would allow prioritization and deadlines to be set accordingly, allowing individuals to effectively achieve their goals within the organization within those deadlines. This study uses a descriptive survey design. In particular, survey questionnaires were used and included 150 employees from 32 organizations located in Abuja Local Government, Nigeria. From the responses of the respondents, it was clear and the study concluded that time management helps to improve the productivity of the organization when properly implemented, so time management is very important. Using the analysis of variance of the data obtained from the respondents, the null hypothesis (H0) was rejected with the values of Fcandgt;Ft, i.e. 4.23>3.48. The study recommends that employees in organizations be further encouraged to follow their own time management practices as a strategy to achieve organizational goals. To manage time in the organization, it is also necessary for the management to create a system in the list of daily tasks; sets priorities in order of importance and urgency; use a functional work distribution system; and focus on what is important..

Introduction

Throughout human existence, the concept of time management can be pragmatic, as it is unconsciously related to the achievement of a goal(s) or goal(s), whether on an individual or collective level. Time is limited and cannot be manufactured - it is a limited resource that we must manage (Decker, 2011). Time is so subtle that it cannot be saved, it can only be used and if misused, it can never be recovered. Whether it is managing an organization to drive development and/or improvement, or an individual looking for better ways to spend time, time management is important to both. According to the World English Dictionary, time refers to the continuous flow of existence, where events move from a state of future potential through the present to a state of past finality. On the other hand, management refers to a multifunctional body that controls business activities and guides managers, employees, and work (Drucker, 1954).

Women's Social Empowerment and Microfinance: A Brief Review of Literature

Sadasiv Dash[1], Ajaya Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:

Since women's empowerment is one of the main drivers of increased global development initiatives, it is crucial for socioeconomic growth. Previous research has shown that the impact of microfinance on women's empowerment is a contentious issue. According to some academics, microfinance gives women the ability to earn more money, giving them more power to address cultural norms. Others claim that women are severely degraded because their partners control the majority of the microloans given to them. In this work, we used word cloud analysis to review previous research findings and assess the impact of microfinance on women's decision-making abilities and social empowerment. The majority of the 54 research studies included in this paper's review indicated positive correlations between microfinance and women's study.

Keywords: Microfinance, Poverty alleviation, Pakistan, Women's empowerment, JEL Classification Codes: G21, J16, I32

Introduction

Microfinance Institutions (MFIs) play a crucial role in addressing the existing poverty among disenfranchised people living in developing countries. MFIs provide financial access to customers with no or low income for supporting viable socio-economic development (Monteza, Blanco, & Valdivieso, 2015). Given the inherent dynamics of MFIs in poverty alleviation, they tend to use standardized business strategies for supporting new business ventures, mainly launched by women, which lead to their empowerment (Beisland, Mersland, & Strøm, 2015).

Impact of the Pandemic Covid-19 and Evolution of E- Payment

Monalisha Patel[1], Anshu Panda[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of
Technology, Odisha, India.

Abstract: COVID-19 Pandemic their first wave and second wave prompts E-payment or Digital payment it can throw the Indian Economy and pushes all activities rapidly towards with Digital Payment. COVID -19 has given it further blow in 2020 (First wave) and 2021 (second wave) , Even consumers also has more comfortable with cash wallet have started using E-Payment for their regular and common needs its push to move India towards a cashless society and contactless transactions . Further E-payment ,mobile wallets Digital transaction ,online bill payment ,QR Code based payment ,mobile banking help consumers avoid as physical footstep and presence and also help to save and protect to fear of the virus. Indian Banking also highlighted how pandemic has accelerated the adoption of E-Payment as consumers preferred to stay out from cash payment, India is experiencing a flight path in E-payment that is more breeding than many advanced cash less economies. The awareness and adoption of E-payment has increased rapidly and benefit us with as safety, convenience, Instant payment were the key spark. In this paper we discuss about E-payment used in various sectors by consumers in those waves of pandemic crises and businesses who also accept and pat with digital transaction.

Keywords: E-payment, contactless transaction, mobile wallet, digital payment, pandemic, digital transaction.

Introduction:

COVID-19 has accelerated the digitization of Indian economy. The continuous spread of COVID-19 in first wave (2020) and in second wave(2021) become one of the biggest hazard to the Indian economy and financial market . To accommodate the Impact of the corona virus and their continues the eruption ,India as like many others countries , is taking particular measure , including many times lockdown in nation ,movement of entire population is limited , shutting down of public places , maintain social distancing mostly organization and offices do work from home . There results huge economic interruption and limited activity of business even they are large or small all are affected in pandemic situation. But E-payment play a big and valuable role in industries and various sectors to help their stability and potential to rebooting the economy in the new normal ,consumer prefer those different type of payments modes cause of their convenient , easy to use , time saver , no any need to outside or bank branches in E-payment no any fear of losing cash , 24*7 service flexibility and non banking hour or bank holidays also anyone get their banking facilities E- payment remark a number of innovations and initiatives have changed the transaction way of Indian consumers, push towards digital payment with resource such as (BHIM) Bharat interfacefor money , Google pay , Amazon pay , Paytm , QR Code , Rupay cards , (UPI) Unified Payments interface , (NEFT) National Electronic fund transfer, (IMPS) Immediate payment etc.

India's Green Finance Trends and Obstacles

Anurag Sahani[1], Madhumita Nayak[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:

The term "sustainable finance" refers to the use of financial resources to support socially, economically, and environmentally significant enterprises. This includes "low-carbon finance," "green finance," and "climate finance." The achievement of "low carbon, green growth" depends heavily on green finance. It is essential in establishing connections between the financial sector, environmental enhancement, and economic progress. The Indian economy has traditionally found it difficult to finance such environmentally significant projects, particularly the capital needed to achieve the production of 175 gigawatts of renewable energy by 2022. The funding of renewable energy projects has traditionally been hampered in India by issues including high capital costs, inadequate debt financing, and short loan maturities. The work is broken up into several portions. It first emphasizes the significance of green finance. The Indian economy and government's different initiatives in this regard are covered in the second part. Section three further discusses the several issues facing the Indian economy. Concluding observations about the future of India's economy and its green investments are given in the final part.

Keywords: Sustainable Development Goals, Paris Agreement, Green Initiatives, Green Bonds, Green Investments.

Introduction: The environment is greatly threatened by climate change, primarily as a result of the overuse of fossil fuels. Fossil fuel consumption at current levels is expected to raise global temperatures by 4 to 6 degrees Celsius above pre-industrial levels (pre-industrial levels are defined as the years prior to the industrial revolution, roughly equivalent to the 19th century when the first signs of climate change appeared). This will have negative effects on food production, human health, and possibly even the survival of certain communities and biodiversity as a whole. A lot of governments have become more aware of this problem and have committed to upholding the Sustainable Development Goals (SDGs) and the 2015 Paris Agreement, which stipulate that global warming should be kept well below 2 degrees Celsius and that nations should work to keep the rise to 1.5 degrees Celsius relative to pre-industrial levels. A significant issue that still exists in the world economy is the low rate of investment.

Psycho-social effect of the Covid lockdown

S.S Panda[1], Pratham Lenka[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: Covid has caused a great deal of calamity on the planet. A large number of individuals have lost their lives because of this hazardous infection. This lethal pandemic has antagonistically affected all countries of the globe. The circumstance is getting awful step by step as there is no antibody imagined at this point to treat this infection. To control its fast transmission among individuals, the solitary alternative that the public authority of various countries has is to force lockdown in their individual nations. This lockdownhas brought about sure just as contrary consequences for different parts of life of individuals. In this article we will glance about it in detail. Social separating is by all accounts hitting individuals much more than the panic of the destructive infection. Individuals are getting exceptionally anxious and unsettled despite online media availability. Instances of aggressive behavior at home have dramatically increased in the country during the lockdown time frame. We need to contain the mental harm by redirecting greatest assets towards reinforcing our medical services framework.

Keywords: Covid, Lockdown, pandemic, Restriction, without socialization

Introduction:

The whole world has suffered from several pandemic situations since more than 100 years like Spanish flu, influenza, smallpox, cholera, swine flu, SARS, and H7N9 which caused many impacts on the society. We are currently faced with a global health crisis, unlike any other. It has led to the loss of lives, and it has intensified human misery and toppled our lives upside down. The corona virus pandemic has become much more than a health crisis. It has become a human, economic, and social crisis. The current novel corona virus pandemic started as a simple outbreak in December 2019 from Wuhan, China. The outbreak was declared a Public Health Emergency of International Concern in January 2020. The governments from most of the countries including India have taken strict precautionary measures to reduce the corona virus spreading such as social distancing; hand hygiene; wearing face masks; and closure of schools, colleges, airports, restaurants, shopping malls, and other places where the people might gather.

Impact of COVID-19 Pandemic on Functioning of Libraries

Purnachandra Pradhan[1], Nitesh Panda[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: The study aims to depict the impact of the pandemic and consequent lockdown of 2020 on functioning of libraries and its users. The study attempts to examine whether or not the present pandemic has impaired the services of the libraries, if so, to what extent. It argues whether the pandemic has resulted in either partial or complete stoppage of services of libraries to its users, or barely impacted the reading room services. The study also aims to present and discuss the library and information community's response to the corona virus pandemic. It chronicles official statements from various library and information associations as they were released in real-time, thereby providing a contemporary and historical snapshot of the early stages of the pandemic.

Keywords: Academic Libraries, Covid-19, Library Services, Pandemic Planning, Online Services, Electronic Resources, Electronic Services

Introduction:

Libraries across the world have been facing lockdown challenges in providing access to their collections and services. The COVID-19 has forced 150 countries to close the school libraries. According to UNESCO, 84 countries have closed their public libraries and 98 countries have closed their national libraries. With the announcement of lockdown, the libraries world over had to close overnight, with no time left at their disposal for making any arrangement to provide even skeleton services. The Govt of India also declared lockdown on 24th March 2020, which remained absolute till 31st May 2020. The same started getting relaxed with effect from 1st June 2020 after the announcement of Unlock-1. The libraries also started to resume their operations slowly, but with caution.

Application of Electronic Security Systems in Libraries

Niranjan Nayak[1], Priyanka Sethi[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:

Use and application of various electronic security systems in the library is become very essential. Due to increasing number of users, space and collection, it is possible to the library staff to overlook all the library premises with traditional security measures. Automated surveillance security system has to be adopted by all the libraries to prevent theft and illegal use of library materials. The Present paper highlights the point related to application of suchelectronic systems in the libraries and its advantages to upgrade the library services with better quality.

Introduction:

Library is supposed to be a important organ (Like, heart, brain, etc.) of any academic institution. It is because, it renders the curricular and knowledge based needs of the patrons. As the collection number of users and space of the library increase, the security and surveillance problems increase. It is beyond the ability of the library staff to supervise the overall library without help of any automated systems. Thus, the need of such electronic devices or automated system arises to overcome this problem.

Nowadays, we find modern surveillance system in every super Bazar, Mall, Cinema theater, such as CCTV cameras, RFID detector tags on each product, Biometric machines at main entrance of the building like fingerprint scanning, iris scanning facial recognition, voice recognition and palm vein authentication. Such technology minimizes the threats of theft, mutilation or misuse of the material of the owner. In Libraries, books and other reading materials are kept for its stakeholders for years. If these technologies are used in the libraries, there will be lot of advantages, in case of staff management, space management, and user management. It is important to secure library resources. It is equaled important to ensure that the security is performed as seamlessly as possible. Without interfering with the library's objective of providing a user-friendly environment. Electronic security system is devices that are used with the aid of Electrical apparatus to secure library materials. They help libraries to control minimize or avoid library material theft and unethical losses Examples of electronic security systems installed in libraries are electronic surveillance camera (CCTV) 3 M electronic security systems (electronic security gates),radio frequency identification (RFID) system, perimeter alarm system etc.

Customer Satisfaction towards Service Quality of Nationalized Banks

Monalisha Patel[1], Lisa Ray[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of
Technology, Odisha, India
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of
Technology, Odisha, India

Abstract:
Service quality has become a competitive strategy in the public sector banks. In this backdrop, a study on customer's perception about service quality in digital environment the mind of customers and an analysis will provide banks to meet the customer's expectations. In thisstudy how customers satisfied with the service provided by the banks and the effect of service quality on customer satisfaction. Hence, in the present study is to analyze the effect of service quality on customer satisfaction towards digital environment in public sector banks. Based on the major findings of this study, the researcher has made several recommendations to the public sector banks to increase digital service quality and enhance customer satisfaction. The result of the study shows that the customers have low perception about digital services, therefore, it is suggested that the public sector banks should bemore conscious of the customer's need of latest technology facilities to enhance customer satisfaction.

Keywords: Perceived Service Quality, Customer satisfaction, Digital services

Introduction:
Many research activities on service quality has been conducted out worldwide. Now a day's banks provide a variety of services ranging from opening a savings account, granting loans to selling insurance, providing locker facilities to transferring money abroad through internet banking and mobile apps. Customers ranging in the society from illiterate farmers to multinational corporations having its business activities all around the world. The banks have to satisfy all the customers belonging to different social groups in the digital era. The banking has therefore become more complex and now it requires specialized skills. The public sector banks have responded to customer needs by paying more attention to enhancement of service quality in order to retain its market position. Now, public sector banks are increasingly facing more competition, whereas foreign and private sector banks are trying to win customer satisfaction, loyalty, and commitment by providing them better quality services.

Best practice for performance appraisal

Minati Das[1], Suman Mohanty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

Employee performance is an important factor in organizational productivity. Employee performance is affected by many reasons and simply put, performance appraisal is a tool to understand employee performance and analyze the reasons for performance. The practices of the performance appraisal system were very different, from a simple method, where the performance of employees is evaluated only by the HR manager, to a 360-degree feedback system, where not only the supervisor, but also peers, colleagues and customers gets the chance to review. the performance of each other. There have been important developments in performance evaluation. Our article focuses on performance appraisal best practices and to identify the best practices, we have selected some of the practices followed by Fortune 500 companies. This article also focuses on the results these companies achieve by adopting new performance appraisal method.

Keyword: Best Practices, productivity, 360 degree feedback

Introduction

The purpose of personnel management is to constantly and effectively manage the qualification requirements of various individuals in the work assigned to them and to offer opportunities to develop their skills. Performance appraisal is an integral part of HR management and the HR manager works with HR as people. "People" is an important and valuable resource that every organization or institution has in the form of its employees. (Dr.S.Jansirani, Mr. R.Hatrikrishnan, Mrs.D.Jaya kani and Ms.A.Saisathya, 2013) Performance appraisal is often considered the most critical function of HRM (Selvarajan The organization is created to fulfill its goals, and the achievement of goals deepens in the work of individual employees. Therefore, it is quite important to understand that performance appraisal is an integral part of an organization. Performance appraisal is mainly used for three purposes [1]. As a basis for distribution of rewards such as salary increase, promotion and other compensations etc. [2].

Performance appraisal identifies the weaknesses of employees and identifies areas where development work is needed. done is needed. Performance evaluation is a tool to identify deficiencies [3] that can be used in a selection and development program. This separates the satisfactory performers from the unsatisfactory ones.

Employee Perceptions of Safety and Health Practices in a Small Organization

Minati Das[1], Tanmayee Jena[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

This study investigated employee perceptions of implementing safety and health practices in a small organization. Data were collected through a series of questionnaires covering seven (7) variables including education, work environment, mechanics, ergonomics, personal protective equipment, electricity and noise. Responses were rated on a 5-point Likert-type scale. 1: strongly disagree 5: strongly agree. The study was conducted in a small food company and involved all employees with a total of 40 respondents. Data were analyzed using descriptive statistics to obtain mean scores and standard deviation. The perception of mechanical aspects received the lowest mean; In addition, it was found that 51.7% of employees had a negative attitude to the problems presented on this variable (combination of "disagree" and "strongly disagree"). The general results show that the employees' general understanding of the implementation of occupational health was low. However, these results were expected because previous studies have shown that small-scale industries are not committed to implementing occupational safety and health practices.

Keywords: Occupational safety and health, small and medium-sized industry.

Introduction

Organizations are at risk every time they open their doors to businesses, regardless of size. One day, an employee may be injured, a customer may have an accident, or a consumer may be injured by an organization's product. An effective and appropriate safety and health system is essential to creating a safe workplace in any industry. In organizations today, issues related to occupational safety and management effects in organizations, especially occupational health and safety management functions, have begun to receive attention (Nor Azimah et al, 2009). Good occupational safety management can have a positive impact not only on the number of accidents, but also on competitive variables and financial results (Fernández-Muñiz, Montes-Peón and Vázquez-Ordáz, 2009). It is very important to measure employees' perceptions of occupational health and safety practices in organizations so that the implementation of occupational health and safety can be continuously developed.

Energy and time management

Minati Das[1], Monali Pradhan[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract

Time management is simply the process of organizing and planning how schedules are allocated and organized across specific businesses to effectively maximize efficiency. The purpose of this paper is to explore the importance, role and impact of some general ideas about time management principles and techniques to achieve organizational goals. Conscious control of the time spent on daily activities would allow prioritization and deadlines to be set accordingly, allowing individuals to effectively achieve their goals within the organization within those deadlines. This study uses a descriptive survey design. In particular, survey questionnaires were used and included 150 employees from 32 organizations located in Abuja Local Government, Nigeria. From the responses of the respondents, it was clear and the study concluded that time management helps to improve the productivity of the organization when properly implemented, so time management is very important. Using the analysis of variance of the data obtained from the respondents, the null hypothesis (H0) was rejected with the values of Fcandgt;Ft, i.e. 4.23>3.48. The study recommends that employees in organizations be further encouraged to follow their own time management practices as a strategy to achieve organizational goals. To manage time in the organization, it is also necessary for the management to create a system in the list of daily tasks; sets priorities in order of importance and urgency; use a functional work distribution system; and focus on what is important..

Introduction

Throughout human existence, the concept of time management can be pragmatic, as it is unconsciously related to the achievement of a goal(s) or goal(s), whether on an individual or collective level. Time is limited and cannot be manufactured - it is a limited resource that we must manage (Decker, 2011). Time is so subtle that it cannot be saved, it can only be used and if misused, it can never be recovered. Whether it is managing an organization to drive development and/or improvement, or an individual looking for better ways to spend time, time management is important to both. According to the World English Dictionary, time refers to the continuous flow of existence, where events move from a state of future potential through the present to a state of past finality. On the other hand, management refers to a multifunctional body that controls business activities and guides managers, employees, and work (Drucker, 1954).

Women's Social Empowerment and Microfinance: A Brief Review of Literature

Sadasiv Dash[1], Gopal Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:

Since women's empowerment is one of the main drivers of increased global development initiatives, it is crucial for socioeconomic growth. Previous research has shown that the impact of microfinance on women's empowerment is a contentious issue. According to some academics, microfinance gives women the ability to earn more money, giving them more power to address cultural norms. Others claim that women are severely degraded because their partners control the majority of the microloans given to them. In this work, we used word cloud analysis to review previous research findings and assess the impact of microfinance on women's decision-making abilities and social empowerment. The majority of the 54 research studies included in this paper's review indicated positive correlations between microfinance and women's study.

Introduction

Microfinance Institutions (MFIs) play a crucial role in addressing the existing poverty among disenfranchised people living in developing countries. MFIs provide financial access to customers with no or low income for supporting viable socio-economic development (Monteza, Blanco, & Valdivieso, 2015). Given the inherent dynamics of MFIs in poverty alleviation, they tend to use standardized business strategies for supporting new business ventures, mainly launched by women, which lead to their empowerment (Beisland, Mersland, & Strøm, 2015).

Impact of the Pandemic Covid-19 and Evolution of E- Payment

Monalisha Patel[1], Anshu Panda[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: COVID-19 Pandemic their first wave and second wave prompts E-payment or Digital payment it can throw the Indian Economy and pushes all activities rapidly towards with Digital Payment. COVID -19 has given it further blow in 2020 (First wave) and 2021 (second wave) , Even consumers also has more comfortable with cash wallet have started using E-Payment for their regular and common needs its push to move India towards a cashless society and contactless transactions . Further E-payment ,mobile wallets Digital transaction ,online bill payment ,QR Code based payment ,mobile banking help consumers avoid as physical footstep and presence and also help to save and protect to fear of the virus. Indian Banking also highlighted how pandemic has accelerated the adoption of E-Payment as consumers preferred to stay out from cash payment, India is experiencing a flight path in E-payment that is more breeding than many advanced cash less economies. The awareness and adoption of E-payment has increased rapidly and benefit us with as safety, convenience, Instant payment were the key spark. In this paper we discuss about E-payment used in various sectors by consumers in those waves of pandemic crises and businesses who also accept and pat with digital transaction.

Keywords: E-payment, contactless transaction, mobile wallet, digital payment, pandemic, digital transaction.

Introduction:

COVID-19 has accelerated the digitization of Indian economy. The continuous spread of COVID-19 in first wave (2020) and in second wave(2021) become one of the biggest hazard to the Indian economy and financial market . To accommodate the Impact of the corona virus and their continues the eruption ,India as like many others countries , is taking particular measure , including many times lockdown in nation ,movement of entire population is limited , shutting down of public places , maintain social distancing mostly organization and offices do work from home . There results huge economic interruption and limited activity of business even they are large or small all are affected in pandemic situation. But E-payment play a big and valuable role in industries and various sectors to help their stability and potential to rebooting the economy in the new normal ,consumer prefer those different type of payments modes cause of their convenient , easy to use , time saver , no any need to outside or bank branches in E-payment no any fear of losing cash , 24*7 service flexibility and non banking hour or bank holidays also anyone get their banking facilities E- payment remark a number of innovations and initiatives have changed the transaction way of Indian consumers, push towards digital payment with resource such as (BHIM) Bharat interfacefor money , Google pay , Amazon pay , Paytm , QR Code , Rupay cards , (UPI) Unified Payments interface , (NEFT) National Electronic fund transfer, (IMPS) Immediate payment etc.

India's Green Finance Trends and Obstacles

Anurag Sahani[1], Nikita Patra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract:

 The term "sustainable finance" refers to the use of financial resources to support socially, economically, and environmentally significant enterprises. This includes "low-carbon finance," "green finance," and "climate finance." The achievement of "low carbon, green growth" depends heavily on green finance. It is essential in establishing connections between the financial sector, environmental enhancement, and economic progress. The Indian economy has traditionally found it difficult to finance such environmentally significant projects, particularly the capital needed to achieve the production of 175 gigawatts of renewable energy by 2022. The funding of renewable energy projects has traditionally been hampered in India by issues including high capital costs, inadequate debt financing, and short loan maturities. The work is broken up into several portions. It first emphasizes the significance of green finance. The Indian economy and government's different initiatives in this regard are covered in the second part. Section three further discusses the several issues facing the Indian economy. Concluding observations about the future of India's economy and its green investments are given in the final part.

