

# PROCEEDINGS

## A National Conference on "Hybridization of Science, Technology, Engineering & Mathematics" (NCHSTEM- 2020)

Date: 20.10.2020

Published Online In Association with-  
International Journal of Engineering, Management,  
Humanities & Social Sciences Paradigms  
(ISSN: 2347-601X)



Organised by



**GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING**  
Golanthara, Berhampur, Ganjam, Odisha- 761008

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## **ABOUT THE CONFERENCE**

The aim of this conference is to present a unified platform for advanced and multi-disciplinary research towards sustainable energy systems. The theme on a broader front focus on recent innovation paradigms in feasible energy support and system and its, earnestness that may be applied to provide realistic solution to varied problems in society, environment and industries. To forge interactions among active researchers in the area of sustainable energy systems, Department of Electrical Engineering in conjunction with Department of Mechanical Engineering and Civil Engineering, Computer Science Engineering, ECE Department., Gandhi Academy of Technology and Engineering, is organizing a multidisciplinary International Conference on Emerging Trends in Sustainable Energy Systems.

## **ABOUT THE INSTITUTE**

Begin its journey in the year 2009 at Berhampur, the Silk City of Odisha, Gandhi Academy of Technology and Engineering is managed by "Tarini Educational Trust". GATE, an Institute, is approved by AICTE New Delhi & Affiliated to BPUT, Rourkela, Odisha. The Institute works with a mission to provide quality education of international standards for producing technocrats and future leaders in a disciplined and conducive environment as an integral part of our social commitment to promote education globally. GATE offer graduate programmes in Mechanical Engineering, Civil Engineering, Electronics Engineering, Computer Science Engineering and Electrical Engineering and Post Graduate Program in Mechanical Engineering. More than 900 graduate and post graduate students are being groomed here to excel in their area of specialization. GATE's alumni have been well accepted by both public sector and private sector companies and many are holding important positions in their respective organizations.

The Institute works with a mission to provide quality education of international standards for producing technocrats and future leaders in a disciplined and conducive environment as an integral part of our social commitment to promote education globally.

**CONFERENCE  
PROCEEDINGS  
(ORAL & PAPER PRESENTATION)**



**Gandhi Academy of Technology & Engineering**  
Golanthara, Berhampur, Odisha- 761008



**Dr. Satya Praksh Panda**  
**Chairman**

### **MESSAGE FROM THE CHAIRMAN**

On behalf of the Gandhi Academy of Technology and Engineering (GATE), I extend a very warm welcome to all delegates and participants to the National Conference. GATE has borne the mantle of excellence, omitted to ensuring the students their own space to learn, grow and broaden their horizon of knowledge by indulging into diverse spheres of learning. In our endeavor to raise the standards of discourse, we continue to remain aware to meet the changing needs of our stakeholders.

Last but not the least; we would also like to thank the staff, faculty members, the Organizers and the students for their contribution in successfully organizing and managing this event. This event wouldn't have been possible without their guidance and constant support.

We welcome all of you to GATE and hope that, this national conference will act as a medium for all to ponder upon the topic of discussions, challenge us to strive towards it, and inspiring us to go ahead

Thank you!

**Dr. Satya Prakash Panda**



**Gandhi Academy of Technology & Engineering**  
Golanthara, Berhampur, Odisha- 761008



**Prof. (Dr.) Gouri Shankar Mohapatro**  
**Principal, GATE**

### **MESSAGE FROM THE PRINCIPAL**

The conference is necessary to bring at the culture of information exchange and feedback on developing trends in technologies. I am delighted to note that the college is organizing the National Conference on “Hybridization of Science, Technology, Engineering and Mathematics”. Certainly, this type of conference not only brings all researches, students in one platform, but it also inculcates the research culture among the entire fraternity of Education in the country, thereby contributing to the development of the nation.

I hope that this conference would certainly induce innovative idea among the participants paving way for new invention and technologies in the field of application of optimization techniques and sustainable development in engineering sciences.

I Congratulate All Professors and the entire organizing team for initiating the conduction of such an important event at our institute.