Keywords: Sustainable Development Goals, Paris Agreement, Green Initiatives, Green Bonds, Green Investments.

Introduction: The environment is greatly threatened by climate change, primarily as a result of the overuse of fossil fuels. Fossil fuel consumption at current levels is expected to raise global temperatures by 4 to 6 degrees Celsius above pre-industrial levels (pre-industrial levels are defined as the years prior to the industrial revolution, roughly equivalent to the 19th century when the first signs of climate change appeared). This will have negative effects on food production, human health, and possibly even the survival of certain communities and biodiversity as a whole. A lot of governments have become more aware of this problem and have committed to upholding the Sustainable Development Goals (SDGs) and the 2015 Paris Agreement, which stipulate that global warming should be kept well below 2 degrees Celsius and that nations should work to keep the rise to 1.5 degrees Celsius relative to pre-industrial levels. A significant issue that still exists in the world economy is the low rate of investment.

Psycho-social effect of the Covid lockdown

S.S Panda[1], Alekha Padhi[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

Abstract: Covid has caused a great deal of calamity on the planet. A large number of individuals have lost their lives because of this hazardous infection. This lethal pandemic has antagonistically affected all countries of the globe. The circumstance is getting awful step by step as there is no antibody imagined at this point to treat this infection. To control its fast transmission among individuals, the solitary alternative that the public authority of various countries has is to force lockdown in their individual nations. This lockdownhas brought about sure just as contrary consequences for different parts of life of individuals. In this article we will glance about it in detail. Social separating is by all accounts hitting individuals much more than the panic of the destructive infection. Individuals are getting exceptionally anxious and unsettled despite online media availability. Instances of aggressive behavior at home have dramatically increased in the country during the lockdown time frame. We need to contain the mental harm by redirecting greatest assets towards reinforcing our medical services framework.

Keywords: Covid, Lockdown, pandemic, Restriction, without socialization

Introduction:

The whole world has suffered from several pandemic situations since more than 100 years like Spanish flu, influenza, smallpox, cholera, swine flu, SARS, and H7N9 which caused many impacts on the society. We are currently faced with a global health crisis, unlike any other. It has led to the loss of lives, and it has intensified human misery and toppled our lives upside down. The corona virus pandemic has become much more than a health crisis. It has become a human, economic, and social crisis. The current novel corona virus pandemic started as a simple outbreak in December 2019 from Wuhan, China. The outbreak was declared a Public Health Emergency of International Concern in January 2020. The governments from most of the countries including India have taken strict precautionary measures to reduce the corona virus spreading such as social distancing; hand hygiene; wearing face masks; and closure of schools, colleges, airports, restaurants, shopping malls, and other places where the people might gather.

A Systematic Literature Review on Decision Models for Supplier Selection in the Industry 4.0

Debasmita Samal[1], Sangram Patnaik[2]

[1]College of Engineering Bhubeswar,Biju Patnaik Univeristy of Technology,Odisha,India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Industry 4.0 refers to the integration of business operations across the manufacturing chain through the deployment of various technological solutions. The selection of a supplier is crucial in fostering collaborative strategies between manufacturers and suppliers, taking into account the requirements of Industry 4.0.This study provides a thorough literature analysis on quantitative models to assist with supplier selection in the context of industry 4.0. Fourteen research were examined and described from various angles, including decision model modeling, application, and validation. The findings showed that the majority of the decision models were created by fusing artificial intelligence (AI) with multi criteria decision-making (MCDM). The most often mentioned characteristics pertaining to the Industry 4.0 environment were digital cooperation, engagement, technological capacity, and information exchange.

Keywords*: Supplier Selection; Industry4.0; Systematic Review; Decision Models; Multi criteria Decision-Making

Introduction

Globalization compelled several industrial sectors to face adaptations to meet markets with high requirements levels[1]. In this context, Industry 4.0 emerges, which represents the paradigm of fourth stage of industrialization and comprises the integration and application of different technological solutions in the establishment of the Internet of Things and Cyber- Physical Systems, so that business objects and processes are integrated promoting an intelligent environment [2].Industry 4.0 is defined by [3] as "the sum of all disruptive innovations derived and implemented in a value chain to address the trends of digitalization, automation, transparency, mobility, modularization, network-collaboration and socializing of products and processes". The emergence of Supply Chain 4.0 concept represents the use of technologies characteristic of Industry 4.0, to facilitate the management of several activities, such as scheduling and Integration between the links in the supply chain has become essential, as it promotes the development of collaborative and synchronized strategies between suppliers and manufacturers [6]. This integration is highly relevant in improving member companies' performance since individual planning without taking into account partnerships with suppliers can result in goods and service levels with non-competitive costs, which can affect long-term

The Solvable Challenge of Air Pollution in India

Prabhat Rath[1], Suman Pattanaik[2]

[1]College of Engineering Bhubaneswar,Biju Patnaik University of Technology,Odisha,India

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: More than 660 million Indians breathe air that does not meet India's national air quality standards. Research shows that meeting these standards would add one year to India's average life expectancy. Meeting the international criteria of the World Health Organization increases life expectancy by 4.7 years. Despite these great advantages, successful implementation of clean air policies has proven difficult. This article reviews extensive empirical evidence from India and elsewhere, as well as new data on Delhi's recent dose control program and industrial emissions in Gujarat and the Maharashtra region. This has three lessons for designing effective reforms: a) ensuring the reliability and impartiality of regulatory information, b) developing regulations that are both economically efficient and compatible with the motivations of different parties, and c) instilling a culture of testing and evaluating new policies as a scientific method for better results. This shows that market-based policy instruments can address many of India's current regulatory challenges by reducing air pollution and lowering compliance costs.

Introduction

The costs to society from air and water pollution can be extraordinarily high. Greenstone et al. (2015) combine ground-level in-situ measurements with satellite-based remote sensing data, and estimate that 660 million Indians live in areas that exceed the National Ambient Air Quality Standard (NAAQS) for fine particulate pollution.[1] India is also estimated to have the worst access to safe drinking water of any country in the world (Water Aid 2016) with over 100 million people living in areas without safe drinking water.[2] The medical literature has documented several mechanisms through which polluted air and water may lead to more illness and higher mortality. For instance, evidence shows that river water pollution causes an increase in diarrhea-related deaths (Do 2014). In the case of air quality, recent research now allows us to go beyond isolating effects on specific diseases and to quantify the *long-term, cumulative* effects of being exposed to sustained air pollution. The Air Quality Life Index[3] (AQLI) provides a means to predict the overallreduction in life expectancy caused by living in places with high levels of air pollution.

Water Pollution Its Causes and Effects

Nidhi Sahoo[1], Sunil Sarkar[2]

[1]College of Engineering Bhubenswar, Biju Patnaik Univeristy of Technology, Odisha, India.
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract

The subject of water pollution is one of the most significant studies that have attracted the attention of scientists and environmentalists due to its great impact on human, animal and plant life. It is no less harmful than air and soil pollution, but more closely related to them. The research focused on the study of the concept of pollution in general, then the concept of water pollution and its sources. In addition to groundwater pollution, there have been many pollution processes, the most important of which are biological, physical and solid and liquid waste entering the waters of rivers, lakes and seas..

Keywords: Seas, Environment, Germs; Factories, Air, water.

Introduction:

The study of water pollution is very important for most researchers and interested people. Its importance lays the fundamental changes that it makes in the lives of humans, animals, plants, soil, and the environment in general. The research addressed water pollution that occurs due to throwing solid objects and organic and liquid materials into water-streams and lakes that contain toxic chemicals such as metals, mercury, lead and others. Radioactive pollution is one of the most important types of pollutants that result from nuclear activity in which materials leak into the water and turned into a toxic and polluting substance. The research also sheds light on the most important sources of water pollution, which are industrial sources, especially tanning factories, lead, mercury and copper. The waste goes to water because most factories do not adhere to industrial drainage controls by using pesticides and fertilizers. Also, waste leaks from homes have a significant impact on water pollution. It also deals with sanitation sources, as the most important sources of water pollution, emphasizing the most important causes of groundwater pollution and the stages of its treatment and purification.

Pollution: It is the negative change that occurs to one of the components of the environmental, which results in whole or in part from the vital and industrial human activity, in comparison with the natural situation that prevailed before human intervention, and begins to occur in energy changes, different radiation levels and unwanted biological, physical and chemical changes, that occur in the biosphere that surrounds us, in which all other living creatures live, and these changes can affect directly or indirectly the ecological balance through food, air, water and various agricultural products, and in this sense the environment pollutants are many and varied sources and have different meanings and effects [1].

Content Marketing Strategies: Data analysis perspective

Niranjan Nayak[1], Sanket Mohanty[2]

[1]Department of Business Administration, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Recently, the importance of data analysis for content marketing has become apparent. However, only a few companies use data as a source of knowledge to enrich their strategies. The application of data analysis in the development of content marketing strategies is still at an early stage of research and still little explored in the business context. However, given the research results analyzed, it is a promising and differentiating area for the success of content marketing strategies. In this paper, the main existing approaches related to this theme were analyzed and an empirical study was developed through a case study in a company, with the aim of optimizing the content production for its blog, regarding digital marketing, using the data analysis provided by the company's software. The study was carried out following an exploratory and qualitative methodology, using content analysis as the main technique for data collection. The results obtained after this work have made it possible to verify and demonstrate the positive contribution of data analysis to the development of content marketing strategies.

Keywords: Content Marketing, Content Analysis, Qualitative Methodology

Introduction:

Content marketing is a technique which creates and distributes valuable, relevant, and consistent content, to attract a clearly defined audience and to involve it, with the purpose of leading the customer to perform an action that generates profit for the company [1]. According to Baltes [2], content marketing fits into a communication model with no sales component, since the content created and distributed within its process is essentially of an informative, educational, or playful nature. The essence of this strategy focuses on the credibility that businesses pass on to consumers, helping them to be rewarded with loyalty at a later stage. The study was carried out following an exploratory and qualitative methodology, using content analysis as the main technique for data collection. The results obtained after this work have made it possible to verify and demonstrate the positive contribution of data analysis to the development of content marketing strategies.

Use of ICT in Higher Education System in India

Monalisha Patel[1], Subhalaxmi Das[2]

[1]Department of Business Administration, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Bhubaneswar Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

The paper is covered to all parameters on the highlight the impact of information and communication technology (ICT) in the higher education for the 21st century .Education is much more important for the social heritage importance will continue to grow and develop in the 21st century. Information and communication technologies (ICT) have become common place entities in all aspects of life. Across the last twenty years the use of (ICT)has fundamentally changed the practices and procedures of all forms of efforts business and governance. Education is a very socially oriented activity and quality education traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in higher education lends itself to more student -centered learning settings and often this creates some tensions for some teachers and students. The paper argues the role of ICT in transforming teaching and learning and seeks to explore how this will impact on the specific program will be offered and delivered in the universities and colleges of future.

Keywords: ICT, Higher education, Social development

Introduction:

Information and communication technology is a force that has changed many aspects of the way we live. If we can compare such different types of fields as medicine, tourism and travels, banking, law, business, engineering and architecture, the impact of ICT across the last two or decades has been tremendous. The way these fields operating today is much more vastly different from the ways they operated in the past. But when one looks at education, there seems to have been a unique lack of influence and less changed, there have been a number of factors impeding the wholesale lift of ICT in education across all sectors. These have included such factors as a lack of funding to support the purchase of the technology, a lack of training among established teaching practitioners, a lack of motivation and need among teachers to adopt ICT as teaching tools (Starr, 2001).

Customer Satisfaction towards Service Quality of Nationalized Banks

Monalisha Patel[1], Reeta Patnaik[2]

[1]Department of Business Administration, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2] Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

Service quality has become a competitive strategy in the public sector banks. In this backdrop, a study on customer's perception about service quality in digital environment the mind of customers and an analysis will provide banks to meet the customer's expectations. In this study how customers satisfied with the service provided by the banks and the effect of service quality on customer satisfaction. Hence, in the present study is to analyze the effect of service quality on customer satisfaction towards digital environment in public sector banks. Based on the major findings of this study, the researcher has made several recommendations to the public sector banks to increase digital service quality and enhance customer satisfaction. The result of the study shows that the customers have low perception about digital services, therefore, it is suggested that the public sector banks should be more conscious of the customer's need of latest technology facilities to enhance customer satisfaction.

Keywords: Perceived Service Quality, Customer satisfaction, Digital services

Introduction:

Many research activities on service quality has been conducted out worldwide. Now a day's banks provide a variety of services ranging from opening a savings account, granting loans to selling insurance, providing locker facilities to transferring money abroad through internet banking and mobile apps. Customers ranging in the society from illiterate farmers to multinational corporations having its business activities all around the world. The banks have to satisfy all the customers belonging to different social groups in the digital era. The banking has therefore become more complex and now it requires specialized skills. The public sector banks have responded to customer needs by paying more attention to enhancement of service quality in order to retain its market position. Now, public sector banks are increasingly facing more competition, whereas foreign and private sector banks are trying to win customer satisfaction, loyalty, and commitment by providing them better quality services.

A modified Ant Colony Optimization Algorithm for Down Syndrome Identification

Bivas Ranjan Parida[1], Amaresh Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Modern healthcare systems have been redesigned with creative thinking to provide people with more sophisticated and capable medical facilities. With the aid of artificial intelligence and machine learning, a variety of intelligent healthcare systems are demonstrated to provide knowledgeable and professional services. Genes contain genetic codes that are stored in the human body. These genes are linked to every one of our inherited characteristics, which are collectively referred to as chromosomes. Normally, each cell has 23 pairs of chromosomes, with each parent contributing half of the total. However, a person is said to have Down syndrome if they carry a complete or partial copy of chromosome 21. It causes developmental delay, reading impairment, intellectual disability, and other medical anomalies. This essay presents a perceptive Ant Colony Optimization (ACO) algorithm for Down syndrome (DS) features feature selection based on density in a prediction and classification system for healthcare.

Keywords: Down Syndrome; Ant Colony Optimization (ACO); Back propagation Neural Network (BPNN); Fiducial Points.

1. Introduction

Nature is an immense source of encouragement for resolving hard and complex problems in computer science since it exhibits an extremely diverse, dynamic, robust, complex, and attractive phenomenon. It always finds the optimal solution to solve its problem maintaining perfect balance among its components. This is the thrust behind bio-inspired computing. Nature-inspired algorithms are meta-heuristics that mimic nature for solving optimization problems opening a new era in computation. For the past decades, numerous research efforts have been concentrated in this particular area. Still being young and the results being very amazing, broadens the scope and viability of Bio-Inspired Algorithms exploring new areas of application and more opportunities in computing. This work proposes a broad overview of biologically inspired optimization algorithm - Ant Colony based Optimization. The proposed intelligent system excludes inappropriate or redundant features before the structure of ACO based classifier. The proposed method has three phases namely pre-processing, Feature Selection, and classification [1]. Comparing the proposed algorithm with existing methods, the presented intelligent system outperformed the other methodologies with a significant improvisation in classification accuracy using fewer features. Thus, early detection and screening of this disability are the best styles for Down syndrome prevention. In this work, Down syndrome detection utilizes a collection of facial expression images and classifies these images based on the age. A compact geometric descriptor is employed for extracting the facial features from the image set. Ant Colony based Optimization algorithm is applied to gather the required data sets and for the classification.

A Small and Effective Model for Summarizing Text for Odia Text Documents

Bivas Ranjan Parida[1], Anand Kumar[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:
The field of text mining research is expanding exponentially in the current context, and automatic text summarization is an important subject. For English and other European languages, a variety of techniques have been developed in this area, but Odia language is still in its infancy. The language's high degree of infectivity and complexity make it difficult to apply the current models directly to it. For Odia text documents, this paper suggests an efficient extractive single document automatic summarizer. F-scores, an evaluation metric, are compared between statistical and clustering methods. The current situation requires the work that is being done. The test documents are in the news category.

Keywords: Text summarization; extractive; TF-IDF, clustering, F score.

Introduction:
Automatic text summarization, a thriving topic abridges the text document while preserving the original information content [Siddiqui and Tiwari (2008)]. From the two major categories of text summarization abstractive and extractive, the former is more human like but harder to implement [Moratanch and Chitrakala (2016)]. On the contrary extractive text summarization is simpler and fulfills the objective of producing an informative summary [Al-Sabahi et al. (2018)]. Overall a good summarizer tries to achieve the requisite features in the output summary like content coverage, coherency among sentences and less redundancy [Qaroush et al. (2019)]. To achieve higher performance researchers try to bring variations in the methodology. Diversified approaches [Munot and Govilkar (2014)] like statistical, linguistic, graph theory based, clustering and machine learning based are being implemented and are successful in enhancing the performance of a summarizer and make it useful in different domains like news [Modaresi et al. (2017)], web pages [Hu et al. (2017)], medical documents [Rouane et al. (2019)] and creating patent summaries [Tseng et al. (2007)]. But considering the developed state of art of summarization models with respect to Odia language, it is in a primitive state. The morphological complexity [Sethi (2014)] and lack of computational resources like availability of machine readable text corpus and automated NLP (Natural Language Processing) tools such as lexicons, POS taggers and named entity recognizers has isolated it from the computational scenario. Also Odia language does not have benchmark training and testing corpus for comparison and evaluation. As it is the official language of Odisha, a land rich in cultural heritage and spoken by 45 million people including Odisha and some parts of neighboring states auto text summarization has become an essential requirement of the present scenario. The proposed techniques are competent attempts to bring Odia, a computationally impoverished language into computational field.

Disease Co-morbidities and Disease Gene Prediction through Heterogeneous Data Set

Bivas Ranjan Parida[1], Smrutirekha Priyadarshini[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:
Large-scale biological data generation made it possible to create innovative techniques for figuring out the underlying causes of disease onset and progression. Predicting disease comorbidity and disease-associated genes has become increasingly important in the past few decades. The main biological components thought to have causal roles in the development of disease are the interactions between genes, pathways, biological processes, molecular functions, and cellular components. Finding disease comorbidities and improving the accuracy of disease gene prediction will be made easier with the integration of these heterogeneous data. This work proposes a vector-based method for identifying new comorbidities through the integration of heterogeneous datasets, including gene ontology information pertaining to biological processes, molecular functions, and cellular components, Pathway, and PPI (protein-protein interaction) data.

*Keywords***:** Disease comorbidity; protein-protein interaction; pathway; Gene Ontology; Vector based similarity.

1. Introduction

Diseases have always perplexed mankind since time immemorial; andscientists the world over, have been grappling with solutions to all the maladies that plague us. This essentially introduces us to the topic of"Comorbidity Research". Comorbidity refers to the existence of one or more diseases along with a primary disease[1].This can add to the complexity of the treatment procedure and the condition of co-morbid patients is more complicated than that of patients suffering from any single disease. Comorbidity raises the difficulty of treating diseases that may potentially lead to higher mortality rates. An elucidation of pathological properties of varied diseases and their coordinated activities at the molecular level is what Comorbidity Research is all about. The 21st century has increased our awareness of human disease mechanisms thus providing ample evidence that complex diseases stem from the breakdown of concerted activities ofgenes involved in common or related cellular processes. High throughput analysis and large scale integration of biological data led to leading researches in the field of bioinformatics. Recent years witnessed the development of various methods for disease associated gene prediction and disease comorbidity predictions. Most of the existing techniques use network-based approaches, statistical approaches and similarity-based approaches for these predictions. PCID[2], ComoR[3] and Comorbidity[4] are some of the existing systems available for comorbidity prediction.

A Successful Deep Learning Method for Extractive Text Summarization using BERT Model

Chandra Kanta Mallick[1], Sambit Sarkar[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Modern healthcare systems have been redesigned with creative thinking to provide people with more sophisticated and capable medical facilities. With the aid of artificial intelligence and machine learning, a variety of intelligent healthcare systems are demonstrated to provide knowledgeable and professional services. Genes contain genetic codes that are stored in the human body. These genes are linked to every one of our inherited characteristics, which are collectively referred to as chromosomes. Normally, each cell has 23 pairs of chromosomes, with each parent contributing half of the total. However, a person is said to have Down syndrome if they carry a complete or partial copy of chromosome 21. It causes developmental delay, reading impairment, intellectual disability, and other medical anomalies. This essay presents a perceptive Ant Colony Optimization (ACO) algorithm for Down syndrome (DS) features feature selection based on density in a prediction and classification system for healthcare.

Introduction:

Nature is an immense source of encouragement for resolving hard and complex problems in computer science since it exhibits an extremely diverse, dynamic, robust, complex, and attractive phenomenon. It always finds the optimal solution to solve its problem maintaining perfect balance among its components. This is the thrust behind bio-inspired computing. Nature-inspired algorithms are meta-heuristics that mimic nature for solving optimization problems opening a new era in computation. For the past decades, numerous research efforts have been concentrated in this particular area. Still being young and the results being very amazing, broadens the scope and viability of Bio-Inspired Algorithms exploring new areas of application and more opportunities in computing. This work proposes a broad overview of biologically inspired optimization algorithm - Ant Colony based Optimization. The proposed intelligent system excludes inappropriate or redundant features before the structure of ACO based classifier. The proposed method has three phases namely pre-processing, Feature Selection, and classification [1]. Comparing the proposed algorithm with existing methods, the presented intelligent system outperformed the other methodologies with a significant improvisation in classification accuracy using fewer features. Thus, early detection and screening of this disability are the best styles for Down syndrome prevention. In this work, Down syndrome detection utilizes a collection of facial expression images and classifies these images based on the age. A compact geometric descriptor is employed for extracting the facial features from the image set. Ant Colony based Optimization algorithm is applied to gather the required data sets and for the classification.

Preprocessor Polymorphic SBD: A Social Big Data Preprocessing Approach

Chandra Kanta Mallick[1], Parikhit Biswal[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Social media has developed into a potent instrument in recent years for people to share their ideas and emotions. As a result, there is a huge growth rate in the generation, analysis, and application of data. The information gathered from multiple posts, reviews, opinions, and updates on social media platforms is highly helpful for obtaining perceptions. Since there are several sources, the quantity, velocity, and format of the data collected have an impact on the information's overall quality. Preprocessing is a critical stage in achieving high-quality data and determines the future course of an effective big data analysis strategy. We are discussing the preparation stage of social big data, which comprises data cleaning, noise identification, data normalization, and data transformation. managing data integration and missing values. Our innovative polymorphic SBD (Social Big Data) preprocessing approach, which yields effective results with multiple social big data sets, is presented in this study. This paper also presents available big data preparation techniques. Following effective and successful data preprocessing, the resulting data set will be well-formed, efficient, and a good starting point for any big data project. analysis strategy to be used subsequently. Along with evaluating min-max normalization, z-score normalization, and data mapping for the given scenario, the paper also gives an example instance.

Keywords: Social big data ; Preprocessing ; Data normalization ; Data mapping ; SBD preprocessor.

1. Introduction

Data is basic source of knowledge and in case of big data [16, 17, 18, 19], it travels through four different phases in its life cycle as shown in Fig. 1. These phases are data generation, data acquisition, data storage, and data analytics. There are large number of data sources like various social websites, news contents, blogs and many more, which come under data generation phase. Data collection phase consists of processes and techniques which are useful to extract and gather data from respective data sources. Collected data is preprocessed and stored for further analysis. Due to tremendous data growth and available disparate data sources, a huge amount of structured, semi-structured and unstructured data is generated which is varied, anomalous and complex in nature. Out of these, it is essential that low quality and irrelevant data should be detected and removed as in prior stages in the data generation and acquisition phases in order to avoid wastage of storage space and processing time [2]. Out of mentioned data sources, now a days social media is very popular among people and billions of people all over the world are generating the data. The social media data is a combination of structured, unstructured and semi-structured formats which have 6 V's property - Volume, Velocity, Variety, Veracity, Value and Variability. So it comes under big data and termed as 'social big data' [1].

Optimizing Renewable Energy and Energy Storage Capacity at the Same Time Using the Hierarchical Control

Debarpita Roul[1], Subhransu Mishra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: A hierarchical optimization approach is developed to simultaneously optimize the capacity of energy storage systems (ESS) and renewable energy generation in order to properly account for the complementing roles of various energy sources and minimize the curtailment of RE in high RE penetration systems. In order to properly account for the regional RE resource characteristics and improve the model's reliability, time sequence simulation (TSS) technology is used. At a lower level, an optimization model is built for ESS capacity evaluation. This work re-formulates this sub-model as a consensus problem, which may be solved by a distributed technique to minimize the system's overall investment costs. This approach helps overcome the high dimensional complexity of time sequence data.
Keywords: Consensus problem, energy storage, planning, renewable, time sequence simulation (TSS).

Introduction: In order to address the energy issue and environmental degradation, renewable energy (RE) development is crucial [1], [2]. The fluctuation and uncertainty of renewable energy sources are noteworthy, and energy storage systems (ESS) can offer adaptability to lessen the effects of renewable energy access to the grid [3], [4].Planning guidelines for ESS and RE capacity in power systems have changed from earlier guidelines. In the past, the grid's RE capacity was limited, and ESS was designed without taking RE characteristics into account. The future economic feasibility of these RE resources depends critically on the simultaneous optimization of ESS capacity and RE generation for the REESS power plant [5]. Conventional approaches often design the generating capacity for ESS and RE separately; the ESS capacity is typically directed by demand [6]–[9], which is easily resolved by achieving certain predetermined reliability indices.

But if the RE generation feature is ignored, the anticipated ESS capacity will also be lowered and ESS flexibility to ensure peak cut would be little. Consequently, there is often a rise in RE curtailment since the anticipated ESS capacity is overly cautious. Furthermore, this approach is inappropriate for power distribution systems in which there is no local demand. As a result, in this study, we maximize the ESS and RE generation capacities concurrently in a system with significant RE penetration. Scholars both domestically and internationally have been focusing on the subject of ESS and RE capacity planning in recent years. A distributed optimization methodology is used in [10] and [11] to optimize the hybrid ESS and RE generating capacity.

Opportunities for Artificial Intelligence in Telecommunications Networks

Dibyalekha Nayak[1], Ananya Prusty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract- While it is true that we are in the middle of one of the Artificial Intelligence hypes, it is also true that the combination of unprecedented computation-power and data availability with new variations of well seasoned Machine Learning algorithms is dramatically changing the optimization strategies for large ICT industries. Especially, the telecommunications industry has always had to deal with complex systems, stochastic contexts, combinatorial problems, and hard to predict users; Machine Learning-aided optimization was just waiting there to be used by telecoms. In this paper, we introduce some basic Machine Learning concepts, and discuss how it can be used in the context of telecommunications networks, particularly in optical and wireless networks.

Introduction -By 2021, global IP traffic will increase by three times compared to the values of 2016 according to the 2017 Visual Networking Index (VNI) report from Cisco [5]. It is forecast that 63% of this traffic will proceed from non-PC devices, showing the highest increment traffic from tablets, smart-phones and machine-to-machine devices. So, by 2021 traffic from wireless devices will be much higher than that originated in wired devices. Also the amount of devices connected to the Internet through wireless will increase dramatically, not only because the amount of smart-phones, tablets and wearables will increase but also because of new paradigms as Machine-to-Machine (M2M) communications and Internet of Things (IoT), where all kind of electronic devices will have wireless communications capabilities. In the report, it is forecast that the number of connected devices will surpass the human population by three times. Also important is the fact that much of this traffic increment will be due to the increment of high-definition (HD) video, which will generate an increment in necessary data rates. In this context, 5G networks are being design to cope with this growing demand of traffic and data rates. To satisfy all these demands new technologies are needed at all network levels, from the wireless access to the wired core network, and from the physical and data planes to the management and control planes. For example, network slicing [7] has been recently introduced and is being thoroughly studied as a means to overcome the heterogeneity of service and requirements of future 5G networks. At this same level, techniques such as Network Function Virtualization (NFV) [15] and Software Defined Networks (SDN) [9] are key enablers for the deployment of 5G. On the other side, optical networks at the core and at the edge of the network are being proposed so as to satisfy low latency and high data rates demands [24].

A Review of Artificial Intelligence in Embedded Systems

Dilleep Kumar Bhadra[1], Sameer Dalai[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:- Advancements in artificial intelligence algorithms and models, along with embedded device support, have resulted in the issue of high energy consumption and poor compatibility when deploying artificial intelligence models and networks on embedded devices becoming solvable. In response to these problems, this paper introduces three aspects of methods and applications for deploying artificial intelligence technologies on embedded devices, including artificial intelligence algorithms and models on resource-constrained hardware, acceleration methods for embedded devices, neural network compression, and current application models of embedded AI. This paper compares relevant literature, highlights the strengths and weaknesses, and concludes with future directions for embedded AI and a summary of the article.

 Introduction -Over the years, the development of artificial intelligence and its applications has greatly reduced the complexity of many machine learning models, making it easier to deploy them on resource-constrained devices. Furthermore, corresponding support for models and algorithms on these devices has emerged. These developments have facilitated a new research direction: embedded artificial intelligence [1–3]. The concept of embedded AI was first introduced in reference [3], which proposed that the IoT could evolve into the Wisdom Web of Things (W2T) and emphasized that embedded intelligence about individuals, the environment, and society could increase the number of users of existing IoT systems, promote environmental sustainability, and enhance social awareness. Recent developments in embedded AI are described in references [1,2], both of which combine embedded AI with IoT technology. The current mainstream research direction of embedded AI is to integrate it with IoT, which includes edge computing with convolutional accelerator [4] and load distribution [5]. Reference [6] mentions that the combination of embedded intelligence and IoT is the future direction of development. In addition, edge computing can be combined with artificial intelligence, resulting in what is known as edge intelligence [7]. The current development of embedded AI is two-way: the optimization of AI models and algorithms reduces the difficulty of deploying them on embedded devices, while hardware accelerators in embedded devices increase support for AI models and algorithms. Furthermore, hardware resources are being developed, and AI is rapidly advancing in mobile devices. For example, reference [8] describes the deployment of neural networks on cell phones, and there are also neural networks specifically designed for mobile devices, such as MobileNet [9].

CSR during Covid-19: A crisis-fuelled opportunity for enlightened capitalism

Minati Das[1], Barsha Baliarsingh[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This paper explores the concept of corporate social responsibility (CSR) in the context of the COVID-19 pandemic, highlighting how this crisis has presented an opportunity for enlightened capitalism. The pandemic has brought about unprecedented challenges for businesses, communities, and societies worldwide, exacerbating existing social and economic inequalities. However, amidst these challenges, many companies have stepped up their CSR efforts, leveraging their resources and expertise to support frontline workers, vulnerable populations, and local communities. Drawing from a synthesis of theoretical perspectives and empirical evidence, this study examines how CSR initiatives during the pandemic have not only provided much-needed relief and support but also fostered a broader shift towards enlightened capitalism—a form of capitalism that prioritizes societal well-being alongside profit maximization. Through case studies and analysis of CSR practices across different industries, this research sheds light on the transformative potential of CSR in times of crisis, offering insights into how businesses can contribute to building a more resilient, inclusive, and sustainable post-pandemic world.

Introduction:

The COVID-19 pandemic has brought unprecedented challenges to businesses and societies worldwide, disrupting economies, livelihoods, and social norms. In the face of this crisis, the role of corporate social responsibility (CSR) has become more critical than ever. CSR, traditionally viewed as a means for companies to contribute to societal well-being while also enhancing their reputation and brand image, has taken on new significance amidst the pandemic.The COVID-19 crisis has highlighted the interconnectedness of businesses and communities, underscoring the importance of corporate citizenship and responsible business practices. Many companies have responded to the crisis by mobilizing their resources, expertise, and networks to support frontline workers, healthcare systems, and vulnerable populations. From donating medical supplies and equipment to providing financial assistance and relief efforts, these CSR initiatives have played a crucial role in addressing immediate needs and supporting recovery efforts.However, beyond providing short-term relief, the COVID-19 pandemic has also presented an opportunity for a broader reevaluation of the role of business in society. This crisis has underscored the importance of a more holistic approach to capitalism—one that prioritizes societal well-being alongside profit maximization. In this context, CSR has emerged as a catalyst for enlightened capitalism, signaling a shift towards a more sustainable, inclusive, and resilient business model.

Data Augmentation Contribution to the Preventive Identification of Vocal Fold Precancerous Lesions

Bhramarabara Biswal[1], Puspita Roy[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This research develops an automated premalignant lesion identification system based on human voice production theory. The current framework is especially interested in the detection of vocal fold precancerous lesions. As early cancer identification is crucial and closely linked to medical interventions, the current study offers a low-time; non-invasive method for early cancer screening. A speech signal can be picked up and analyzed using a basic microphone. Our objective is to separate the acoustic speech signal from the voice source signal. The sound source produced by the vocal fold is changed when a precancerous lesion appears. Analysis of features taken from source voices is thorough. However, extracted characteristics are enhanced based on features analysis because there aren't enough voice samples. Data augmentation of the extracted features is achieved by the adopted technique, which is based on boxplot, histogram, and probability density.SVM processing, is utilized in learning and testing using augmented features. Four criteria were used to analyze the performances: accuracy, precision, specificity, and sensitivity. When augmented features are combined according to PC Analysis, an accuracy of premalignant lesion identification about 95% is accomplished. It is shown in this study that is possible to detect the premalignant lesions with acceptable and fairly sensitivity, specificity, precision and accuracy. The performances are improved when data augmentation process is used.

Keywords: lesions, Data augmentation, box-plot, histogram, probability density, SVM processing, premalignant

Introduction: The term laryngeal cancer describes cancer of the larynx or throat. It happens when aberrant cells divide and multiply out of control or order. The nineteenth most prevalent type of cancer is laryngeal cancer. SAWhole cancer accounts for 3% of cases, placing males at 13th and females at 22nd in frequency. Treatment options for laryngeal cancer range from radiotherapy to total laryngectomy. When a tumor just affects one vocal fold, grows to a modest extent, or even paralyzes it, radiation therapy is still an option. A complete laryngectomy is required when it crosses the larynx. The treatment of laryngeal cancer remains a crucial and challenging medical intervention, even in the most basic of cases. Individuals may lose their ability to speak as well as their entire larynx.In the medical sector, it is well knowledge that the sooner cancer is identified, the easier it will be to treat.

Evaluating Auto Grading Systems by Comparing Jailed Sandboxes and Containers

Parimal Giri[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Auto grading systems are becoming more and more necessary as a result of the ongoing increase in enrollment in computer science courses. These systems have traditionally been used to grade assignments in either a virtual machine (VM) or a caged sandbox environment. Since each submission in a virtual machine (VM) has its own instance of the guest operating system and virtual hardware running on top of the host system, nothing running within the VM can communicate with the host or any other VM. Although running student submissions with suitable, constrained resources is possible, employing these virtual machines (VMs) is expensive in terms of system resources. Conversely, jailed sandboxes limit the process to specific system directories and use a security mechanism that limits the process to the host itself, using less resource. Unfortunately, the solution suffers from running on the host machine because new courses use auto grading and have their own set of possibly incompatible needs for system packages and programming languages. Containers have been used more and more in auto grading systems and the software engineering industry over the past few years. Similar to virtual machines (VMs), containers offer isolation benefits at a lower resource cost than operating in a failed sandbox environment. We compare the running times and memory consumption of the two systems, present the implementation of both a container-based auto grader and a failed sandbox, and talk about the total resource usage.

Keywords: Containers, Jailed Sandbox, Auto grading, virtual machines

INTRODUCTION

Industry demand for computer specialists is still rising. Universities simultaneously have to teach and mark larger classes due to an increase in enrolment in computer science courses. Many are using home-grown or commercial auto grading systems to deliver automated feedback to students on their work in order to handle this surge. These systems are becoming more and more viewed as essential tools for teachers since it is no longer possible to give each student's homework assignment accurate manual feedback. Furthermore, educators may prefer to employ an assortment of programming languages and system resources in their instruction. According to a UK research, thirteen distinct programming languages were utilized in CS1 courses.

Context, Approach, and Takeaways from Integrating a Data Analytics System in Auto Manufacturing

Parimal Giri[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Using and integrating a data analytics system in manufacturing is a challenging endeavor requiring a variety of expertise and frequently necessitates handling a Brownfield situation. In this context, this article intends to serve as a guide for researching the history and rationale behind the industrialization of a data analytics system in manufacturing, offering a methodology, lessons learned, and possible use cases. The digitalization case study of an automotive manufacturing facility is presented as an implementation of this methodology, and it contains scenarios pertaining to process optimization, early parameter deviation detection, and quality enhancement. It has been shown that, even at this early stage of implementation, these steps give the manufacturer an economic edge in terms of increased production and efficiency. This methodology can be used to other industrial domains in addition to the automotive industry.

Keywords: automotive; manufacturing; data analytics; digitalization

Introduction: The automotive sector has long been a leader in process innovation and the application of new technologies. The automobile industry has been a leader in the adoption of these kinds of technologies in the age of digitization, data analytics, and business intelligence. Owing to recent efforts at digitization, traditional automotive companies now routinely employ a wide range of information technologies to handle various tasks. However, since these systems typically restrict access to their data, interoperability, sharing, and accessibility are challenging. Today, the majority of the global manufacturing industry experiences this.

Although the idea of a centralized data analytics system is not new, recent technology advancements have made it more relevant than ever. The concept is to build the instance of the part by storing all production variables (temperatures, energy, etc.) with the generated part (a car, for example), building a feature vector with all related variables during the manufacturing process. Due to the various, heterogeneous, and multigenerational nature of the data sources, the variable agglutination process is not readily apparent. In light of this, Stellantis (formerly Groupe PSA), one of the largest automakers in the world, has spent the last few years working on a digitization initiative at its Valencia, Spain, factory. This paper provides an overview of the factors that impact the integration of data analytics in manufacturing, along with a set of lessons learned that serve to clarify the process.

Is a Mobile Application Platform a Good Step in the Right Direction to Improve Access to HIV/AIDS Healthcare Information in Tanzania?

Sanjay Kumar Sarangi[1], Parimal Giri[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This survey study assesses people's comfort level and acceptance of visiting HIV/AIDS Care and Treatment Centers (CTCs) to obtain healthcare information. Additionally, the survey looks into whether improving the distribution of HIV/AIDS healthcare information in Tanzania may be accomplished through a mobile application platform. The Tanzanian city of Dar es Salaam served as the study's location. A total of 208 people participated in the structured questionnaire-based study, 45 of them were HIV/AIDS healthcare professionals. The computer programs Python and WEKA were used to examine the gathered data. The study's conclusions showed that: 24.5% of respondents said they felt uncomfortable visiting HIV/AIDS CTCs, expressing fear of exposure and stigma; nearly one-third (31.3%) of respondents said they would rather look for HIV/AIDS-related information online; 78.5% said they would prefer to have access to official mobile applications for HIV/AIDS healthcare information; 64.4% of HIV/AIDS practitioners said a mobile application platform was necessary for the delivery of HIV/AIDS healthcare information; and more than two-thirds of HIV/AIDS practitioners said they could provide people with online resources for HIV/AIDS information. The conclusion is that in order to give HIV/AIDS healthcare information, healthcare practitioners must have a mobile application platform. As a result, the mobile application platform will enable people to regularly and discreetly obtain HIV/AIDS healthcare information on their mobile devices without worrying about being discovered, just as they would if they visited CTCs on a regular basis.

Keywords: *HIV/AIDS, Mobile Application, HIV/AIDS Healthcare Information, HIV/AIDS CTCs*

Introduction: Acquired Immunodeficiency Syndrome (AIDS) and the Human Immunodeficiency Virus (HIV) have killed millions of people worldwide since they were first identified. Combating HIV/AIDS has proven to be an extremely difficult task for the world's health community, especially for those in Sub-Saharan Africa (SSA). By 2015, there were about 36.7 million HIV-positive individuals living in the world, with over two thirds of them residing in Sub-Saharan Africa. In Tanzania specifically, there were over 36,000 HIV/AIDS-related deaths in 2015 and approximately 1.4 million people living with HIV (PLHIV). Many countries in Sub-Saharan Africa (SSA), including Tanzania, have implemented socio-political and economic strategies to combat the HIV epidemic.

Comprehending Workaround Theory in Practical Applications

Sunita Satapathy[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This paper describes the current state of workaround research with reference to Alter's steps for creating workarounds. A workaround is a method by which a user circumvents the official system in order to accomplish specific objectives. In reaction to perceived system limitations, the activities may involve disobeying established policies or evading internal system procedures. Workarounds introduce both beneficial and negative results for organizations because they are, up until this point, perceived as an improvisation of the formal structure. The purpose of this study is to document the application of the Theory of Workarounds in the explanation of workaround construction in research in particular, the use of the seven procedures outlined in the Theory of Workarounds. Because of this, we retrieved the top ten cited publications from 2014 and compared them with the top ten most recent articles from Google Scholar, as indicated by Dennehy and Sammon . In order to comprehend the state of the art of the workaround studies, we then categorized those papers using the Theory of Workarounds. This study's contribution is that we show how to use the Theory of Workarounds to document the ways in which researchers justify the creation of workarounds in their publications. As far as we are aware, this is the first study that has done that. Additionally, we add to the corpus of knowledge on information systems (IS) on post-IS deployment. We identify unexplored research directions in workarounds at the conclusion of the study.

Keywords: Workarounds; Google Scholar; IS deployment

Introduction:

In organizations, computer workarounds are a common aberrant behavior. An actor chooses to pursue a different way to accomplish his or her working goal rather than following the set rules and regulations that are part of a system. The path is not part of the system and is typically unofficial. Currently, a workaround is a creative solution to a mismatch that exists between the capabilities of the software system and the actual circumstances .Organizations may experience benefits or drawbacks from this workaround adaption. Positively, it might offer a prompt reaction to obstacles, anticipations, and mishaps. In a similar vein, it encourages both improvisation and innovation to address organizational dynamics Workarounds have drawbacks as well, including lower information quality and an increase in strategy misalignment within the company. It is important to recognize that each workaround's impact on outcomes varies depending on the organization.

6Genesis Flagship Program: Building the Bridges towards 6G-Enabled Wireless Smart Society and Ecosystem

Subrat Kumar Mohanty[1], Samyak Kanti Jena[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: In this paper, an initial vision of what the sixth generation mobile communication system (6G) might be is presented. This is done through the primary ideas of the 6Genesis Flagship Program (6GFP), a recently formed Finnish academic and industrial consortium aiming at developing key enabling technologies for 6G. 6GFP is an eight-year large-scale research initiative set to ultimately develop, implement and test key enabling technologies for 6G. Motivations, visions, trends and expectations for 6G are first discussed to set the ground for further development. Four main research areas are proposed as the starting point, encompassing not only wireless communications but also computer science, electronics and material science as well as applications and services. The paper provides an in-detail list of technical topics going to be studied in this program, and in general, worth considering for everyone planning developing beyond 5G technology. The paper also shed some light on how the research will be implemented, showing the logic and relationships between the research areas, discussing already selected promising enabling technology for 6G, as well as envisioning how the proof-of-concept of the developed system will be carried out. An existing state-of-the-art 5G network will be used as the starting point for developing and testing the novel concepts and technologies created in the program.

Keywords: Mobile Communications, 5G, 6FP

Introduction: Looking back at the evolution of mobile communications over the past decades, one can see that there is similar development cycles related to each generation (G). Typically, developing a new mobile generation takes one decade, while its further usage extends for at least another decade. The developing process includes definition, specification, standardization and industrial implementation of the technology. Academy, research organizations, industry and regulators cooperate on a global basis to develop a new generation of mobile communications. As 5G is currently in the final phase of developing and close to its massive commercialization, expected to begin approximately in 2020, the research and industrial communities are starting to concentrate in the development of the sixth generation (6G) mobile communication system. Launching of 6G, including commercialization and deployment, is expected to occur around 2030, and preceded by a decade of development. In this paper, we introduce the 6Genesis Flagship program, an all-encompassing Finnish initiative focused on the development of a complete 6G ecosystem. The key goals of the 6Genesis Flagship Program (6GFP) include supporting industry in the final development of 5G, developing fundamental enabling technologies for 6G and accelerating the process of digitalization of society.