I wish the conference a grand success.

**Prof. (Dr.) Gouri Shankar Mohapatro**



**Gandhi Academy of Technology & Engineering**  
Golanthara, Berhampur, Odisha- 761008



### **MESSAGE FROM CONVENER**

It gives me immense pleasure to invite all delegates, researches and students at Gandhi Academy of Technology and Engineering (GATE), Berhampur, Odisha India to the National Conference on “Hybridization of Science, Technology, Engineering and Mathematics”. New Technology are introducing every day that will radically transform the future of this fields. The aim of the conference is promote excellence in scientific knowledge and innovations in the diversified fields of science, engineering and technology to motivate young researches and students. It is also offer the budding researches to different opportunities to present their work in front of eminent experts of individual fields.

As the convener of the conference, I extend my gratitude to all professors, Invited speakers, Chief Guest, Guest of honour, Keynote speakers, National Delegates, Invited Faculty member, researcher and students coordinators for their wholehearted participation in the national Conference. I would like to thank National & International advisory committee members, organizing committee and department faculty and staff members for their continuing support. I would like to thank all the authors and persons who directly or indirectly contributed their helping hand in the conference. Without their cooperation and full support, this conference would not have been possible

I wish the conference and the proceedings a grand success.

**Sachin Kumar Patro**

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# **Inter comparison of NO<sub>2</sub>, O<sub>4</sub>, O<sub>3</sub> and HCHO slant column measurements by MAX-DOAS and zenith-sky UV–visible spectrometers during CINDI-2**

**Dr.Girija Prasad Sahoo**

Professor, Department of Chemistry  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

In September 2016, 36 spectrometers from 24 organizations estimated various key air toxins for a time of 17 d during the Second Cabauw Intercomparison crusade for Nitrogen Dioxide estimating Instruments (CINDI-2) that occurred at Cabauw, the Netherlands (51.97 E). We report on the result of the formal semi-blind intercomparison work out, which was held under the umbrella of the Organization for the Discovery of Climatic Sythesis Change (NDACC) and the European Space Organization (ESA). The three significant objectives of CINDI-2 were (1) to portray and better grasp the distinctions between countless multi-pivot differential optical assimilation spectroscopy (MAX-DOAS) and pinnacle sky DOAS instruments and examination techniques, (2) to characterize a powerful technique for execution evaluation of all partaking instruments, and (3) to add to a harmonization of the estimation settings and recovery techniques. This, in turn, makes the capacity to create steady top notch ground-based informational collections, which are a fundamental necessity to produce solid long haul estimation time series reasonable for pattern investigation and satellite information approval.

## **1. INTRODUCTION**

Inactive UV-noticeable spectroscopy involving dispersed daylight as a light source gives one of the best techniques for routine remote detecting of barometrical follow gases from the ground. While apex sky perceptions have been utilized for a very long while to screen stratospheric gases like NO<sub>2</sub>, O<sub>3</sub>, Brother and OCIO (for example Noxon, 1975; Platt et al., 1979; Solomon et al., 1987; Pommereau and Goutail, 1988; Richter et al., 1999; Liley et al., 2000; Hendrick et al., 2011; Yela et al., 2017), estimations examining the sky upward at a few rise points among skyline and peak have been laid out more as of late. Notwithstanding complete segments, the MAX-DOAS (multi-hub differential optical retention spectroscopy; Hönninger et al., 2004) strategy likewise permits the deduction of in an upward direction settled data on various tropospheric species like NO<sub>2</sub>, formaldehyde (HCHO), Brother, glyoxal, IO, HONO and SO<sub>2</sub> (see, e.g., Hönninger furthermore, Platt, 2002; Wittrock et al., 2004; Heckel et al., 2005; Lee et al., 2008, 2009; Sinreich et al., 2010; Frieß et al., 2011; Hendrick et al., 2014;

# Organ metallic compounds in drug discovery: Past, present and future

**Dr.Sunita Bal**

Professor, Department of Chemistry  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

In this survey, we present an outline of a portion of the restoratively significant organometallic drugs that have been utilized previously or that are right now in clinical preliminaries as well to act as an illustration of mixtures that are presently in the underlying phase of medication advancement. Three primary classes of organometallic buildings have been picked for conversation: antimicrobial organoarsenicals, antimalarial and anticancer ferrocene-containing compounds and anticancer synergist organometallic edifices. The motivation behind this audit is to give perusers with an emphasis on the huge advancement that has been made for each of these separate fields of medication.

## 1. INTRODUCTION

An organometallic complex is for the most part characterized as a metalcontaining compound that has something like one immediate, covalent metal-carbon bond [1]. The most noticeable instances of this class of mixtures are generally presumably the (half-)sandwich compounds and the change metal carbenes, with ferrocene what's more, the Grubbs impetuses being common instances of these two classes of organometallic buildings. Such mixtures have tracked down huge applications in catalysis or biosensing at the same time, really astonishing for specific perusers of this article, too in medication [2-7]. At this phase of the survey, it is significant to feature that the well knownplatinum(II) anticancer medications cisplatin, oxaliplatin and carboplatin, the antiarthritic gold(I) auranofin or the X-ray specialists in light of gadolinium(III) are not organometallic edifices since they don't have a metalcarbon bond — they are characterized as coordination edifices. In this audit, we mean to provide the perusers with an outline of the (potential) utilization of organometallic intensifies in medication. We have picked a couple of models, chose by logical significance and individual liking to the field of exploration, to make sense of the ideas utilized such a long ways with such buildings. More in particular, we are talking about under three principal classes of restoratively pertinent organometallic edifices, specifically (1) antimicrobial organoarsenicals, (2) antimalarial and anticancer ferrocene-containing mixtures and (3) anticancer reactant organometallic buildings.

# **$^{17}\text{O}$ NMR studies of organic and biological molecules in aqueous solution and in the solid state**

**Dr.Amit Kumar Jana**

Professor, Department of Chemistry  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

This audit portrays the most recent improvements in the field of  $^{17}\text{O}$  NMR spectroscopy of natural and organic particles both in watery arrangement and in the strong state. In the initial segment of the survey, a general hypothetical depiction of the atomic quadrupole unwinding process in isotropic fluids is introduced at a numerical level reasonable for non-trained professionals. Notwithstanding the first-request quadrupole communication, the hypothesis likewise incorporates extra unwinding components, for example, the second-request quadrupole association also, its cross connection with protecting anisotropy. This total hypothetical treatment permits one to evaluate the cross over unwinding rate (hence the line width) of NMR signals from half-number quadrupolar cores in arrangement over the whole scope of movement. Based on this hypothetical system, we talk about general highlights of quadrupole-focal change (QCT) NMR, which is an especially strong technique for examining biomolecules in the sluggish movement system. Then, at that point, we survey late advances in  $^{17}\text{O}$  QCT NMR studies of natural macromolecules in fluid arrangement. The second piece of the audit is worried about strong state  $^{17}\text{O}$  NMR investigations of natural and organic particles.

## **1. INTRODUCTION**

Oxygen is quite possibly of the most widely recognized component present in natural what's more, natural particles like proteins, nucleic acids, lipids, and sugars. Oxygen-containing practical gatherings frequently play key jobs in keeping up with the two designs and elements of biomolecules. The science including the oxygen component is rich, and in many cases oxygen is the point of convergence of numerous significant compound what's more, organic cycles going from breath to photosynthesis. In any case, according to the NMR viewpoint, oxygen is dependably an "revolting duckling" inside the group of components saw as in natural and organic atoms like hydrogen (H), carbon (C), nitrogen (N), what's more, phosphorus (P). The explanation that it is challenging to perform NMR tests for oxygen is on the grounds that the main NMR-dynamic stable oxygen isotope,  $^{17}\text{O}$ , has a few ominous atomic properties. As a matter of some importance,  $^{17}\text{O}$  has an extremely low normal overflow (0.037%). Subsequently, practically all  $^{17}\text{O}$  NMR studies require  $^{17}\text{O}$  isotopic naming for the atomic framework being scrutinized.