A Survey of 6G Wireless Communications: Emerging Technologies

K. Murali Babu[1], Karthik S.[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIET, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: While fifth-generation (5G) communications are being rolled out around the world, sixth-generation (6G) communications have attracted much attention from both the industry and the academia. Compared with 5G, 6G will have a wider frequency band, higher transmission rate, spectrum efficiency, greater connection capacity, shorter delay, wider coverage and stronger anti-interference capability, so as to meet the various network requirements for industries. In this paper, we present a survey of potential essential technologies in 6G. In particular, we will introduce index modulation, artificial intelligence, intelligent surfaces, and terahertz communications technologies in detail, while giving a brief introduction to other potential technologies, including visible light communications, blockchain-enabled wireless network, advanced duplex, holographic radio and network in box.

Keywords: 5G, 6G, Blockchain enabled Wireless Network

Introduction: Fifth-generation (5G) networks are being deployed commercially . However, the rapid growth of data-centric intelligent systems has brought significant challenges to the capabilities of 5G wireless systems. For example, the 5G air interface delay standard of less than 1 millisecond (ms) is challenging to meet the air interface delay of less than 0.1ms required by haptic Internet-based telemedicine [2]. To overcome the performance limitations of 5G to deal with new challenges, countries are researching the sixth-Generation (6G) mobile communication system. Upcoming technologies such as artificial intelligence (AI), virtual reality, and the Internet of Everything (IoE) require low latency, ultra-high data rates and reliability. Past generations of wireless networks utilize micro-wave communications over the sub-6 GHz band, whose resources are almost used up [8]. Hence, the Terahertz (THz) bands will be the major candidate technology for the 6G wireless communications [4,8–12]. Due to the propagation loss, the THz will be used for high bit-rate short-range communications [13]. Besides, the 90-200GHz spectrum is often not used in the past generations of wireless networks. The sub-THz radio spectrum above 90GHz has not been exploited for radio wireless communications yet; thus, it is envisioned to support the increased wireless network capacity [14]. 6G will undergo the transition from radio to sub-terahertz (sub-THz), visible light communication and terahertz to support explosive 6G applications.

6G Communication: Next Generation Technology for IoT Applications

R. Siva Kumar[1], Sailaja Reddy[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

In the revolution of Industry 4.0, 5G communication plays an important role in connecting various IoT devices. 5G, an up-gradation of 4G, has shown the significant throughput over 4G mobile communications owing to its ample of benefits such as high data rate, huge bandwidth, low latency etc. However, there is the drastic transformation of technology from Industry 4.0 to Industry 5.0 for Internet of Things (IoT) applications where artificial intelligence and machine learning are applied for real time applications. Subsequently, to achieve uninterrupted performance, the main requirement is to have flawless internet connectivity. This paper describes the emergence of 6G communications in the field of Industry 5.0 along with the limitations of 5G communication for IoT applications. Index Terms—6G mobile communication, Internet of Things (IoT), Industry 4.0, 5G communication, Industry 5.0.

Keywords: Internet of Things, Industry 4.0, 6G mobile communications

Introduction:

Evolution in mobile communication has witnessed the changes in the technologies, whether it is related to the voice/data traffic or the architecture of cellular communication [1]–[3]. Over the decades, the improvement in the data rate from 2G (64 Kbps) to 3G (2 Mbps) communication has been observed. Also, with the increase in demand of services such as, human machine interaction, online streaming etc., the improvement in the data rate in the range of 50 -100 Mbps for 4G, LTE and Long Term Evolution (LTE)-Advanced system has been initiated [1], [3], [4]. This includes high-quality video streaming, real time audio visual gaming, video conferencing and many other application [1], [3], [4]. Therefore, it is intuitively important to understand the data traffic (or mobile data traffic) that has been currently in used. In order to understand the mobile data traffic, initially the examination of data flow is required. It provides the information about various parameters of data communication, viz. the bytes parameters, requirement of data storage, consumption of data byte rate.

The Application of Hyper parameter-tuned Machine Learning Techniques to Predictive Modeling and Analytics for Diabetes

Sunita Satapathy[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Any prediction model's success depends on a classifier's accuracy. The more resilient the system built upon an accurate classifier, the more accurate it is. In this work, a Python illness prediction model is created to categorize patients with diabetes. A comparative comparison of the effectiveness of machine learning classification algorithms is conducted in the research article. The performance of the classifier can be improved by adjusting the hyper parameters and using various dataset preprocessing techniques. Four models have been developed in this experimental investigation, and each model is based on a dataset that was acquired using various PIMA dataset preparation techniques. The classification algorithms for K-Nearest Neighbors, Decision Trees, Random Forests, and Support Vector Machines have been applied to each model, and the hyper parameters of the classifier have been adjusted to improve the performance of these models. Additionally, a thorough analysis was conducted to determine the optimal prediction model, optimal classifier, and efficient preprocessing techniques. A prediction model's primary metric is the F1 score. With the removal of samples with missing or unknown values from the PIMA dataset, the Random Forest classifier for dataset model D3 achieves the maximum F1score and accuracy, which are 75.68% and 88.61%, respectively.

Keywords: Hyper parameter, K-Nearest neighbors, Decision Trees, Random Forests, Support Vector Machines, PIMA dataset

Introduction: The primary energy source is glucose, which is found in human blood as sugar. Diabetes is an illness that results in a high blood sugar level and severely impairs the extraction of glucose from blood. It is caused by a hormone called "insulin," which controls the body's blood sugar levels. In a diabetic patient, either the body cannot absorb the manufactured insulin or the pancreas does not make enough of it. Diabetes has serious health effects, including blindness, heart attacks, and renal failure. Despite the fact that it is incurable, frequent exercise, a good diet, and sustaining bodyweight exercise can reduce its risks. The three forms of diabetes that affect humans are type-1 diabetes, type-2 diabetes, and gestational diabetes. When a person has Type 1 diabetes, their pancreas cannot make enough insulin due to the destruction of their beta cells, and their blood glucose level rises. Another name for type 1diabetes is Diabetes mellitus that Depends on Insulin (IDDM).Diabetes type-2, commonly referred to as Insulin resistance that has formed in body cells is the cause of non-insulin-dependent diabetes mellitus (NIDDM), also known as adult-onset diabetes.

Small Signal Stability of Synchronous Motor-Generator Pair for Power System with High Penetration of Renewable Energy

Eepsita Sridevi[1], Rakesh Singh[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2] Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: As the amount of renewable energy in the power system increases, the use of many converters increases the risk of safety and stability problems in the power system. These problems include inadequate damping to control oscillation, insufficient capacity to support current, voltage, and frequency, and an unreliable inertia response. The synchronous motor-generator pair (MGP) is suggested as a novel grid-connection technique to address these instability problems. First, an analysis of MGP's primary framework and application landscape is conducted. Second, the stability of the MGP tiny signal is determined using the classical model. The MGP may produce greater damping than a single generator with the same mass block, as demonstrated theoretically. Next, an experimental 5kW MGP system is constructed.

Keywords: High penetration of renewable energy, synchronous machine, motor-generator pair (MGP), small signal stability, damping characteristic.

Introduction:

Renewable energy has grown significantly in the last several years. The combined installed capacity of solar and wind energy worldwide as of the end of 2018 was 1044GW [1]. Furthermore, 80% or even 100% of energy comes from renewable sources in some places [2], [3]. A significant percentage of renewable energy power applications has been pledged and promoted by an increasing number of nations and organizations. First off, the power system's capacity for dynamic control is weakened by an unreliable inertia response. Furthermore, power electronics converters are not very resilient to changes in active power and frequency, which can quickly cause major problems with power grids. Second, the new energy grid-connected converters have insufficient voltage traversing ability and voltage tolerate level for the voltage sags and transient overvoltage of AC/DC hybrid power grids, which readily leads to large-scale offgrid of new energy. Furthermore, the frequency spectrum of the grids is expanded by the power electronic converters' quick reaction qualities.

Imagining Through Fuzzy Based Methods

GSS. Rao[1], Sallu Reddy[2]

[1,2]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

Digital image gets corrupted due to unlimited and number of unrecognized sources. The denoising of image in algorithmic approaches uses a sliding window that first detects the noisy or corrupted pixel and denoises by comparing with the nearby pixels of same window. The limitations of conventional filters for image denoising and their not-so-efficient accuracy are some major flaws that seek attention. In this paper, the improved fuzzy logic is implemented for image filtering. The medical images are sourced for experimentation and the design is tested on three noises i.e., Poisson, Gaussian and salt & pepper noises. Four parameters are selected to evaluate the performance of proposed system (PSNR, SSIM, IQI and IEF). Proposed architecture works well with salt & pepper and Poisson noises. As noise density increases the performance of system is much better compared to performance of traditional median filter.

Keywords: Image Denoising; Fuzzy Decision; Median Filtering; PSNR; SSIM; IQI; IEF

Introduction:

In digital image capturing the various sources add spurious and extraneous information known as noise. This information in general terms is referred as noise that corrupts the original pixel information. Robert A. Schowengerdt [1] in his research performed a detailed analysis of noise and their tendency of image corruption. The salt and pepper noise is occurred due to inefficient channels or due to transmission errors. This noise has two intensity values high and low. High values have intensity 1 and low have 0. The white and black combination of noise in image has given it a name salt and pepper. Poisson noise is an impulsive noise that occurs at given interval based on probability of occurrence. This type of noise is either present or absent in noise and cannot be scaled on measuring devices. Another form of statistical noise called as Gaussian noise is the mixture of every single possible noise that can affect the image. The sources of this noise are undetermined and PDF of noise is equal to normal distribution or Gaussian distribution. The noise in any image is vulnerable for studies and detection of alien elements. In medical language the term 'texture' is used to locate the noise. The noise reduction methods attempt to maximize the signal to noise ratio and conserve edges and lines in any image.

An Ultimate Method for the Development of Convolution Neural Networks with Accuracy in Human Activity Recognition

Hiren Kumar Praharaj[1], Suprakash Dash[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2] Maharaja Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract - Numerous applications exist for automated human activity recognition, including fitness tracking, monitoring the health of the elderly, and smart home systems that can adjust their behavior. Convolution Neural Networks (CNNs) are being used more and more in deep learning for the recognition of human activities. Nonetheless, the network architecture has a significant impact on CNN performance, and hyper-parameter selection is typically done by hand. The design of CNN architectures has been automated using a variety of techniques. The study suggests optimizing the architecture of one-dimensional CNNs for the detection of human activity using an evolutionary-based method. Three sets of accelerometric data are used to test the proposed methodology. The experimental findings demonstrate that the evolutionary-based CNNs' accuracy on the WISDM Act tracker is comparable.

*Keywords***:** Convolutional neural networks; Genetic algorithms; Neural network architecture design; Deep learning; Human activity recognition.

Introduction

Human activity recognition (HAR) has a number of applications such as in elderly healthcare monitoring, fitness tracking and in various smart home systems that can adapt to the inhabitants' behavior. Recently, deep learning methods have been gaining popularity in HAR due to their ability to recognize more complex patterns in the data compared to shallow neural networks. One very popular deep network is the Convolutional Neural Network (CNN) [20]. The main advantage of CNNs over classical methods is their ability to automatically extract relevant features, usually directly from the raw signal. This feature extraction is done by the convolution of the input signal with filters, the result of which is usually passed through a pooling layer that reduces the size of the data and introduces translational invariance. Often CNNs consist of several successive convolutional and pooling layers, which lead to a hierarchical extraction of features – with each layer the data is represented in a more abstract way. Typically after these layers the convolutional networks contain a fully connected multilayer perception, which performs the classification according to the extracted features.

Influence of Vertical Loads on the Lateral Performance of Pile Foundations

Sipra Mallick[1], Seema Dutta[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Few studies have examined the behavior of piles subjected to mixed loadings, even though pile foundation loads are typically a combination of vertical and lateral components. The results of those few experiments on the impact of vertical loads on the lateral response of piles were not entirely uniform. The impact of vertical loads on the lateral performance of pile foundations is assessed by a sequence of three-dimensional finite differences calculations. Three idealized soil profiles—a two-layered stratum, a layer with modulus proportionate to depth, and a 24 homogenous soil layer—are taken into consideration for the sandy and clayey soil types. The soil is idealized using the Mohr-Coulomb constitutive model with a non-associated flow rule, and the pile material is modeled as linearly elastic. In certain situations, soils are further simulated using more complex models (i.e., CYsoil for sandy soils and MCC for clayey soils) to validate the study's conclusions. According to numerical data, especially in the loosest condition, the lateral resistance of the piles in sandy soil does not seem to change significantly with the vertical weight. It is unconservative to 31 design piles in clays assuming that there is no interaction between vertical and lateral loads, and the existence of a vertical load on a pile immersed in homogeneous or inhomogeneous clay reduces its lateral capacity. Furthermore, the present findings suggest that the properties of the soil around the piles as well as those beneath their tips determine how vertical loads affect the lateral reaction of piles embedded in multi layered strata.

Keywords: Pile foundations, Vertical loads, Lateral loads, Finite differences, Mohr circle.

Introduction: The influence of vertical loads on the behavior of laterally loaded piles in sand and clay was investigated using numerical modeling. The computer programme FLAC3D 476 was used to conduct the numerical models, and full-scale load and laboratory model testing data were used to verify the models. Subsequently, a parametric study was conducted using the validated numerical model, taking into account various soil configurations and parameters, to assess the lateral capacities and bending moments of concrete piles that were exposed to both vertical and lateral loads. The present paper evaluates the effects of vertical loads on the internal forces and lateral response of piles installed in four idealized soil profiles—a two-layered stratum, a clayey layer with undrained shear strength that is proportionate to depth, a uniformly sandy clayey layer, and a clayey layer with constant undrained shear strength.

Sodium-Sulfur Energy Storage Technology: A Two-Stage Stochastic Optimization Approach for Hybrid Renewable Power Systems

Jagatjyoti Ranjan Das[1], Neelesh Rout[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Energy storage systems (ESS) are seen to be one of the most important components for reducing the effects of renewable energy variability and enhancing the viability of building a sustainable electricity grid. In order to preserve both the economic and operational sustainability of a renewable integrated power grid and the quality of the electricity produced, it is necessary to balance the high cost of ESS with its optimal capacity and allocation. An large ESS leads in a costly capital expenditure and, in some situations, increases the system losses when it comes to ESS sizing in terms of optimal power (kW) and energy (kWh) capacity. On the other hand, an inadequate ESS has a notable effect on the dependability and accessibility of the power grid.

INTRODUCTION

These days, producing electricity from renewable energy resources (RES) is highly recommended in order to meet the always rising demand for power. Among the most favored RES technologies are solar and wind power. However, most RESs present a number of difficulties in balancing their features with those of the diesel generator [1], [2]. Generators often exhibit varying degrees of fluctuation [3], which are controlled to maintain grid functionality. In the MG, ESS is a significant dispatchable energy source. It preserves the financial significance of the MG components while guaranteeing power quality and supply continuity to the power network in both islanded and grid-connected modes. The study in [17] illustrates the use of ESS with the goal of mitigating the erratic production of hybrid renewable energy sources (HRES) that are made up of wind and solar power. The power network's dependability and security are naturally enhanced by the ESS's smooth output power profile [18]. However, given the high cost of the current ESS technologies, an ideal size is relevant. The identification and selection of an energy-storage system (ESS) technology that complies with grid power quality criteria while taking renewable integration into account is a complex problem. While many ESS technologies may be taken into consideration to enable energy buffering operation and get over the technical difficulties in integrating renewables, careful consideration is also required to keep ESSs operationally and economically viable.

Energy Hole-based Mitigation Technique for Wireless Sensor Networks

JVN Ramesh[1], Shridhar Patro[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]NMIET, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

The energy hole issue in wireless sensor networks (WSN) must be fixed in order to significantly increase network lifetime. An effective Mitigating Energy Hole based routing algorithm (MEHRA) for WSN is presented in this paper. In the initial phase of the network initialization process, the network is split into a few regions and then into sectors based on equiangular wedges. A Head Node (HN) will be selected for each sector based on energy and distance when the network is divided into regions and wedges. In addition, the sensor nodes within a given sector establish a chain in order to communicate with their HN. From the farthest node in the HN, the chain construction process has started, and each node will select its chain neighbor by executing avaricious algorithm. The HN gathers data from both its predecessor and its own sector, transmits the combined data to its successor HN, and continues this process until the data reaches the BS. A comprehensive series of experiments was conducted in order to demonstrate the superiority of the MEHRA method. The resulting simulation result confirmed the MEHRA technique's excellence in several areas.

Keywords: Energy hole problem, WSN, Routing technique, Base station, Head node

Introduction

Wireless Sensor Networks (WSNs) comprise a group of resource limited sensor nodes [1], which are applied extensively in domains like ecological observation, armed forces, disaster prediction, farming, remote patient observation, factory mechanization, and so on. The primary role of the sensor nodes is to gather the related data from atmosphere and forward them to Base Station (BS) or sink by multi-hop transmission. The nodes placed nearby the sink in multi-hop WSNs should forward maximum traffic when compared with alternate distant nodes. The topological demerits result in huge power exhaustion and led to energy holes or hot spot problems. Consequently, external layer sensor nodes are not applicable to send the data to BS and it limits the network duration even under the presence of maximum Residual Energy (RE). Fig. 1 portrays the overview of energy hole problem where the nodes placed nearby BS are comprised of minimum residual battery power, and nodes placed away from the sink are composed of maximum residual battery power. Also, energy hole problem occurs when the nodes receive or transmit massive data packets when compared with alternate nodes [2]. In multi-hop system, the entire system is confused because of the energy hole problem.

The Use of Recursive Feature Selection and Elastic Net Feature Selection on Media Piracy

K. Venkata Ramana[1], Raman Singh[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: In the modern era, selecting the best feature from the high dimensional dataset with multiple variables has become a challenging task. It has become very prominent to train the model with relevant features eliminating the un-necessary feature. The traditional method feature selection methods are performing their excellence in the field of selecting the feature by creating a subset of feature from the dataset. Though it performs well, sometimes they are not helpful in learning the model by selecting single feature with single classifier. This overbids the model and leads to unnecessary confusion. Therefore, this work implements a Robust Framework of Ensemble feature selection Technique. The ensemble learning combines two or more outputs in which they may be the same type or different types, and they may or may not have been trained on the same training data. This study aims to extract the false news sub features by combining multiple subsets of features using ensemble technique. To get an efficient feature on the fake news opinion pool the Feature Score, Recursive Feature Selection and Elasticnet Feature selection has been used. Finally, feature importance has been created for each feature acts as an aggregator to select the final subset of features. The performance has been analysed with 5 classification algorithms of SVM RF, Logistic Regression, Gradient Boosting Classifier and Ridge classifier. The overall performance with accuracy has been evaluated with each classifier. The best classifier is determined by the highest accuracy rate. Our proposed implemented framework determines that Random Forest acquires a better performance in Accuracy.

Keywords: Feature Score; Recursive Feature Elimination; ElasticNet; Feature Selection; Support Vector Machine; Random Forest; Logistic Regression; Ridge Classifier.

Introduction: Data is the basis for everything in machine learning. Massive amounts of data are streaming every nanosecond. It is necessary to arrange them in a systematic manner. It is essential to preserve the valuable ones, eliminate the superfluous ones, and develop a long-term solution. The investigators specialize in carrying out investigations to tackle these issues involving high-dimensional data and variables.[1] Additionally, they wish to draw important conclusions from these high-dimensional variables and data. It's important to keep in mind that not every feature is used when training our model. Our model can be greatly improved by utilizing feature correlation and non-redundant data. For this reason, choosing features for high-dimensional data is essential and must be done carefully. Feature Selection Technique is one of the best models to create a subset of training samples since it is essential that we solve problems with fewer training examples of qualities to generate a more superior result.

An analytical view of virtualization and placement management in Cloud Technology

M. Pavan Kumar[1], Sukanta Kishore Jena[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: The "on-demand" service models offered by the cloud, which are made possible by a combination of hardware and software, are widely recognized. Large virtual machines (VMs) are hosted by cloud computing services for demanding scenarios such as virtualization. The large-scale cloud data centers' growing need for network, storage, and processing resources is effectively met by virtualization. Modern resource management representations take into account fault tolerance, distributive service availability, proactive server maintenance, load balancing, power management, and virtual machine (VM) migration. One of the most difficult and ambitious problems in cloud infrastructure management is where to put virtual machines (VMs). There are a number of methods for doing this. This survey offers an analytical perspective on cloud computing from the standpoint of virtualization, along with current virtual machine (VM) placement techniques for managing resources and using electricity consumption more wisely.

Keywords: Cloud Computing, Virtualization, VM Migration, Data Centers.

Introduction: Cloud computing is a model which enables accessible, on-demand access to the shared computing resources such as applications, services, storage, networks and servers [1]. It rapidly provides resources with minimum control management effort and service provider interaction [2]. The underlying concept of cloud computing is to bring the specific services from shared resources with the help of virtualization technology [3]. The aim of cloud computing model is to produce a powerful usage of distributed resources, assign them along to make high turnout and to control large-scale computation efficiently and economically [4]. Cloud computing architecture is classified into three levels of model [5]. Cloud computing services are (1) Infrastructure-as-a-Service (IaaS): IaaS is basically hardware and software resources that operate it all like servers, networks, storage and operating systems. Users of IaaS layer manage to support applications and functional systems, however there is no requirement for server, networking hardware and storage.(2) Platform-as-a-Service (PaaS): PaaS is a collection of services and tool developed to create coding and deploy applications fast and efficiently. Cloud computing replaces machine language by providing the system to execute software system of the user and (3) Software-as-a-Service (SaaS): SaaS applications are developed for end-users service over the network. The cloud users interact directly with this cloud software system and pays for usages. Popular examples of SaaS supplier is Google Apps [8][9].

Model Tests using Recycled Aggregates as Filler Material on Regular and Geo-synthetic-Encased Stone Columns

Sachikanta Pradhan[1], Sai Shankar Panda[2]

[1,2]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Recycled industrial and construction waste offers a sustainable substitute for ground improvement utilising the vibro replacement method because natural aggregates are extremely scarce. Recycling construction waste meets the need for its disposal and provides a practical solution to the depletion of natural resources. The purpose of this project was to provide a long-term substitute for natural aggregates used to make stone columns. The purpose of this experiment is to determine if concrete waste and railway ballast are suitable substitutes for stone column material. These materials have undergone extensive laboratory testing to determine the necessary strength for use in both Geosynthetic Encased Stone Columns (GESCs) and Ordinary Stone Columns (OSCs). By building unit cell stone column models of various recycled aggregates and contrasting their load settlement behaviour with that of natural aggregates, researchers may assess the increase in capacity of both OSCs and GESCs through the use of the California Bearing Ratio (CBR) test in a laboratory setting.

Keywords: Recycled aggregates, Ordinary stone column, Geo-synthetic encased stone column, CBR, natural aggregates

Introduction

When utilized as the material for stone columns, recycled aggregates have the following advantages: First off, it lessens the detrimental effects on the environment caused by the overuse of natural aggregates. Second, it lessens the need for debris disposal, which minimizes the need for a landfill. It has been determined that a number of potential materials could be used as filler material for stone columns. The material that will be utilized to build the stone column must be strong, hard, and chemically stable in addition to meeting certain requirements for inertness. Finding the best way to increase the use of industrial wastes including steel and iron slag, coal bottom ash (CBA), pulverized fuel ash (PFA), silica-magnesium slag, fly ash, and other materials was the focus of numerous studies. CBA made by burning coal has qualities that are comparable to those of sand, making it suitable for use as a material for stone columns. Research indicates that CBA can be utilized to install CBA columns and enhance the shear strength characteristics of clay. This study describes the properties of natural aggregates, leftover railroad ballast, and concrete leftovers that make them suitable for use in stone columns. Using laboratory modeling, the load-settling characteristics of stone columns composed of various recycled aggregates were examined to determine their appropriateness for stone column building.

In the Direction of Improving the Subcellular Location of Long Non-Coding RNA Prediction

Manas Kumar Satapathy[1], Debarchan Rout[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Long non-coding RNA (lncRNA) distribution patterns in cells are closely associated with their functional characteristics. Numerous computational techniques have been created for the recognition of the subcellular localization of lncRNA, as a result of the increase in publically available subcellular location data. Sadly, the low discriminative strength of redundant features or overfitting of oversampling plagues these computational techniques. We introduce a support vector machine-based method that incorporates an incremental feature selection strategy and mutual information algorithm to overcome such problems and improve prediction performance. The improved predictor might thus attain an overall accuracy of 91.60%. You can access the highly automated web tool at lin-group.cn/server/iLoc-LncRNA (2.0)/website. Gaining knowledge about the sub cellular location of lncRNA will be beneficial.

Keywords: lncRNA, sub cellular localization, support vector machine, mutual information

Introduction:

While the majority of RNAs transcribed from genomic DNA sequences in mammals do not encode proteins, they do have a functional role in controlling the translation process of proteins. A type of non-coding RNA with a length greater than 200 nucleotides is called a lncRNA. The majority of its functions are unclear or unknown. It is important to remember that the cellular location of lncRNAs affects their mode of regulation. lncRNA in the cytoplasm contributes to post-transcriptional control, while lncRNA in the nucleus often regulates RNA transcription. Additionally, several disorders are linked to the location of lnc RNA. Therefore, understanding the lnc RNA's sub cellular location will be useful for characterizing its function.

Numerous data are available for the investigation of RNA subcellular localization thanks to the development of RNA fluorescence in situ hybridization (RNA FISH) and RNA-sequencing (RNA-seq) for large-scale RNA detection. Three RNA subcellular localization databases have been created for the convenience of researchers. The first database made specifically for RNA subcellular localization is called RNALocate. Experimental evidence and different RNA subcellular localization entries are personally gathered and added to the database. Currently, RNALocate contains 2382 lncRNA subcellular localization articles involving nine different organisms. lncATLAS offers the trend of subcellular localization of 6768 Homo sapiens lncRNAs according to the relative concentration index by gathering RNA-seq data from GENCODE and quantitative analysis.

Problems with the Applicability of Multi-Criteria Approaches for Complicated Business Process Decision-Making in Management

Manas Kumar Satapathy[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Numerous methodological approaches are used in the research on complicated business issues in management that are characterized by multiple characteristics (indicators). Various decision support techniques are applied in this field to address issues (based on the situation analyzed). These techniques consist of VMCM and TOPSIS. Although they have certain methodological commonalities, they differ in a few ways as well. A few of TOPSIS's drawbacks are removed by VMCM, including the inability to include unusual objects, real-world patterns, and time-varying dynamics. This paper presents methodological considerations together with an exemplary implementation.

Keywords: multiple characteristics; TOPSIS; VMCM, TOPSIS

Introduction:

The development of decision support techniques has been compelled by the requirement to resolve complex decision-making problems. Numerous such techniques have been established up to this point, and new ones keep coming up. The techniques that are already in use have been for years. This has to do with trying to get rid of restrictions that have been found in specific techniques, among other things. Using the right decision support techniques is essential when managing complicated business situations. There are several of these ways available, so choosing the best one becomes a problem. This is caused by the necessity of having solid knowledge of decision support techniques, among other things. Many researchers who employ these techniques are unaware of the variations in methodology across different answers (methods). This information might become especially crucial during certain decision-making processes. These are circumstances in which non-typical objects are included in the research sample. For instance, they significantly influence how a pattern and anti-pattern are constructed, which results in object classification heterogeneity.Numerous factors can be used to classify the decision support techniques. This can be accomplished in terms of the choice problem's multidimensionality and several criteria. In the field of multi-criteria decision-making (MCDM) or multi-criteria decision analysis (MCDA), for instance, the most widely used techniques are as follows: ELECTRE, PROMETHEE, AHP ANP UTA, SMART and DEMATEL.

Regarding the Evolution of Computer Science among Mathematical Sciences

Manoj Kumar Behera[1], Parimal Giri[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: The acquisition of the University of Belgrade's first dependable computer system, the IBM 360/44 system, in 1968 and professor Nedeljko Parezanovi¨c's concept of programming development are closely linked to the development of computer science in the modern sense at the university, and particularly among Belgrade mathematicians.

This essay describes the steps that Serbia took to recognize computer science as a separate academic field.

Keywords: Computer science, programming, Nedeljko Parezanovi´c

Introduction:

This year marks the 50th anniversary of the University of Belgrade's first large-scale installation of an IBM 360 series computer system. Thus, today is a fitting time to describe how the characteristics of this machine, and more so the people who worked with it, impacted the advancement of computer science among mathematicians in Serbia and throughout the country. We shall try to show how this computer, once integrated into a well-thought-out development model, determined long-term trajectories of the development of Serbian computer science and its applications, to the extent that our weak memory and preserved papers enable us to. It is clear from numerous subsequent computer equipment purchases that developing an idea for using computer equipment is considerably more crucial than actually acquiring it, but even this is insufficient to get over internal resistance to modernization.

The role of this structure among mathematicians in Belgrade is the main topic of this paper. The conventional mathematics community's recognition of programming abilities as a "discipline of mathematical nature" (Dijkstra, 1974) opened the door for the expansion of the application of mathematical techniques beyond predetermined boundaries and the addition of a "practical" element to mathematical activity. The urge to venture into an uncharted, multidisciplinary field was resisted gradually and with struggle; the effects of this may still be seen today. But operations begun in these conditions and on this machine form the foundation of many successful computer introductions in science, culture, and the business.

An Overview of Blockchain Technology Concepts, Uses, and Problems

Prasanna Kumar Mishra[1], Parimal Giri[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: The Bitcoin whitepaper, the first viable proposal to create a decentralized digital currency capable of carrying out entirely irreversible transactions without the need for a centralized and reliable third party, is credited with introducing blockchain technology. Inherent to this decentralization were the blockchain concept, public key cryptography, hash-based proof-of-work, and peer-to-peer networks. Blockchain technology was developed to address the issue of double spending in electronic money transactions by eliminating the need for a third party, but it is currently being studied and applied to address issues in numerous other domains. This paper summarizes blockchain concepts, applications, problems, and recommended fixes with reference to other blockchain-related papers that have been published since then.

Introduction:

In order to prevent double-spending when conducting a transaction over a communication means without depending on a reliable third party like a bank or financial institution, the blockchain concept was first presented with the Bitcoin whitepaper. With a specific set of features in mind—namely, decentralized currency and peer-to-peer electronic payment applications—the first public blockchain, which powers Bitcoin, was created. As a result, the Bitcoin blockchain was practically hard to modify and had very little support for programming with Script, a scripting language used for other purposes. Seeing this challenge, Vitalik Buterin created the Ethereum blockchain platform, which includes a Turing complete programming language built in. This allows anybody to create and execute smart contracts, which are scripts that run decentralized apps.

A minito can be used to operate Ethereum platform protocols such as identification, reputation, and currency systems. Following the release of the Ethereum platform, more individuals became aware of the true benefits of blockchain apps and began investigating the development of substitute applications built on top of the technology. To increase the success of blockchain, new blockchains and software stacks to create new blockchain technologies have arisen in addition to creating substitute applications on already-existing blockchains. In contrast to the internet age, where value was captured in the application layer, the technology has grown quickly due to widespread adoption and investments, with much of the created value being collected in its protocol layer. Thus, we think that for academic and industrial purposes, blockchain technology needs a formal definition and type classification.

A Virtual Lab for Electronics Measurements Using an Effective Web-Based E-Learning Simulation Tool

Manoj Kumar Behera[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Technology advancement calls for effective tools that encourage students to participate actively and adapt while they study and practice. In the future, virtual laboratories may serve as the main teaching tools by fostering the development of training and educational skills. In this paper, we propose a mechanism that leverages the team viewer application to enable real-time interactions between learners and demonstrators in a virtual laboratory for electrical signal measurement. The mechanism is based on the use of the Lab VIEW simulation tool. When compared to conventional physical approaches, the suggested method enhances learners' skills and displays precise measurement findings together with an effective synchronized data manipulation.

Keywords: Lab VIEW simulation tool, virtual laboratory, synchronized data manipulation

Introduction:

New applications for technical training have been made possible by the ongoing evolution of information and communication technology (ICT). The time and financial constraints associated with learning practical skills can be reduced by using ICT. Teachers' worries about costs, time, or potential risks from selecting inappropriate, ineffective, or potentially hazardous experimental procedures are reduced when students learn in a virtual laboratory. Higher student-to-component interaction and perception are provided by ICT use. Gaining additional knowledge is made possible by learning in a virtual lab. These days, it's a common problem that science and engineering students lack the professional knowledge and skills necessary to interface with components and machines. Pupils are not able to practice and acquire information about research and theoretical approaches. Some technical colleges are seeing an increase in these difficulties.

The e-learning environment is thought to be a valuable tool for assisting antiquated traditional learning formats and changing the essence of education. The term "laboratory environment" refers to the space that universities and other educational institutions are creating for student instruction. One important aspect of the environment for teaching and learning is the classroom lab. It offers students a practical, secure, and easy-to-use space for doing scientific experiments. The experiment has the potential to increase curiosity, enjoy the process of discovery, improve the current framework of knowledge, and improve operational, diagnostic, analytical, design, and innovative skills.

Stochastic Optimization on Graphs and Convex Stochastic Bounds

Prasanna Kumar Mishra[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This study introduces a method to obtain stochastic bounds for a broad class of graph optimization problems where the link parameters (costs, weights, or delays) are random variables. We examine the category of issues that have convex operators as their foundation and polynomial complexity when the parameters are known. In this case, the parameters are discrete random variables, such as a link's delay. The difficulty of the problem is dramatically altered by such an assumption (usually, the problems turn out to be NP-complete).We suggest providing upper and lower bounds on the stochastic bounds based on convex order. We first demonstrate how we might simplify a discrete distribution to create bounding distributions that are difficult to handle, resulting in a trade-off between the bounds' precision and computational complexity. Second, an apolynomial time algorithm is designed and computed. The method is demonstrated through the calculation of a task graph's execution time.

Keywords: Stochastic ,Convex operators, Discrete Distribution, NP-complete

Introduction:

It is assumed that the edge or node costs or weights are deterministic in most optimization problems on graphs, but this is not realistic in many circumstances. Links or networking components within a communication network may breakdown as a result of traffic jams, mishaps, inclement weather, denial-of-service attacks,...Therefore, it is possible to correlate each edge with a likelihood that this piece will be entirely or only partially available. We usually assume that each element (node or edge) has multiple capacity levels (which we can represent as states) with corresponding probability. With knowledge of the probability distributions on the edges and nodes, our purpose is to examine the distribution of the optimization problem's results.We examine a broad range of optimization problems, including Maximum Flow, Shortest Path, Reliability, Minimum Spanning Tree, and Completion Time. These issues are based on either convex or concave operators. Due to their rich theoretical context and practical significance, these problems have drawn a lot of attention.

Many techniques are based on graph aspects that are relevant to the problem and merely take expectations as approximates or bounds.To limit the distribution of the total weights in a spanning tree when the weights of the edges are random, the authors, for example, examine the attributes of the trees and the cuts that are connected to them.

Ontology: Elements and Assessment, a Review

Sandip Kumar Bala[1], Debarchana Rout[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

To ensure the safety and fulfillment of the work for which it was developed and created, it is vital to understand the aspects of the ontologies, which are powerful tools for describing information from certain domains. This book offers some examples of practical definitions and applications of the theory by providing a general review of its aspects and an evaluation of it.

Keywords: Ontology, domain, aspect, evaluation

Introduction:

People produce a lot of information every day that they can post online, from a text message to a personal location. When we try to consult, sort, or transmit this information, there can occasionally be issues because the format is different across all sources. The goal of ontology is to supply information for data structure by rules, primarily on the web, from a certain domain.

Explicit and formal specification about a shared conceptualization that has a defined and legible vocabulary to express the main concepts and relationships about a specific domain. We can define ontology as a formal abstraction of what we wish to represent of a domain, using specific information such as objects, properties, and relationships by a structure typically of hierarchical type. A well-defined structure composed of a set of most representational terms with human-readable text description, the ontology can also be defined as a form of representation about a certain discourse universe or part of it . Its building approach depends on making clear the kinds of objects that are explored in that domain .

Generally speaking, the theory of ontology establishes a domain's relative vocabulary to aid in semantic interoperability between systems, primarily those on the web. Ontologies can be classified into numerous categories based on their specialized area, focus, application, creation, and generics. This work provides a general view regarding semantic knowledge representation and its evaluation from two approaches: validation and verification, and based on criteria. The elements and evaluation methodologies of ontology are described.

Using Data from Twitter, Influence Analysis was Conducted on Users' Emotional Behaviors and Relationships

Sandip Kumar Bala[1], Debarchana Rout[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract:

Sharing feelings with others on Twitter is one of the primary uses for the platform. When users feel happy or sad, they can quickly publish a brief text message about it. A tweet like that encourages empathy from followers and could have an emotional impact on other people. In this study, we employ two dictionaries of emotional words to examine how user connections are affected by emotional actions based on Twitter data. Keyword matching is used to construct emotion scores. Additionally, we created three distinct experiments with varying parameters: calculating a user's average emotion score through random sampling, calculating an emotion score based on all of their emotional tweets, and calculating an emotion score based on their tweets but omitting users who have posted few emotional tweets. Using the Brunner-Munzel test, we assess how emotional actions affect user connections. The outcome demonstrates that, under particular circumstances, a positive user is more active than a negative user in developing user relationships.

Keywords: Twitter; social data analysis; emotional actions; user connections; Brunner–Munzel test

Introduction:

Globally, social networking services (SNSs) like twitter are growing in popularity. Within 140 characters, a user can write a brief message and quickly receive comments from other users. Twitter users find it easier to quickly express their emotions and share them than they do on blog-style SNSs like Facebook. Without the user's consent, one can add a user to their list of favorites if they discover that person. The unique aspect of Twitter is the ability to "follow" someone and refer to the person being followed as "followee."

Users follow and unfollow other users for a variety of reasons, including impressions, subjects, interests, and personalities. We take emotional expressiveness to be one of these elements in this study. On Twitter, where users often express their emotions, tweets are said to have an impact on a user's relationship with other users. If someone often shares unfavorable tweets, his or her follower will experience unease, which is probably going to contribute to the decline in the follower relationship.

An Overview of Virtualization Containers

Debarchana Rout[1], Parimal Giri[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Due to the availability of hardware resources for running several environments and sharing computing resources among various businesses, virtualization has made cloud computing more commercially viable. Hardware virtualization typically uses two sorts of technologies: containers and hypervisors. Only container technologies are covered in this study. There hasn't yet been a thorough analysis of the virtualization container technologies and the factors influencing their growing popularity. An overview of this kind is necessary to make an informed, quick decision about technologies. A comprehensive assessment of the literature was done to close this knowledge gap, highlighting the most widely used container technologies as well as the themes in their development.

Keywords: virtualization, containers, hypervisors, knowledge gap

Introduction:

The commoditization of cloud computing has been made possible by virtualization, as hardware resources are now available to run many environments and distribute computer resources across various businesses. Enhancing resource sharing makes sense as cloud computing has become widely accepted in large-scale enterprises. Container technology eliminates one layer of infrastructure setup and configuration, allowing for better sharing of hardware resources.

The fundamental idea behind virtualization is operating a virtual instance of a computer system in a layer separate from the physical hardware. The virtualized machine's operating apps function without awareness of any intermediate layer .

The hypervisor and the container are two technologies that are frequently utilized in hardware virtualization. Virtual machines (VMs), which the hypervisor offers, need an operating system to be provisioned. Containers can operate inside a virtual machine (VM), but they do not require the installation of an operating system. Multi-tenancy and isolation are supported by both technologies . Virtual machines and Linux containers are conceptually similar. They do, however, have certain variations in their operational flow. Developing and executing apps in a cloud environment is made possible by container technologies, this is especially true when paired with micro service-style architecture [5]. Compared to the hypervisor, it allows for the construction of multiple tenancy applications with minimal overhead. The use of containers has some security issues. Therefore, the advantage is not without a cost . Docker provides a comprehensive container platform solution, making it only one of the virtualization techniques available for containers.

The acceptability and effectiveness of digital stress management micro-interventions

Debarchana Rout[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: The use of quick digital "micro-interventions" for online and mobile intervention is gaining a lot of attention. However, the majority of digital micro-interventions have not shown to be effective or widely accepted and lack a solid theoretical or empirical foundation. Based on theory and empirical data, we created a short series of digital stress management micro-interventions, which we then evaluated for acceptability and effectiveness in addressing preservative cognition, mood, and stress. 1,050 healthy individuals between the ages of 35 and 65 made up the participants. They completed acceptability ratings and post-intervention assessments after receiving digital micro-intervention content, either comparison or micro-intervention content. In four treatment domains (relaxation, response regulation, happy experiences, and resource buffers), we developed sixteen short (<2 min) micro-interventions in addition to a quick active comparison exercise. The longer multi-component micro-intervention or the time-matched active comparator activity were given to 200 participants, whereas the remaining subset (n=850) of participants got one of the 16 brief micro interventions or a brief comparator. Acute stress, depressive symptoms, and preservative thoughts were all decreased by the micro-intervention stress management content.

Keywords: mobile-intervention; micro-intervention; response regulation; "just-in-time"

Introduction: Over the past ten years, there has been a significant increase in the development and application of mHealth interventions, in part due to the possibility of providing interventions on a larger scale and at a lower cost than in-person treatment. This excitement is tempered, though, by the realization that the quality of interventions may have suffered in the haste with which mHealth applications have developed. In order to improve the quality of interventions, numerous requests have been made to build better development procedures and evaluation techniques, with parallel advancements being made to development guidelines, rating scales, and assessment frameworks. In general, these demand that robust theoretical and empirical evidence be carefully integrated into the creation and content selection of the intervention, that evidence be established that the final mHealth/digital intervention is effective (e.g., proximally engages mechanisms of change, or is related to long-term health improvements), and that potential users will find the intervention acceptable. These requests are somewhat supported by data showing that few studies (only 19% of the evaluated papers, for example) explicitly look at mechanisms of effect.

A Highly Effective EH-WSN Energy Management System

Puspita Ray, Parimal Giri

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: To increase network lifetime, an Energy-Harvesting Wireless Sensor Network (EH-WSN) collects energy from the surrounding environment. When implemented in real environments, an EH-WSN has challenges due to decreased network efficiency and restricted energy in complicated environments. Previous research on EH-WSN typically operates under presumptive assumptions, such as synchronized nodes and a calculable or known energy profile. Lack of energy can cause nodes in real surroundings to become out of synchronization. Furthermore, while the ideal hypothesis is challenging to realize in practice, energy harvesting is greatly impacted by a variety of factors. We present a general foundation for intermittent energy-aware (IEA) EH-WSNs in this research. In order to guarantee node synchronization in scenarios without energy harvesting, we initially implemented a double-stage capacitor structure. To accomplish ultra-low power measurement, we employed an integrator. We offered an optimal energy management system for intermittent operation in terms of hardware and software. This study elaborates on the energy management mechanism from the perspectives of energy management, energy measurement, and energy prediction. It also discusses the general architecture of the IEA platform.

Key words: energy harvesting WSN; ultra-low power measurement; energy harvesting; integrator

Introduction:

Promising uses for wireless sensor networks (WSN) can be found in radiography, military, underwater detection, and structural monitoring. The WSN node collects environmental data, sends it across multihop networks, aggregates it, sends it to the sink node, and uses data processing and analysis to rebuild the physical status. Energy is the main factor limiting the implementation of WSN. While the energy of sensing nodes is limited, the sink node typically possesses enough power to meet higher performance requirements.

Energy efficiency is taken into account in the operation of WSN, including data aggregation, extraction, and query. This encourages us to look into ways to extend network lifetime as much as feasible. Although its lifetime is constrained, a traditional WSN employs batteries to supply comparatively enough energy for intricate computations and communications. When the battery runs out, the WSN becomes unresponsive. The majority of real-world application settings make battery replacement exceedingly difficult or prohibitive, which makes WSN less feasible. In WSN, Energy Harvesting (EH) technology is commonly used to further extend the network lifetime.

Deep Learning of Code Images for Android Malware Family Classification

Puspita Ray[1], Sandip Kumar Bala[2]

[1,2]Department of Master in Computer Application, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Android is still the most popular operating system for mobile social devices, and hackers are increasingly focusing on Android apps on social media networks. Despite the fact that millions of Android malware samples are discovered each year, only a small number of malware families can be identified. Using code-images that have been transformed from the malware's binary byte codes, a deep-learning based classification approach is presented to automatically and successfully categorize Android malware into the respective malware families. In order to get around the training problem caused by the fact that very few malware samples are publicly tagged with families, the deep-learning classifier leverages the lower layers of a convolutional neural network that has already been trained. Empirical research indicates that the suggested method outperforms the current code-image based technique in terms of ease of implementation and classification metrics like false positive and false negative rates, as well as F-measure values. Moreover, malware families of all sizes, including tiny families, can be recognized by the constructed classifier.