# Thermodynamic analysis of albumin interaction with monosodium glutamate food additive: Insights from multi-spectroscopic and molecular docking approaches

**Dr.Sagarika Pasayat**

Professor, Department of Chemistry  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Monosodium glutamate (MSG) is an illustration of food added substance, which is utilized as a flavor enhancer in different groceries. On account of its broad use in food creation, the toxicology what's more, conceivable adverse consequences of MSG added substance on egg whites should be all around explored. In this manner, interestingly, the limiting of BSA and MSG have been concentrated on utilizing multispectroscopic and atomic displaying approaches under physiological circumstances. BSA fluorescence force has been reduced upon the expansion of expanded MSG focuses. The Harsh Volmer extinguishing consistent (KSV) esteem increment with increasing temperature and bimolecular extinguishing rate consistent of protein (kq) esteem was bigger than  $2.0 \times 10^{10} \text{ L mol}^{-1} \text{ s}^{-1}$ , which shows that the fluorescence extinguishing was both dynamic and static because of the BSA-MSG complex development. The positive qualities for both  $\Delta S^0$  (888.291 J.mol<sup>-1</sup>K<sup>-1</sup>) and  $\Delta H^0$  (243.903 kJ.mol<sup>-1</sup>) suggested that the hydrophobic powers assumed transcendent parts in the limiting of MSG to BSA.

**Keywords:** Monosodium glutamate (MSG); spectroscopic studies; bovine serum albumin; Thermodynamic parameters; circular dichroism.

## 1. INTRODUCTION

Food added substances play a critical part in food stuff and hazard evaluation of them are one of the vital worldwide test in nourishment science [1]. For a long time, food added substances as a characteristic or engineered substances have been utilized in limited quantities for seasoning, shading, pleasantness and expansion of the timeframe of realistic usability of food [2, 3]. Enhancing frameworks are extremely fundamental in flavorful food assembling and play a significant wholesome job, particularly in certain food varieties that are not exceptionally tasty through giving the beneficial allure [4]. Monosodium glutamate (MSG; Fig. 1) or monopotassium glutamate (MPG) as instances of flavors have been generally utilized in various fields, for example, bioprocess observing what's more, amino corrosive biosynthesis as well as in the food business and medication [5].

# **Characterization of perceptual interactions among ester aroma compounds found in Chinese Moutai Baijiu by gas chromatography-olfactometry, odor Intensity, olfactory threshold and odor activity value**

**Dr.Priyabrat Mohapatra**

Professor, Department of Chemistry  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Ester fragrance intensifies in Chinese Moutai Baijiu were extricated by fluid extraction (LLE) or headspace strong stage microextraction (HS-SPME) and distinguished and evaluated by gas chromatography-olfactometry (GCO) furthermore, gas chromatography-mass spectrometry (GC-MS), and 13 of them were perceived as the significant smell intensifies in view of their flavor weakening (FD) values and scent action values (OAVs). The perceptual cooperations of ethyl isobutyrate and ethyl isovalerate for the general esters smell in 53% watery ethanol arrangement were concentrated on through the scent power, olfactory limit and OAV. The Vector Model showed that smell fractional expansion had happened in the wake of blending. The Feller's added substance model and OAV investigation uncovered that different groupings of ethyl isobutyrate and ethyl isovalerate gave added substance or synergistic smell impacts for combinations. Specifically, as the convergence of ethyl isobutyrate was expanded prior to blending, the pattern of expanding level of collaboration was seen in the blend.