Keywords: Android malware, code image, deep learning, malware families

Introduction: As mobile social devices grow more commonplace, it's critical to strengthen the security of the apps that operate on them. Android applications have been the main focus of malware writers in numerous social networks because of their enormous user base. For instance, 7.57 million new Android malware samples were discovered by 360 Internet Security Center in 2017. Differentiating between malicious and benign Android applications is a major area of focus for researchers. Sachdeva et al., for example, divide Android applications into three categories: safe, suspect, and extremely suspicious.

Nonetheless, in recent years, there has been a three-fold decrease in the annual addition of malware families despite a 0.6-fold increase in the number of new Android versions. This is due to the fact that harmful modules or malware creation tools are used to build the bulk of varieties of existing Android malware. It is essential to automatically categorize a large number of malware into their respective families due to the limited number of malware families and the constant influx of new malware. Both static and dynamic methods can be used to describe and examine Android malware.

Behavior-based methods, which execute the target program and track and evaluate its behaviors, are another name for dynamic approaches.

A Novel Technique Using a Hydrogen-Generating System to Regulate the Frequency Variation of The Electricity Grid with Wind Farms

N Veda Kumar[1], Lingaraj Prusty[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This study proposes a novel system that consists of a wind power generator and a hydrogen generator. When wind generator output is sent into the power system without any management, the extreme fluctuations in wind speed can have a detrimental effect on the system's overall performance. The proposed system's goal is to provide the power system with steady electricity while utilizing a portion of the wind generator's output to manufacture hydrogen. The wind generator in the suggested system is an induction generator (IG) with a squirrel cage, and the hydrogen generator is a High-purity Hydrogen Oxygen Generator (HHOG). Through simulation assessments, the suggested system's performance is examined. PSCAD/EMTDC is used for the simulations.

Keywords: Battery energy storage system (BESS), distributed energy resources (DER), grid outage, microgrid, renewable energy sources (RES), uninterruptible power supply (UPS), voltage source (VS).

Introduction: Because of the major environmental issues facing the world today, hydrogen has gained a lot of interest as an oil substitute in recent years[1,2]. Certain uses, such fuel cell automobiles and domestic fuel cells, are anticipated since hydrogen burns only to produce water[3]. Even though the main technique for creating hydrogen right now is the reforming of fossil fuels, water electrolysis shows promise as a clean manufacturing method. However, the issue of carbon dioxide emissions cannot be resolved if the electrical power needed for the electrolysis of water is obtained from thermal power generation utilizing fossil fuel. Thus, research is being done on producing hydrogen utilizing sustainable energy sources like wind power[4,5]. To moderate the fluctuations in these situations, energy storage devices like batteries are frequently used; however, these devices come with extra costs. With these considerations in mind, reports of smoothing control methods utilizing the hydrogen producing system without the need for a battery have also been made; nevertheless, there are issues with the smoothing capacity being insufficient and the hydrogen generator's capacity factor being poor [6-7]. This study proposes a novel system that consists of water electrolytic hydrogen producers and wind power generators without the installation of any energy storage devices. The suggested technology operates the hydrogen generator by giving it a bias in its reference power consumption, just like a battery would. Consequently, hydrogen may be produced and the output from the wind power generators can be smoothed. Maintaining the hydrogen generator's capacity factor at an appropriate level is also taken into consideration.

A Rice Leaf and Seedlings Disease Detection System Using Image Processing and Deep Learning Techniques

Naba Kumar Rath[1], Raj Kishore Tripathy[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIET, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Rice is a major crop in India. Near about 70%, the economy depends on agriculture products. However, Agriculture production is uncertain due to natural calamities, environmental conditions, and unpredictable plant diseases. Plant diseases are nearly impossible to recognize by the open eye by the farmers and crop producers. Therefore, an automatic detection system is a modern approach. Many automatic plant disease detection systems are developing by the researchers. In this paper, we present a summary of different image processing and machine learning techniques applied to the recognition of rice leaf and seedling diseases. Various attributes considered for doing a survey include segmentation type, segmentation techniques, features extracted, dataset size, author's name, and publication year, category of disease, techniques used, detection/classification accuracy, and future scope/limitations. We have gone through several research papers and a brief review of recent image processing and machine-learning techniques used by the researchers has been provided for the rice leaf and seedlings disease detection and classification.

*Keywords***:** image segmentation, machine learning, classification, detection, rice disease, seedling.

Introduction: Rice is a major crop in India. Near about 70%, the economy depends on agriculture products. However, agriculture production is uncertain due to natural calamities, environmental conditions, and unpredictable plant diseases. Plant diseases are very difficult to detect and classify by the naked eye by the farmers and product producers. Therefore, an automatic detection system is a modern approach. Rice disease detection and classification model consists of the following three steps [Prajapati, *et al.* (2017)]. In the first step, the segmentation technique used to obtain the diseased part from the healthy part of an image. In the second step, useful features retrieved from the object for classification. In the last step, classification techniques used for the classification of different types of diseases according to the features provided as input [Phadikar, *et al.* (2012)]. First, we present a review on image processing techniques that use different segmentation techniques such as clustering, thresholding, and the watershed, etc. and feature extraction techniques such as GLCM, HAAR wavelet, etc. to process input image data.

177

Data Integrity Method in a Cloud Setting for Dynamic Auditing

Naba Kumar Rath[1], Alaka Rout[2]

[1,2]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract - More people are outsourcing their data to the cloud due to the benefits of cloud storage. Numerous IOT data, including traffic and sensor data, as well as sensitive data from hospitals, banks, commercial and public organizations, are kept in the cloud and require precise analysis. be a promise of honesty. In contrast to local storage, users in the cloud are concerned about data integrity and lack control over the data environment. Many issues with the current auditing scheme exist, including high audit costs, information leakage, and poor dynamic auditing efficiency. A dynamic integrity auditing system is suggested for cloud privacy security in order to get around these challenges. Current research enables data integrity verification without requiring access to the original data file. Data auditing is the process of having a reliable third party verify information; the auditor is that third party. But these approaches have a number of shortcomings.. Therefore, the authenticator needs to be updated and recalculated for every file block in order to reflect even minor changes. Higher communication and storage overhead results from it. This article supports completely approved auditing and a fine-grained update, which lowers communication overheads while confirming tiny alterations. The outcome of the experiment indicates that the Flexibility, security, and reduced overhead are offered by the suggested plan to accommodate more frequent, minor updates to social media and business transactions.

Keywords: Big Data; Cloud Computing; fine grained dynamic data update; authorized auditing; Data security; provable data possession.

Introduction: Utilizing the Cloud [1][2] a brand-new business model built on distributed computing, virtualization, and network technologies that offers software resources, virtualized hardware via a network, resource sharing, broadband access, and dynamic growth, among many other features computer storage service. Through remote access, the user can affordably acquire computational and storage resources [3]. The network can handle millions of data in a second by utilizing cloud computing. cloud-based storage [4] [5] a system that gives users access to services and data storage via application interfaces and has numerous storage device collections thanks to distributed computing and cluster applications. Numerous users, including businesses, government agencies, and individuals, are able to store their service apps on the cloud [6]. Network technology is developing, there is a need for IT resources, and many Large amounts of data are stored in the cloud for computing and lower infrastructure costs by businesses and individuals outsourcing. Numerous IT organizations worldwide provide a range of services to consumers and businesses through the usage of public cloud computing.

A Review on Tele-Robotic Surgery Device Classification for Machine-To-Machine Communication in the Internet of Things

Nrusimhadri Naveen[1], Sailendra Kumar[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: Internet of Things (IoT) domain gradually growing in information technology and telecommunications systems area considering its size and complexity. It is recognized as potential domain in IoT applications. New technologies need to anticipate this sharp increase in the number of varying smart devices. In current perspective, the IOT environment, which allows a huge network of things to communicate with each other, may face a number of technical and application problems, such as privacy concerns, security, sensor anonymity, decision support, a variety of device applications, and so on. In this review paper, goal is to study various frameworks for IoT device classification possible in Tele robotic surgery and summarizes the classification algorithm. Tele robotic surgery needs robust and beneficiary control techniques for providing efficient and precise alternative for medical surgeries. Time delays over network severely impact the stability in the surgery and eventually affect the performance of expert doctors. Also we analyze the problems encountered with the M2M connectivity of network devices.

Keywords: Device classification, Internet of Things (IoT), IoT challenges, M2M communication**.**

Introduction

Advances in communication technology will create an Internet of Things (IoT) environment. In IOT era, it has transformed the lives of many automated internet connected devices, from machines to machines (M2M) communications to decision-making to coordinate the use of interconnected intelligent devices [1]. M2M communication has emerged to provide device connectivity. It combines low-cost, reliable and scalable technologies with interconnected networks and remote controllable mechanical and electrical networks. Market condition and recent forecasts confirms that M2M adoption is rapidly increased. It needs to automate the monitoring and management processes in real life, also provide smart applications to improve live-work style [2]. M2M communication provides various applications such as monitoring the environment, security, energy and smart grid, building automation and home networks [1][4]. These applications create new business opportunities and features of M2M somewhat different than those of traditional networks [1][3].

Numerical Modelling of Soil Nailed Slope Using PLAXIS Software

V. Dinesh Kumar[1], Samaresh Pratihari[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, India.
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: It is now known that the finite element method can be used to represent complex geotechnical processes. This study uses in-house laboratory models to simulate different soil properties while doing finite element (FE) modeling of the construction and overburden pressure stages of the soil-nailing process. The PLAXIS software models the soil-nailing process, conceptualized as a plain strain problem and implemented in laboratory models. A Perspex sheet box with a sandy soil slope, a Perspex sheet facing, steel bars for reinforcement, and a steel plate for foundation make up the laboratory models of the soil-nailing process. A hardening-soil model represents the sand's stress-strain relationship. The Coulomb friction model describes the interaction between the nail and the dirt. The behavior of the soil-nailing process is examined in terms of slope displacements and stress conditions in the slope soil mass during the building stage, as well as under different overburden pressure and soil density circumstances. When compared to laboratory model test data, the FE modeling presents the slope displacements and stress conditions in the slope soil mass in an effective manner. Three-dimensional modeling of the nailed-soil slope is used to do a sensitivity study of the dimensions of the laboratory models. As a result, it can be said that the developed finite element model has the ability to mimic the behavior of a field nailed-soil slope during the planning and implementation phases and may offer recommendations for the building and upkeep of soil-nailed cut slopes in granular soils and weathered rocks.

Keywords: Soil-nailing process; finite element models; overburden pressure; nailed-soil slope; sandy soil; nail spacing; nail inclination

Introduction: It is now known that the finite element method can be used to represent complex geotechnical processes. According to (Stocker et al. 1979) , the soil-nailing procedure for slope stability is built in steps, working from top to bottom as the construction progresses. The most economical and successful technique for stabilizing both naturally occurring and artificially created slopes is soil-nailing (Lazarte et al. 2015). Small rooms can use the procedure without experiencing vibration or environmental disturbance (Cornforth 2005).The results of the FE analysis of the thrust on landslide and pile-side earth pressure were compared to those from field data and earth pressure theory. A novel kind of soil nail made of fiberglass pipe, with enhanced performance for the combined reinforcement and drainage action of the nails, was used by (Sterpi et al.) to stabilize the tunnel face under drainage conditions.

A Reliable Probabilistic Approach to Wind Power Forecasting Wind Situations

P. Jagannatham[1], Kartik Chandra Sasmal[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, India.

[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: One of the simplest and least expensive ways to lessen the detrimental effects of intermittent wind generation on the stability and dependability of the power system is through wind power forecasting. When it comes to wind uncertainty, probabilistic predictions, as opposed to deterministic forecasts, might offer more details that are useful for effective trade and economic operations. Regarding precision, dependability, and sharpness, it is far from perfect because of the wind's significant changeable characteristic. This work proposes a robust probabilistic wind power forecasting system (RPWPF) that can account for variations in wind conditions and wind generation variability. Regarding the wind farm's wind generating process and wind direction dominance, many wind scenarios are recognized.

Keywords: Wind power, robust, probabilistic forecast, power curve, power generation process.

INTRODUCTION

In light of the global shift to cleaner and more sustainable energy sources, wind power has attracted a lot of interest. However, because wind energy is intermittent, there may be serious hazards involved, which would raise the cost of maintaining power system stability, dependability, and power quality [1]. One of the best strategies to lessen these adverse effects is to use wind power forecasting technologies when accurate prediction results are available. Wind power forecasting (WPF) has been developed and optimized by several researchers. The most popular technique for short-term wind power deterministic forecasting is the artificial neural network (ANN) approach, which yields competitive performance and a variety of optimization schemes [2, 3]. One of the most used benchmark methods for probabilistic wind power forecasting (PWPF) is quantile regression [4,5]. Nevertheless, the forecasting model is less resilient to changing wind conditions when using these approaches since a fixed model simulates the features of the power generating process. When one takes into account the geographical and temporal complexity, the difficulties become considerably more complicated [6,7,8]. Therefore, it is important to increase the WPF and PWPF models' resilience.

Cost-effective Reactive Power Supply for an Offshore Transmission System

P Jagannatham[1], S. Sekhar Reddy[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract: This study examines the cost-effective supply of reactive power for a 295 MW offshore wind farm off the coast of the Netherlands in an offshore transmission system. Although reaching unity power factor at the grid entry point (GEP) has been the primary emphasis of this research, the ultimate goal of the design is to comply with the criteria of the Dutch grid code. Two distinct strategies for providing reactive power have been put into practice in this respect, at both a 150kV and 220kV AC transmission voltage level. The steady state electrical system design and analysis tool, EeFarm-II, has been used to examine each instance .

Keywords: Wind Farm, Wind Turbine, Reactive Power Control, Offshore transmission system, EeFarm-II.

Introduction:

Voltage regulation, power factor enhancement, power loss reduction, and steady state transmission power augmentation are among the applications for reactive power (Q) controllers [2]. Reactive power control approaches require information about the kind of wind turbine generators, grid code requirements, and specific control objectives in order to be discussed and the best suitable solution to be selected may be determined.

Long transmission lines generate reactive power, which needs to be adjusted for in order to minimize transmission losses, maximize transmission capacity, and maintain the grid voltage within safe operating parameters. Reactive power is produced by subterranean cables and consumed by overhead lines. The voltage magnitude in the wind farm collecting and transmission system is determined by the reactive power exchange, and vice versa. The quantity of the current and the distance to the onshore substation determine the voltage drop along the circuit. The impedance behind the substation may also be relevant in particular circumstances [3]. Furthermore, the power factor is often maintained close to unity in accordance with grid code standards. Reactive power demand may cause the power factor to diverge from unity when the wind farm is producing low active power in order to supply extra lead/lag current. To make wind farms more dependable power plants, a lot of research is being done on reactive power management and voltage control. Control at the grid entry point (GEP) and control at the wind turbine are the two primary categories into which the state-of-the-art reactive power control solutions have been separated in [6]. The control algorithms discussed in this study use Q set-points to involve wind turbines in the reactive power provision process, hence controlling the reactive power/voltage at the GEP.

Opportunities for Artificial Intelligence in Telecommunications Networks

Dibyalekha Nayak[1], Smeetarani Jena[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIET, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

Abstract- While it is true that we are in the middle of one of the Artificial Intelligence hypes, it is also true that the combination of unprecedented computation-power and data availability with new variations of well seasoned Machine Learning algorithms is dramatically changing the optimization strategies for large ICT industries. Especially, the telecommunications industry has always had to deal with complex systems, stochastic contexts, combinatorial problems, and hard to predict users; Machine Learning-aided optimization was just waiting there to be used by telecoms. In this paper, we introduce some basic Machine Learning concepts, and discuss how it can be used in the context of telecommunications networks, particularly in optical and wireless networks.

Keywords: Stochastic Process, Machine Learning-aided optimization

Introduction

By 2021, global IP traffic will increase by three times compared to the values of 2016 according to the 2017 Visual Networking Index (VNI) report from Cisco [5]. It is forecast that 63% of this traffic will proceed from non-PC devices, showing the highest increment traffic from tablets, smart-phones and machine-to-machine devices. So, by 2021 traffic from wireless devices will be much higher than that originated in wired devices. Also the amount of devices connected to the Internet through wireless will increase dramatically, not only because the amount of smart-phones, tablets and wearables will increase but also because of new paradigms as Machine-to-Machine (M2M) communications and Internet of Things (IoT), where all kind of electronic devices will have wireless communications capabilities. In the report, it is forecast that the number of connected devices will surpass the human population by three times. Also important is the fact that much of this traffic increment will be due to the increment of high-definition (HD) video, which will generate an increment in necessary data rates. In this context, 5G networks are being design to cope with this growing demand of traffic and data rates. To satisfy all these demands new technologies are needed at all network levels, from the wireless access to the wired core network, and from the physical and data planes to the management and control planes. For example, network slicing [7] has been recently introduced and is being thoroughly studied as a means to overcome the heterogeneity of service and requirements of future 5G networks. At this same level, techniques such as Network Function Virtualization (NFV) [15] and Software Defined Networks (SDN) [9] are key enablers for the deployment of 5G.

Geometric Misorientation Changes in Aluminum Subjected to Strain Path Change Test

Shanta Mohapatra[1], Ritik Ranjan Dehury[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Nalanda Institute of Technology, Bhubaneswar, Biju patnaik university of Technology, Odisha, India.

ABSTRACT

A strain path change test was performed on commercial purity aluminum specimens during high temperature deformation. Up to different strains of 0.2, 0.5, and 1, specimens were deformed at 4000 C and a strain rate of 0.1 s-1. The specimens were then subjected to a strain path change test. distorted to a strain of 0.5, then subsequently deformed to strains of 0.2 and 0. The sub grain sizes and misorientations were thoroughly characterized by comparative studies employing optical microscopy in polarized light (POM), orientation imaging microscopy (OIM/SEM), and transmission electron microscopy (TEM) in order to advance our understanding of the deformation mechanisms in aluminum. The investigation showed that total misorientations increased with increasing tension, although subgrain size is comparatively indifferent to strain. These evaluations supported

Keywords: aluminum, high temperature deformation, strain path change, TEM, OIM, POM, subgrains, misorientations, geometric dynamic recrystallization

INTRODUCTION

The increase in average misorientation (π) was noticeable as additional information on boundary misorientation in hot wrought aluminum using OIM became available. Because the OIM does not show boundaries <1o, it is challenging to compare it with the TEM, which uses them extensively to determine size. Although the lengthening of grain boundaries (GBs) accounts for a large portion of the increase, certain strain-induced boundaries become medium angle (MAB, 5-15o) or even high angle (HAB>15o). According to others, this occurs because, as seen in cold working [3], the initially low angle subboundaries (LAB<5o) continuously climb in as increases [4]. Conversely, as the bands rotate, transition boundaries that form between the deformation bands in the initial straining rise quickly [8,9], potentially developing into MAB orExperimental Methodology Commercial quality aluminum with initial average grain size of around 40 πm and weight percentages of 0.03 wt% Fe, 0.02 wt% Si, and 0.01 wt% Mn was the material employed in this experiment. Before the test,For two hours, aluminum was annealed at 500 degrees Celsius to guarantee a completely recrystallized microstructure.

Stress Intensity Factors for Single and Double Edge Cracks in a Simple Beam Subject to a Moving Load

Pradipta Kumar Rout[1], Punil Behera[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Stress intensity factors for single and double edge cracks in simply supported undamped Bernoulli-Euler beams under a moving load are calculated using the method that is described. The method is predicated on applying linear elastic fracture mechanics to compute the equivalent load on the beam once modal analysis has determined it.stress intensity factors (SIF). The findings demonstrate that SIF depends on time, the moving load's speed, and the position and size of cracks.

Keywords: Net Crack, dynamic load, modal analysis, moving load, stress intensity factor, vibration.

INTRODUCTION

In many engineering applications, fatigue crack propagation and/or brittle fracture are significant considerations. In the linear elastic regime, structures should have any suspected or existing cracks examined using the stress intensity factor (SIF). SIF is dependent on a number of things, on the structural loading conditions. The impact of shifting loads on structures and machinery is a significant issue in both the fields of transportation and machine design. When a similar load is applied statically, it results in lower stresses and smaller deflections than when it is moved. These strains and deflections depend on the moving load's speed and motion. The literature on uncracked structures has given this issue a lot of attention. One recent investigation is the Zheng et al. study. employed an 11-degree-of-freedom nonlinear vehicle model to investigate the dynamic reaction of many cars crossing uneven decks on simply supported bridges.However, there has been an increase in interest in researching the vibration of fractured elements and configurations. Over 500 studies on the topic were reportedly produced in the course of 20 years (Dimarogonas, 1996). A structure's dynamic response is modified when there are cracks because they cause local flexibility.

Effect of Cracks on the Dynamic Response of a Simple Beam Subject to a Moving Load

Pili Kumari Sahoo[1], Mahima Chordhary[2]

[1] College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

It was established how transverse cracks affected the simply supported, undamped Bernoulli-Euler beams' dynamic behavior. Higher deflection and altered beam response patterns are caused by the presence of cracks in the beam. Specifically, at a given speed, the beam's maximum deflection takes longer to occur. to accumulate, and at the fracture position, a discontinuity is seen in the slope of the deflected shape of the beam. Furthermore, when the load departs the beam, the beam's pattern of deflection shifts from downward to upward at specific speeds. As the depth of the crack increases, the impacts become more apparent.

Keywords: vibration, moving load, crack, dynamic response

INTRODUCTION

A significant issue in the fields of transportation and machine design is the impact of shifting loads on machinery and structures. A load in motion causes bigger deflections and higher strains than does an equivalent load delivered statically. The moving load's speed and time both affect these strains and deflections. The literature has given this issue a great deal of attention. Multispan Timoshenko beams [1], non-linear effects on Timoshenko beams [2], and random vibration of multispan Timoshenko beams [3] are some of the recent studies on this topic. Foda and Abduljabbar [4] used dynamic Green functions to solve Bernoulli–Euler beam problems subject to a moving mass, and Esmailzadeh and Ghorashi [5] looked into the inertia of the moving load., The vibration of fractured buildings and parts has drawn increasing attention. When a structure has cracks, it creates local flexibility, which in turnchanges the structure's dynamic reactivity. Over 500 publications on the topic were reportedly written in the course of two decades [7]. Recent studies in this field have looked at beams with breathing mechanisms, rotors with several cracks [8].

The Effect of a Moving Mass and Other Parameters on the Dynamic Response of a Simply Supported Beam

M Selvom [1], Ratikant Sahu[2]

[1] College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This study takes into account the mass of the beam in order to analyze the linear dynamic response of a simply supported uniform beam under a moving load of constant size and velocity.The person uses a series solution for the dynamic detection in terms of normal modes.The coupling effect of the moving load's mass, velocity, and other characteristics is thoroughly evaluated. A range of numerical data enables us to make significant structural design conclusions

INTRODUCTION

Over the previous 99 years, a great deal of research has been documented on the dynamic reaction of railroad bridges, and subsequently highway bridges, to the influence of moving loads. The book by has numerous references to the literature on the subject. Fry\ba [0~]: Stokes [1~ and Zimmermann [2~] made two early, fascinating contributions in this field. The problem of the dynamic behavior of a prismatic bar acted upon by a load of constant magnitude traveling with a constant velocity was fully solved by Krylov 3\ 4}\ in 0849. Timoshenko solved the identical problem in 0811, but for a moving harmonic pulsing force. In 0823, English 6}\ delivered a groundbreaking study on the topic, in whichWhen the effect of the mass of the load is taken into consideration, the problem of the forced motion of a beam subjected to a moving load is connected with significant difficulties. In the current study, this problem is approached by first approximating its solution to the comparable problem.It is successfully derived to a closed form solution without the effect of the mass.

Numerical Solution for Response of Beams with Moving Mass

D Subhramani [1], Swayam Samampan Ray[2]
[1] College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

A technique that combines analysis and mathematics is introduced to ascertain the dynamic behavior of beams supporting a moving mass under various boundary conditions. The way this piece depicts the evolution of an established transform the governing equation into a fresh set of ODEs that can be solved. A comparison utilizing finite element models was used to determine the accuracy of the results, and very good agreement was found. The paper also demonstrates how, in contrast to the moving force model, the response of structures caused by moving mass—which has frequently been disregarded in the past—must be appropriately taken into consideration.

Keywords: Deformation twinning; Twin boundary; Slip; EBSD; Twin–twin hardening

INTRODUCTION

Early in the 20th century, structural engineers were aware of the possible danger that could arise from a mass moving down a supported beam. They were only able to determine the effect's dynamic response for the most basic situations and their resolutions were incredibly unrealistic (Jeffcott 1929). Recently, engineers building highway and railroad bridges and space station facilities likely to be influenced by unexpected changes of mass have restarted the investigation of this subject (Stanisic and Hardin 1969; Stanisic et al. 1974). A numerical-analytical approach to analyzing beam behavior with different boundary conditions and a moving mass is presented in this paper.It is necessary to solve partial differential equations that are so complicated that simplifying assumptions are typically made in order to calculate the response of beams influenced by moving mass. Typically, these presumptions consist ofThe system of ordinary differential equations describing a continuous beam with a moving mass and changing boundary conditions is solved in this work. Continuous System Modeling Programming (CSMP) was employed in the investigation.to independently validate the analytical-numerical results by solving the system of ordinary differential equations (Speckheart 1976) and the Programs for Automatic Finite Element Calculations (PAFEC 1978; Akin 1982).

Forced Responses of Cracked Cantilever Beams Subjected to a Concentrated Moving Load

N.K Vadivel[1], Sai Prakash Das[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The dynamic response of a cracked cantilever beam under a focused moving load is presented analytically. The fractured beam system is treated as a two-span beam and each span of the continuous beam is assumed to obey Euler–Bernoulli beam theory. A rotational spring with sectional flexibility is used to represent the crack. Taking compatibility into account Depending on the crack, it is possible to determine the correlations between these two spans. Eigensolutions of this fractured system are explicitly determined by use of the analytical transfer matrix approach. With the identified eigenfunctions, the forced replies can be produced via the modal expansion theory. A few numerical data are displayed to illustrate the impacts of the crack (crack location, crack extent), and they are examined at various speeds of

Keywords: Cracked structures; Eigensolutions; Transfer matrix method; Modal expansion theory

INTRODUCTION

Over the past ten years, a lot of study has been conducted on the dynamics of fractured structures. A structural component's rigidity decreases as it experiences cracks.decreasing its natural frequencies as a result. Some research have proposed strategies for calculating the effects on the eigenparameters of these structures (direct methods), while others have dealt with the difficulty of identifying, locating and quantifying the level of damage (inverse difficulties).Numerous analytical and computational techniques have been used to study the dynamic behavior of fractured structures [1–5].Numerous studies in this field address cracked beams that are exposed to different boundary conditions. A overview of the dynamics of cracked structures was given by Dimarogonas [6]. Chondros et al. [7] also created a comprehensive cracked-beam vibration theory for the transverse can be obtained using the fracture mechanics theory's stress intensity factors. Finding the location and length of a crack based on its inverse involves measured data from the system of broken beams. The inverse problem of a simply supported beam has been studied by Narkis [8].

Vibration Analysis of Beams with Open and Breathing Cracks Subjected to Moving Masses

Chandru J[1], Sumit Kumar Das[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This study uses the so-called discrete element method to calculate the dynamic response of the undamped Euler-Bernoulli beams with breathing fissures under a point moving mass analytically and computationally.FEM) and the finite element technique (DET). Initially, the usual DET formula is adjusted to account for centrifugal and Coriolis forces. Subsequently, the formulation is expanded to assess scenarios including open and breathing fissures beneath moving masses. The outcomes will be verified by comparing them to those documented in the literature and by contrasting them with finite element approach outcomes. We shall look into how the position, size, and velocity of the moving mass affect beam deflection. The beam's inherent frequencies under

INTRODUCTION

One of the most frequent structural flaws that can have a negative impact on a structure's behavior and performance and ultimately cause it to collapse is a crack. Typically, cracks produce changes in the structure's stiffness, also diminishing its natural frequency. Additionally, the crack will open and close at different times according on loading circumstances and amplitude of vibration. The vibration effect mixed with the static deflection caused by some loading component (residual loads, a structure's body weight, etc.) on the cracked beam may cause the crack to open constantly, open and close on a regular basis, or close completely depending on the different loads at a given time.If the beam's static deflection is caused by a loading element like However, the impact of shifting masses and stresses on machinery and structures is a significant issue in both the field of transportation and the design of machining procedures. Moving mass, often known as a moving load, produces bigger greater strains and deflections than an identical load delivered statically. These strains and deflections are a consequence of the moving loads' speed and duration. Therefore, it is crucial to identify and manage damage in structures that are subjected to moving masses. There aren't many research that discuss moving mass or moving load in the literature.issues under the action of cracks.

Dynamic Response of Timoshenko Beam Under Moving Mass

Gangadhar Mande[1], Subham Samtray[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The dynamic responses of a Timoshenko beam to a moving mass and a moving sprung mass are examined in this article. The governing differential equations for beam vibration are derived by using Hamilton's principle. The modal superposition technique is used to calculate the partial differential equations of the system are translated into a set of Ordinary Differential Equations (ODEs). The resulting collection of ODEs is solved numerically using a state-space representation. By comparing our approach's results with those from earlier research, we were able to determine the accuracy of the findings and find a reasonable level of agreement. When a moving sprung mass is present, the beam's dynamic response qualities are faced with moving

INTRODUCTION

Within the discipline of structural engineering, one of the main areas of research is the interaction of moving bodies with structural systems.By building high-speed rail lines in recent years, a revitalizedResearchers are looking for closed form and numerical solutions for moving body issues, although there is interest in developing numerical techniques to solve differential equations for beam vibration under moving force [1-3].The majority of the early research on this topic was devoted on offering closed-form solutions. As a result, Timoshenko [4] made a significant contribution when he used the power series expansion to solve the problem of a simply supported beam subjected to a moving force. Furthermoreand M. Mofid [17] introduced an analytical–numerical approach based on the technique of modal superposition. Their method is readily applicable to ascertain the dynamic response ofbeams that are subject to a moving mass and have different boundary conditions. Lee [18] looked into the possibility of separating the mass and the beam in addition to applying Akin's method to tackle the problem of moving mass on a Timoshenko beam.In this article, by applying Hamilton's principle, the partial differential equations of a continuous beam exposed to a moving mass and moving sprung mass are derived.

Dynamic Response of a Cracked Beam under a Moving Mass Load

Sujit kumar khuntia[1], Sandeep Parida[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The purpose of this work is to examine how the dynamic response of a simply supported beam with a single crack under a moving mass load is affected by inertial, centripetal, and Coriolis forces. It is demonstrated that these forces need to be taken into account in the analysis, just like in the case of beams without a break. The mass and velocity of the moving load have a noticeable impact on the inertial, centripetal, and Coriolis forces.The system's reaction is found using the Duhamel integral. Through an iterative process, the differential equation with a right-side nonlinearity is solved. Examples of the outcomes are shown for a range of variable values.

Keywords: Beam; Centripetal; Coriolis; Crack; Moving; Mass load.

INTRODUCTION

Since the turn of the 20th century, researchers have looked into how beams respond dynamically to moving masses or forces. The abundance of findings from the experiments and analysis were tallied.for several instances, with varying loading and geometry These investigations are motivated by the finding that dynamic transversal deflection and stresses in a beam structure may increase dramatically relative to static loads when the structure is subjected to moving loads. Researchers have focused on the dynamics of fractured structures under shifting loads for the past 20 years. In fact, the presence of a crack modifies the stability characteristic and dynamic behavior of the material by causing a local flexibility that depends on the depth of the crack (Anifantis and Dimarogonas 1984). The lively manner An overview of the dynamics of fractured structures was given by Dimarogonas (1996). The hypothesis of continuous cracked beam vibration was created by Chondros et al. (1998) for the Euler-Bernoulli beams with single- or double-edged open cracks and their lateral vibration.The impact of two open cracks on the frequencies of a cantilever beam's inherent flexural vibrations was examined by Ostachowicz and Krawczuk (1991). Rizos and Aspragathos (1990) used a rotational spring to model the fracture and locate the crack site through the measurement of the amplitudes of the component. A comparable issue was investigated by Liang et al. (1990) utilizing the finite-element approach.

Effect of Precipitate Shape on Slip and Twinning in Magnesiu Alloys

Tapas kumar Chand[1], Ritika Sahoo[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Calculations have been made about the expected strengthening effect of precipitates with varying shapes and habits on the basal, prismatic, and f1 0 1 2g twinning deformation systems in magnesium. It is anticipated that in the parent material, rod precipitates parallel to the c-axis will harden the basal and prismatic slip systems more effectively than plates parallel to the basal plane. Nevertheless, nonsheared in twinned material The basal slip required to relieve incompatibility stresses is effectively inhibited by basal plates. While c-axis rods may have the opposite effect, the predictions indicate that basal plates will lessen asymmetry in strongly textured extrusions by preferring hardening against twin development compared to prismatic slip. The measured asymmetry for two magnesium alloys that form either c-axis has been compared to the predictions.

Keywords: Magnesium alloys; Twinning; Extrusion; Modelling

INTRODUCTION

Particles of precipitate are used to strengthen a variety of economically significant magnesium alloys [1]. Typically, precipitates develop in magnesium alloys and takethe shape of rods or plates resting on specific crystallographic planes, with the alloy system and heat treatment influencing the precipitate's morphology and habit [2]. It is well known that different precipitate types result in noticeably different strengthening responses. For instance, in randomly textured as-cast material, the prismatic plates that form in Mg–Y–RE (rare earth) alloys, like WE54, tend to give better strengthening than the basal plates formed in Mg–Al–Zn (AZ) alloys. Previous research has demonstrated that this variation in strengthening could be caused, at least in part, by the varying Orowan hardening of basal slip (the deformation mode that is most readily activated in This work predicts how particle shape affects the strength of the various deformation systems in magnesium and what effects it will likely have on mechanical asymmetry.are talked about. Although the impact of particle shape and habit is not as well understood as it is in the case of slip, previous work by Nie and Muddle [2,3] has demonstrated how the situation of rationally oriented rod- and plate-shaped precipitates may be treated. The Orowan mechanism has been well studied in the case of slip strengthening.

A Theoretical Investigation of the i9n & Uence of Dislocation Sheets on Evolution of Yield Surfaces in Single-Phase B.C.C. Polycrystals

Jagannath Mohapatra[1], Jagarnath Singh[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India

[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

A more accurate physical characterization of the significant causes of anisotropy in the material is necessary to make predictions about yield surfaces and how they will change with deformation that are both accurate and dependable.Up until recently, the present literature's most physical approach has been the use of polycrystalline deformation models, where it is considered that crystallographic texture is the dominant contributor to the overall anisotropy. However, as indicated by strain-path change experiments (e.g., cross e8ect, Bachinger e8ect), recent research have shown that the grain-scale mesostructural characteristics (e.g., cell-block borders) may have a significant influence on the anisotropic stress–strain behavior.Some characteristics of the grain-scale mesostructural properties were incorporated into an adaptation of the Taylor-type crystal plasticity model developed by the authors in earlier studies. This paper's primary goal is to

Keywords: Plastic anisotropy; A. Microstructure; Texture; Yield surfaces; Changing strain paths

INTRODUCTION

The conventional method for simulating plastic deformation in metals involves first developing a phenomenological description of the yield surface, after which a yield rule—such as the normalcy yield rule—is determined based on the yield surface's shape. Still,It has long been known that a particular material's yield surface changes significantly as plastic deformation progresses. As a result, numerous efforts have been made to comprehend how deformation affects yield surfaces and to create models that adequately represent these changes.The evolution of a metal's yield surface during deformation is frequently explained by a combination of kinematic and isotropic hardening rules in the most basic phenomenological plasticity models. It is assumed in isotropic hardening laws that the yield surface. The creation of crystal plasticity models (see, for example, Aernoudt et al., 1993), which explicitly account for the geometry of the available slip systems in the given crystals and the distribution of crystal orientations in the given material, opens the potential to utilize a suitable polycrystalline model (such as a self-consistent scheme or a Taylor-like model.

The Activity of Non-Basal Slip Systems and Dynamic Recovery at Room Temperature in Fine-Grained AZ31B Magnesium Alloys

Subhakanta Nayak[1], Abhinesh Goel[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Fine-grained Mg-3Al-1Zn-0.2Mn in weight percent (AZ31B) alloys were produced by equal-channel angular extrusion and then elevated-temperature annealing. At room temperature, tensile tests were conducted with a strain rate of 1x10 - 3 s - 1. The alloys showed a significant tensile elongation and an apparent steady-state deformation area. of 47 percent. At a 2% elongation, the deformed microstructure showed significant cross-slip to non-basal planes caused by the plastic compatibility stress connected to grain boundaries. The non-basal segment of dislocations was found to consist of 40% of the overall dislocation density at a yield anisotropy factor of just 1.1 instead of an expected value of 100 determined from single-crystal tests. Additionally, restored portions inside the twins were revealed by the distorted microstructure at an elongation of 16%.

Keywords: Magnesium; Mechanical properties; Microstructure; Dislocations

INTRODUCTION

It has long been believed that magnesium and its alloys have poor cold workability and ductility. Consequently, useful magnesium alloys with complex Casting routes frequently result in shapes with little to no mechanical processing. Still, Compared to other alloys, the majority of cast magnesium alloys have tensile elongation of only a few percent, which makes them less mechanically dependable for structural applications. Additionally, the rate of solidification sets a restriction on the size of cast parts. Should ductility be enhanced to the point that shape forming may occur at room temperature, magnesium alloys' massive structural components might be made at a significantly reduced cost and used for a considerably wider range of applications, including car parts. Magnesium alloys' low ductility has been linked to introduced to the phenomenon of extremely anisotropic dislocation slide. For three distinct slip systems, reports of critical resolved shear stresses (CRSS) have been made. magnesium single crystal [1-4].

Twin Growth and Texture Evolution in an Extruded AM30 Magnesium Alloy During Compression

Biplab Mohapatra[1], Sidheswar Dash[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Examining and measuring the development of extension twins and the corresponding textural change in an extruded AM30 magnesium alloy under compression along the extrusion direction was the goal of this work. Due to twin-dislocation interactions, three stages of twin growth with increasing strain were seen, along with raising the texture volume fraction of the components f1210g<0001> and f0110g<0001>. Growth during Stage I was defined as being comparatively slow and accelerating gradually. Stage II saw the twin growth achieve a steady-state, with the twin width growing linearly with increasing tension. Stage III twin growth slowed and took on a plateau-like quality.

Keywords: Magnesium alloy; Compressive deformation; Twinning; Twin growth; Texture

INTRODUCTION

Because of their low density and high specific gravity, magnesium alloys are promising lightweight materials for use in the transportation sector to reduce vehicle weight and boost fuel efficiency. particular potency[1,2]. Nevertheless, wrought magnesium alloys typically show poor room temperature formability and directional anisotropy in addition to having a strong texture generated during the manufacturing processes (rolling, extrusion, etc.)[3e5]. Magnesium's hexagonal close-packed (hcp) crystal structure results in a restricted number of independent slip systems, making it unable to meet the Taylor criteria for deformation, which calls for five independent slip systems[3, 6].However, twinning is necessary for the deformation of magnesium at ambient temperature because the critical resolved shear stress (CRSS) required for slip deformation is greater than that of twinning[7, 8]. When twinning deformation occurs, a twinned zone is created. The twinned region's deformation behavior will differ from the parent grain's as a result of this reorientation. Hence, the combination of twin formation and initial texture results in the anisotropy in the mechanical properties[11,12].

Strain-Path Effects on the Evolution of Microstructure and Texture during the Severe-Plastic Deformation of Aluminum

Shanta Mohapatra[1], Omm Prasad Baral[2]
[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The study aimed to determine the impact of purity level and processing approach on grain refinement and sub grain formation in unalloyed aluminum by an investigation of microstructure and texture evolution under severe-plastic deformation (SPD). Two batches of aluminum, each containing ninety-nine percent purity Four distinct deformation techniques—sheet rolling, traditional conical-die extrusion, equal-channel angular extrusion (ECAE), and uniaxial compression—were used to subject Al and 99 percent Al) to significant plastic strains at ambient temperature. Using orientation-imaging microscopy, microstructures and textures were identified after deformation. The different deformation paths in commercial-purity aluminum produced an ultrafine microstructure with a 1.5-mm grain size, which was assumed to have been created by a dynamic recovery mechanism. Conversely, for high-purity aluminum, the lowest grain size obtained by the different processes was ;20

INTRODUCTION

The superior strength and improved superplastic qualities linked to ultrafine microstructures in metallic alloys offer significant advantages for an array of aerospace applications. Large plastic strains are typically used in conventional metal-forming processes (such as extrusion and rolling) to refine grain. However, because these procedures result in a significant change in the dimensions of the billet, their structural applications are limited. On the other hand, the development of novel deformation techniques like equal-channel angular extrusion (ECAE), which imposes ultra-high plastic strains (i.e., e. 5) without changing the dimensions of the workpiece, has made it easier to produce ultrafine grain structures in bulk materials.[1-4] One way to create a fine-grain microstructure is viaby one of two methods. The process known as discontinuous recrystallization entails the formation and development of grains devoid of strain. process triggered by high mobility boundaries being affected by stored dislocations. Generally, there are a lot of misorientations while crossing new grain boundaries. This process can take place either during heat treatment after cold or hot deformation (i.e., classical static recrystallization) or during hot deformation (i.e., dynamic recrystallization).

Effect of Particles in Promoting Twin Nucleation in a Mg–5 Wt.% Zn Alloy

Pradipta Kumar Rout[1], Hemangini Menon[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

When precipitate particles were present, the number of f10^12g twins generated in a compressed Mg–5 wt.% Zn alloy rose and reached a maximum in the peak-aged condition. It was shown that whereas particles prevented twin growth, they encouraged twin nucleation.A straightforward model has been created to demonstrate that the rise in twin number may be reliably anticipated in peak and over-aged conditions. by presuming that the Orowan stress impeding twin growth is equivalent to the additional stress driving twin nucleation.

Keywords: Magnesium alloys; Precipitation; Twinning; Electron backscattering diffraction (EBSD)

INTRODUCTION

In magnesium alloys, twinning is a significant deformation mode. One of the simplest deformation processes to initiate is the f1012g twin mode.while loading at room temperature. The f10^12g twin mode has been thoroughly investigated in magnesium alloys and other hexagonal close-packed (hcp) metals because to its significance. The impact of second-phase particles on twin nucleation and growth, on the other hand, has not received as much discussion as it should. Given that many crucial magnesium alloys for technology can age and contain second-phase precipitates to increase strength, this is quite interesting. Precipitates can significantly impact the quantity and size of twins seen following twinning in magnesium alloys, according to the scant number of prior investigations on the topic. Based on a finding made by two of the current authors in a prior work, this paper concentrates on a single component of the aforementioned issue [4]. In this piece of work, firmlyAn orientation was applied to a textured magnesium–5% zinc alloy in order to initiate f10–12g twinning. In order to compare specimens that had been age hardened to their peak strength before deformation with unaged specimens, the final microstructure was studied. It was discovered that while the overall percentage of twinned material decreased in the older specimens (from 58% to 38%), there was a notable rise in the number of twins (by a factor of 1.7).

Moving-Load Dynamic Problems: A Tutorial (With a Brief Overview)

Pili Kumari Sahoo[1], Narsigh Biswat[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This course focuses on the analysis of structural dynamics issues brought on by shifting loads.By means of a basic illustration of a simplysupported beam crossed by a moving mass, some fundamental principles related to moving-load issues are presented.The required mathematical information is provided.Additionally, the analytical method for a circular plate excited by a spinning oscillator is described.Then, numerical outcomes of a circular beam stimulated by an axially moving surface load that is pinned around its longitudinal axis are given.A range of moving-load issues are succinctly examined together with a few published articles and books to enable readers to dive right into the issues that interest them.It is anticipated that readers would develop an understanding of moving-load issues, general solutions, and research findings after reading this lesson.Understanding the tutorial requires knowledge of vibration theory of beams and plates as well as partial differential equations.

INTRODUCTION

Moving-load dynamic issues are prevalent in everyday life and engineering.These challenges arise when structures or machines are subjected to loads that move in space and excite the structures or machines during vibration.Numerous examples abound.The vehicle-bridge interaction is a well-researched moving load issue.A few examples include wood saws, computer discs, machine tools, car discs, and drum brakes.In the event that the relative speeds involved are significantly lower than the critical speed—which will be described later in the tutorial—the issues may be classified as typical, stationary load issues.In order to solve the mass moving load problem, more complex mathematics and extensive calculation are needed. The mid-19th century saw the recognition of the dynamic effects of moving loads.The collapse of Stephenson's Bridge over the Delaware River was thought to have caused the hunt for moving load issues to begin in 1847. It is actually a moving-force problem, but Stoke is recognized as being the first researcher to formally analyze a moving-load problem. Timoshenko recounted this history [1]. Several easy moving-load issues were covered in Fryba's monograph along with their analytical fixes [2].

Free Vibration Analysis of Euler-Bernoulli Beam with Double Cracks

M. Selvom[1], Shivam Bittiria[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik university of Technology, Odisha, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This work examines the effects of two open cracks on the dynamic behavior of a simply supported beam with two cracks, using both analytical and experimental methods. Hamilton's principle is used to derive the equation of motion, and a numerical method is used to examine it. The Euler-Bernoulli beam is a model for the simply supported beam. hypothesis. Three intact beam segments are connected by a local flexibility matrix, which represents the fracture portions. For both single and double cracked simply supported beams, the effects of the fracture depth and location on the vibration mode and natural frequencies of the beam are explained analytically. A comparison of the theoretical results with experimental measurements provides additional validation

Keywords: Free vibration; Euler-bernoulli beam; Double crack; Eigenvalue; Flexibility matrix

INTRODUCTION

Considerable weight is placed on the dynamic behavior of a beam with cracks in many structural designs.When a building sustains damage, its dynamic Because of the shift in its mechanical properties, responsiveness varies. Chondros and Dimarogonas (1989, 1998) investigated how a cantilevered beam's dynamic behavior was impacted by the depth of the crack. They demonstrated how the beam's inherent frequency decreases as the crack depth increases. Additionally, they examined the transverse vibration of the cracked beam using the energy approach and the continuous cracked beam theory. Dado and Abuzeid (2003) investigated the interaction between the bending and axial modes of vibration when studying the modeling and analysis algorithm for a fractured Euler-Bernoulli beam. This method is used to analyze the broken beam's vibration behavior, especially its inherent frequency. and mode forms as a result of the free end's rotating inertia and additional mass. Lin (2004) examined the free vibration analysis of simply supported beams with a crack using both direct and inverse approaches. Using Timoshenko beam theory as its foundation, the technique depicts the crack as a massless rotational spring. The usefulness of employing coupled responses to identify damage in thin-walled tubular constructions was investigated by Liu et al. in 2003. By

ArcNet: Series AC Arc Fault Detection Based on Convolutional Neural Network

Prasanta Kumar Sethi[1], Dillip Pradhan[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

AC series arc is dangerous and can cause serious electric fire hazards and property damage. This paper proposed a Convolutional Neural Network (CNN) based arc detection model named ArcNet. The database of this research is collected from 8 different types of loads according to IEC62606 standard. The two most common types of arcs, including arcs from a loose connection of cables and those caused by the failure of the insulation, are generated in testing and included in the database. Using the database of raw current, experimental results indicate ArcNet can achieve a maximum of 99.47% arc detection accuracy at 10 kHz sampling rate. The model is also implemented in Raspberry Pi 3B for classification accuracy. A trade-off study between the arc detection accuracy and model runtime has been conducted. The proposed ArcNet obtained an average runtime of 31 ms/sample of 1 cycle at 10 kHz sampling rate, which proves the feasibility of practical hardware deployment for real-time processing.

INTRODUCTION

WITH the wide usage of power electronics-enabled devices, power utilization is becoming more efficient and convenient. However, with the modernization of the low voltage distribution system, it also poses potential risks to electric safety. Arc fault is one of such serious threats, which is prone to cause electric fire hazard due to the partial high temperature (approximately 5000oC or above) of the arc [1] [2]. Unfortunately, traditional protection devices such as fuses, molded case breakers, and residual current devices are not suitable for detecting arc faults [3]. To close the safety gap, arc fault circuit interrupter (AFCI) is required and mandatory in residential electrical installations since 2002 in the US [4] [5]. A similar protection technology called arc fault detection device (AFDD) was introduced by the International Electrical Commission (IEC) to Europe, China, and many other countries in 2013 [6]. According to the relationship between arc and load, arc faults can be categorized as series and parallel ones [5] [6]. Series arc faults are more difficult to be detected than parallel ones because of the limitation of the impedance of the load in series.

Predicting the ultimate bearing capacity of the rectangular footing resting on layered sand: A Numerical Investigation

Pradeepta Kishore Dehury[1], Rajashree Senapati[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Einstein Academy of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The predicted ultimate bearing capacity of the rectangular foundation sitting on layered sand can be ascertained with this proposed numerical research. The dimensionless ultimate bearing capacity of the rectangular footing sitting on a lower loose sand layer with an infinite thickness on top of an upper dense sand layer was examined using finite element analysis. The friction angle was adjusted from 31° to 36° for the lower loose sand layer and from 41° to 46° for the upper dense sand layer. According to the findings, the dimensionless ultimate bearing capacity increased up to an approximate H/W ratio of 1.75, beyond which the rise was negligible. The results additionally show that the dimensionless ultimate bearing capacity was lowest for the upper dense and lower loose sands corresponding to the friction angles of 41° and 31°, and maximal for the upper dense and lower loose sands friction angles of 46° and 36°. The dimensionless bearing capacity falls for H/W = 0.5 and 2 as the L/W ratio increases from 0.5 to 6, after which the dimensionless ultimate bearing capacity stays constant for all parameter combinations. The outcomes were displayed in a non-dimensional manner and compared with the previous studies available in the literature.

Keywords: Rectangular footing, Finite element analysis, Bearing capacity, Layered sand

INTRODUCTION

This study provides insight into the ultimate bearing capacity of a rectangular footing put on layered sand, specifically the effect of the top dense sand layer's thickness on the ultimate bearing capacity. The results may be applied to determine the rectangular footing's ultimate bearing capacity on piled sand. The analysis is performed using a ABAQUS 2017 software. This investigation came to the conclusion that the shallow footing's bearing capability increased with footing size. From the literature mentioned in past, it is evident that the majority of numerical and experimental studies were carried out for the circular and strip footings on layered soil. The literature also showed that a dearth of experimental research on the ultimate bearing capacity of rectangular footing installed on layered soil have been carried out.

Recent Major Ground Improvement Techniques and Its Practical Application: An Overview

SachiKanta Pradhan[1], Saroj Nayak[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Templecity Institute of Technology and Engineering, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

There are a lot of foundation issues that arise throughout the execution stage of a construction project. At a construction site, natural soil may not always be able to support significant structural loads. In these cases, it is necessary to treat the soil to increase its bearing capacity and reduce anticipated settlement. To enhance the subsoil's bearing capacity, shear strength, settling characteristics, drainage, and other qualities, some ground improvement techniques are frequently employed. Ground enhancement is commonly understood to be a novel method of adding soil to the foundation to improve efficacy under operational loading conditions and/or design conditions at various construction sites. Ground improvement modifies the properties of the soil, enabling various construction techniques. The fight for infrastructure development has been an enhancement of soft ground deposits close to the country's coast, particularly black and delta soil areas. The swift expansion of urban and industrial areas necessitates additional space for future growth. Reclamation and utilisation of unsuitable and environmentally impacted lands have been undertaken in order to meet this need. This study provides an overview and conceptual framework of the most current key ground improvement techniques and addresses real-world implementations.

Keywords: Bearing capacity, Shear strength; M-sand, Ground improvement technique

INTRODUCTION

Any nation's ability to grow socially, economically, culturally, and industrially is greatly influenced by its installation. The only mode of transportation that could offer the majority of services to everyone is train and highway travel. Due to the recent construction of many infrastructure projects, including buildings, railroads, and highways, there is now an adequate supply of high-quality land available for building.

A Review of Digital FIR Filter Design in Signal Processing.

Salil Kumar Malla[1], Sagarika Ojha[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Sophitorium Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

In signal processing, a finite impulse response (FIR) filter settles to zero in finite time. FIR filters can be discrete-time or continuous-time, and digital or analog. FIR filter is widely used in various signal processing and image processing applications because of less area, low cost, low power, and high operation speed. An FIR filter is usually implemented by using a series of delays, multipliers, and adders to create the filter's output. We concentrate on the following three categories: frequency sampling methods, windowing based methods, and optimization-based methods. We also focus on the communications system, including transmissions equipment, relay stations, tributary stations, and other data terminal equipment. A communications system can even include other communications systems. A good example would be a regional emergency response communications system that connects several different cities and allows them to respond to a disaster by integrating systems they have installed for their police and firefighters. In the end, the performances of several FIR design methods are assessed. This article provides a comprehensive overview of the latest developments in finite impulse response (FIR) filter design methods in communication systems. Keywords: FIR Filter; Communication system; frequency sampling methods; windowing based method.

INTRODUCTION

A finite impulse response (FIR) filter is a filter whose impulse response (or response to any finite length input) is limited because it settles to zero in finite time. This contrasts with infinite impulse response (IIR) filters, which may have internal feedback and may continue to respond indefinitely [1]. The communication system model describes a communication exchange between transmitter and receiver. Signals or information passes from source to destination through a channel [2]. Mainly FIR filters are using windowing based methods and optimization-based methods [3]. To design a Finite Impulse Response (FIR) filter with the desired frequency response, window functions to achieve a trade-off between ripples in the passband and the transition band's sharpness [4]. Digital filters form an important part of today's expanding field of Digital Signal Processing (DSP). Among them, the most used filter is Finite impulse response. FIR filters. FIR filters are used extensively to filter images, modulate frequency, precision arithmetic, and various other purposes.

Fiber Optic Sensors and Fabry-Perot Fiber Optics Sensors and their Applications.

Sandeep Kumar Mishra[1], Rakesh Routray[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]Konark Institute of Science and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

 Beside advantages; recent advances, and cost reductions has stimulated interest in fiber optical sensing. So, researchers combined the product outgrowths of fiber optic telecommunications with optoelectronic devices to emerge fiber optic sensors. Numerous researches have been conducted in past decades using fiber optic sensors with different techniques. Intensity, phase, and wavelength based fiber optic sensors are the most widely used sensor types. In this paper, an overview of fiber optic sensors and their applications are presented.

INTRODUCTION

With the invention of the laser in 1960's, a great interest in optical systems for data communications began. The invention of laser, motivated researchers to study the potential of fiber optics for data communications, sensing, and other applications. Laser systems could send a much larger amount of data than microwave, and other electrical systems. The first experiment with the laser involved the free transmission of the laser beam in the air. Researchers also conducted experiments by transmitting the laser beam through different types of waveguides. Glass fibers soon became the preferred medium for transmission of light. Initially, the existence of large losses in optical fibers prevented coaxial cables from being replaced by optical fibers. Early fibers had losses around 1000 dB/km making them impractical for communications use [1]. In 1969, several scientists concluded that impurities in the fiber material caused the signal loss in optical fibers. By removing these impurities, construction of low-loss optical fibers was possible. In 1970, Corning Glass Works made a multimode fiber with losses under 20 dB/km.

Implementation of Database Triggers for Critical Database Table Surveillance

Sasmita Mishra[1], Sandeep Mishra[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India

[2]Gandhi Institute of Technology and Management, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The ability of a Database Management System (DBMS) to detect fraudulent activities at the earliest possible time cannot be overemphasized. The concept of critical data surveillance is the ability of system to automatically watch over some selected database objects, and take cognizance of ensuing events. This work achieves this solution through the implementation of database triggers, which keeps track of the major database events. The focus of this work is on surveillance and protection against updates to critical database tables. The work implements real life audit-based surveillance of automated product sales enterprises database tables. The trigger was created from the scratch, and programmed to monitor the critical database object - the product pricing table, which keeps record of the price tagged on each the products in the supermarket. Thus, this work ensures that the trigger is fired accordingly, and that changes to the contents are reported to an audit table for further review by only authorized persons. This research was implemented using PostgreSQL.

Keywords: DBMS; Database Trigger; System Workflow; Audit Table; Multi-Event; Evaluation.

INTRODUCTION

A database trigger is defined as a function that is invoked (triggered) automatically when a database event occurs on a database object [1]. One of such database objects is a table. The action verb that defines the automatic invocation of a trigger is 'fire'. Thus, a trigger gets fired [2] the moment a target event takes place on a target object. A number of database events could be tracked by a trigger, some of which are Updates, Deletes, and Inserts. A trigger could be programmed to track just one or a number of such events. When it tracks a number of such events, the trigger is said to be a multiple event trigger [3]. A trigger or group of triggers programmed to keep surveillance on database tables will automatically cease to exist the moment the associated database objects get dropped [4].

A Wireless Token-Passing Protocol for Multi-Hop Networking Wireless Mesh Networks using Decentralized Controlled-Access Approach

Snehasis Dey[1], Debasis Sahoo[2]

[1]College Of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

[2]Rajdhani Engineering College, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

This work presents a wireless token-passing protocol, named Ripple, for wireless mesh networks (WMNs). In contrast to existing random-access approaches, Ripple uses a decentralized controlled-access approach to protect nodes from unintentional packet collisions and maximize the spatial reuse. The performance of Ripple under an error-free wireless channel was investigated and the accuracy of the analysis was verified by simulation. Simulation results also indicated that Ripple achieved throughput, stability, and QoS enhancement than that of 802.11 DCF under a highly loaded situation..

I N T R O D U C T I O N

Currently, there has been a focus on a class of networks known as "mesh networks" in both proprietary commercial systems and multi-hop wireless networks [1]. As opposed to mobile ad hoc networks (MANETs), which use multiple mobile relaying nodes to facilitate communication between any two nodes, wireless mesh networks (WMNs) function as access networks by employing non-mobile relaying nodes to offer wireless backbone services that enable mobile users to connect to the wired Internet. All nodes must be able to handle quality-of-service (QoS) transport in multi-hop operation during periods of high demand in such an environment. While methods like increased physical carrier sensing [4], cut-through, spatial reuse, multi-channel, and so on can boost 802.11 DCF performance, they still depend on the random-access-based CSMA/CA process and hence have the same drawbacks.

Opening Up Socio-technical Minds to Promote Fair and Sustainable Energy Transitions

T.C. Manjunath[1], Prakash Patel[2]

[1]College of Engineering Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.
[2]NMIT, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The main problem for energy policy is to address various types of energy injustice and inequality while also accelerating the transition to carbon neutrality in order to combat climate change. In this piece, we contend that successful attempts to address this twin problem depend heavily on the public imagination. We specifically contend that theories of socio technical imaginaries can be used to both identify and catalyze integrated socio technical designs and solutions that deliver on both accelerated technological change and just, equitable, and inclusive transitions, as well as to strengthen public support for and engagement in carbon-neutral energy transitions. We offer a thorough case study of an emerging socio-technical imagination related to solar energy technologies in Puerto Rico in order to investigate these concepts.

Keywords: Energy justice, energy policy, energy transitions, photovoltaic, public imagination, Puerto Rico,socio-technical imaginaries.

INTRODUCTION

The central challenge for energy policy is to address forms of inequality and injustice ingrained in both current and past energy systems, the varying effects of transitions on workers and communities, and future designs for sustainable societies and economies, all while accelerating the transition to carbon neutrality to combat climate change [1]. In this piece, we contend that successful attempts to address this twin dilemma depend heavily on the public's imagination. Recent studies have shown how important sociotechnical imaginaries [2] are for understanding a number of important energy policy issues, such as who can effectively participate in energy decision-making and how energy systems are designed and function. Sociotechnical imaginaries are collective, institutionalized ways of imagining the relationship between technology and social and economic progress. These are crucial concerns to be answered in order to ensure that the transitions to sustainability are fair and inclusive as well as to define and accelerate them [12]. However, in many debates of energy policy and research, specific attention to the public's imagination of sustainability and energy has been undervalued and given insufficient attention thus far.

A New Defense Strategy Using Wind Power Generation for the Isolated Algerian System of Adrar

T.C. Manjunath[1], Nabeen Dash[2]

[1]College of Engineering Bhubaneswar, , Biju Patnaik University of Technology, Odisha, India.
[2]Nalanda Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Algeria has been planning to add 10 MW of wind power to the remote Adrar power grid in recent years. It is vital to assess how well the existing defensive strategy can withstand a scenario like this since wind turbine behavior during an incident can have a significant impact on a power system's stability and could cause a blackout. To evaluate the existing system defense strategy, simulations of various generating units going down are run. A unique defensive strategy is developed and tested in this study, based on the simulation findings of the dynamic behavior of the system frequency utilizing the isolated Adrar power system's current defense plan.

Keywords: Isolated power system, defense plan scheme, under-frequency load shedding, dynamic frequency behaviour, wind power generation.

INTRODUCTION

Algeria has started a significant program to modernize its electrical power infrastructure, with a goal of producing 40% of the country's electricity by 2030. Several initiatives have been directed toward raising the penetration level of renewable energy. A total of twelve Gamesa G52-850 kW wind turbines will be erected in the isolated Adrar power system as part of the investment program, which aims to install roughly 2000 MW of wind power. This farm will go into operation during 2014. For planners and operators of a power system, delivering high large-scale levels of intermittent production to supply the energy would present new difficulties. When the wind farms are integrated into an isolated electricity grid, a notable effect is observed. Numerous studies [1-3] have examined the problem of wind integration in stand-alone power systems. Using the recommended adaption of inertia support, Persson et al. [1] created a model to sustain a loss of generation with a 20% penetration of wind power. The approach is thought to provide a way for wind turbines to respond to frequency fluctuations as quickly as possible without the need for assistance from other production units.

Development of planning ideas for the further deployment of medium and low-voltage intelligent network operating devices

T C Manjunath[1], Tanuj Sahoo[2]
[1]College of Engineering Bhubaneswar, Odisha, India
[2]Mahavir Institute of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

The addition of new customer devices like electric cars and heat pumps to the supply task, along with the integration of measurement and control units into the networks and the advancements in automation technology, all contribute to and necessitate adjustments in the network planning and operation processes. These modifications should be included into a larger idea for intelligent network operation rather than being handled independently since they have a wide range of effects on the planning process at different levels. Therefore, E.DIS Netz GmbH and Bayernwerk Netz GmbH assigned a team consisting of FGH GmbH, FGH e.V., and IAEW at RWTH Aachen University the job of defining such a model.

Keywords: Medium voltage, low voltage, distributed energy resources (DER), grid outage.

INTRODUCTION

Distribution system operators (DSOs) face additional issues as a result of the further integration of decentral generating units (DGUs), energy storage systems, and charging stations for e-mobility, as well as modifications in customer load profiles. The substantial rise in uncertainty around future network consumption is one issue brought on by these variables, which makes demand-oriented planning and operation considerably more challenging. The difficulty may be effectively addressed by closely monitoring the network condition and utilizing flexibilities, as equipment loading is anticipated to peak within a limited number of hours per year. The DSO can extend the timeframe for required reinforcements by actively managing these circumstances, operating the network securely near its technical boundary conditions. To take use of flexibilities, distribution networks do not yet have enough actuators, communication infrastructure, or measurement.

The Study on The Performance Of Different Coagulants Used In the Water Treatment Process

Salini Patra[1], Devraj Giri[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, India
[2]Institute of Science and Information Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

One of the main issues in treating drinking water is turbidity. Plankton, molecules, and colloids are present in turbid water, which is treated by adding coagulation chemicals through the processes of flocculation and coagulation. This study looks at the effectiveness of three of the most often used coagulants in the turbid water treatment process in terms of lowering turbidity. Three different forms of coagulants have been used: poly aluminium chloride (PACl), ferric chloride, and aluminum sulphate (alum). The samples (60, 120, 180, 240, and 300 cm) are drawn from the Mahanadi River at different depths below the surface of the water. The outcomes demonstrated that ferric chloride and alum are less effective than PACl at eliminating turbidity. Alum is not as effective as ferric chloride as a coagulant in varying degrees of turbid water. This study compares the effects of utilising synthetic polyacrylamide with PACl and natural coagulants like "Walnut coat" with PACl to PACl alone for turbidityremoval. Polyacrylamide with PACl was more successful in eliminating turbidities of 22.8 and 25.7 NTU than PACl by itself. Additionally, it was demonstrated that walnut coat worked better at lower turbidities (20.7 and 21 NTU) when paired with PACl. Large, translucent, and easily settled flocs formed within the first five minutes of slow mixing with polyacrylamide; nevertheless, the same flocs produced after thirty minutes of slow mixing with PACl and walnut coat as flocculant. Better sludge qualities were achieved with the use of both polyacrylamide and walnut coat as coatants. This resulted in a high density and low water content that can be easily dried and disposed of.

Keywords: ferric chloride,Poly aluminum chloride, alum, Turbidity, and flocculant

INTRODUCTION

This study mainly indicates how coagulation affects the effectiveness of water treatment in reducing turbidity. For many years, a large number of researchers have been examining the separation of suspended particles from river water.

Utilizing Plastic Bottle Trash for Numerical Modeling of a Geocell-Reinforced Slope

Pradeepta Kishore Dehury[1], Rita Panda[2]

[1]Department of Civil Engineering, College of Engineering Bhubaneswar, India

[2]Maharaja Institute of Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha, India.

ABSTRACT

Currently, one of the main priorities for maintaining a sustainable and healthy environment is trash management. Plastic bottle garbage has undoubtedly overrun the landscape of the planet. Using it as a geocell in the geotechnical industry is one way to lessen the contaminating influence. The earlier researchers looked more closely at employing manufactured geocells for slope reinforcement. In this project, leftover plastic bottles are used to create a geocell. One type of internal stabilisation is the use of geocell for slope stabilisation. External stabilization refers to other methods of slope stabilization such the use of sheet piles and gravity walls. This study aims to provide a general overview of the impact of the slope strengthened by geocells. The findings of experimental tests utilising the plate load test showed that soil reinforced with geocells could have a higher bearing capacity. The PLAXIS 2D modelled geocell reinforce slope, sometimes referred to as the beam model, is used in numerical modelling as a slab that can distribute the load evenly throughout the reinforced region. Young's modulus of the geocell-soil composite is derived from empirical equations and experimental research, and it is confirmed in PLAXIS 2D utilizing axisymmetric condition. According to the study's findings, a geocell reinforce slope may typically prevent failure deformation by dispersing the loads across a wide area. In contrast to the reinforcement in clayey soil with a low improvement factor (IF), the considerable benefit is seen in sandy soil with a high IF. It suggests that waste plastic bottles can be turned into a geocell, increasing its market worth. It can lessen the pollution that comes from the trash of plastic bottles because it is applicable.

Keywords: Geocell,Slope stabilization, PLAXIS 2D, failure

INTRODUCTION

Geocell is shaped like a honeycomb in three dimensions. The soil inside the confinement system, which is supplied by cell, creates a composite that is stronger than regular soil (without geocell). Geocell can be made up of several kinds and substances.