## **1. INTRODUCTION**

Chinese Baijiu is perhaps of the most generally polished off cocktail in China, its yearly result has surpassed 7.8 billion liters in 2018, and comprises a significant piece of the Chinese food industry (based on information from the China Business Data Organization). Baijiu is an old Chinese alcohol and a notable refined soul that has been created for more than 2,000 years (Liu and Sun, 2018). Based smell also, flavor qualities, Chinese Baijiu can be characterized into 12 smell types: sauce, areas of strength for fragrance, light smell, rice smell, feng fragrance, te smell, sesame fragrance, laobaigan smell, fuyu fragrance, natural fragrance, chi smell and blended fragrance (Liu and Sun, 2018). Among them, sauce smell type Baijiu, a regular delegate, has a place with the item of conventional strong maturation, and has particular flavor due to the extraordinary common habitat of Maotai town and unconventional cycle conditions (Li, Wei, Zhou, and Sun, 2008). Moutai Baijiu (or Maotai Baijiu) is a common sauce fragrance type Baijiu, and it has a full-bodied enduring sauce fragrance.

# **A Comparative Analysis of 'The Theory of Reasoned Action (TRA)' with 'The Theory of Planned Behavior (TPB)' for the Objective of Understanding Students' Entrepreneurial Intention**

**Dr.Ramesh Chandra Rath**

Professor, Department of Economics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Career planning among students has reached epidemic proportions in several countries. Every psycho major knows how challenging it is to provide a satisfactory explanation for human behaviour. It can be studied on a wide range of depths, from the level of individual physiological processes to that of societal structures. There have been many successful interventions for many various behaviours, and they have all been planned and evaluated using TPB and TRA. The study's overarching objective is to teach students how to effectively use research material to draw conclusions, as well as how to apply research methods and procedures to solving practical problems. This study will address the benefits and limitations of using TRA and TPB theories, as well as their place in a praxis research paradigm. Focusing on answering the question "What Is TRA & TPB and How Does It Consist?" will be the key goal of this research.

**Keywords:** TRA; TPB; Attitudes; Behavioural Beliefs; Perception; Subjective Norms; Intentions; Motivation to Comply

## **1. INTRODUCTION**

Predictions of future actions are often based on the notion of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). According to a recent meta-analysis by Sheppard, Hartwick, and Warshaw (1988), the model is helpful for pinpointing where and how to focus efforts to alter behaviour. The theory of reasoned action was built and tested on the premise that the behaviours under study were entirely governed by free will. The theory of planned behaviour, originally presented by Ajzen (1985), has been updated recently to include perceived behavioural control as an explicit antecedent to behavioural intentions. The current research aims to draw parallels between the predictions of behavioural intention and target behaviour made by the theory of planned behaviour and those made by the theory of reasoned action. Ten behaviours were chosen to illustrate varying degrees of agency in bringing about their own performance, and the predictions derived from the two theories were compared across these behaviours.

# **Entrepreneurship Development: A Study on Women Entrepreneurs of Gobardhana Development Block under Barpeta District**

**Dr.Mousumi Parida**

Professor, Department of Economics  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Women entrepreneurship development is an essential part of human resource development. The development of women entrepreneurship is very low in North East India, especially in the rural areas. Here women have to face many constraints in carrying out economic activities or undertaking any entrepreneurial work. But today they have become aware of their existence, their rights and their work situation. They are now participating in large number in the present world of business. Today, more and more women are undertaking various economic activities. They are playing very important role in socioeconomic development of the country. This paper mainly focuses on women entrepreneur. It is an attempt to understand the prospects and challenges for women entrepreneurship development of Gobardhana Development Block. This paper is prepared to understand the various issues like importance of women entrepreneurship, constraints faced by the women entrepreneurs and a framework for encouraging women entrepreneurship. The paper also suggested some measures which may be viewed as challenges for the development of women entrepreneurship.

**Keywords:** Entrepreneurship, Women Entrepreneurship, Motivational Factors, Constraints

## **1. INTRODUCTION**

The term „Entrepreneur“ has been derived from the French word *entreprendre*“ means to undertake. The term entrepreneur may be defined as “an entrepreneur is a person who combines capital and labour for production.” According to Cole, Entrepreneurship is the purposeful activity of an individual undertaken to initiate, maintain or aggrandize profit by production or distribution of economic goods and services. Entrepreneurship is a turf where men are the major players, but, lately many women entrepreneurs have also prove their mettle. Women who were earlier the bread maker have now become the bread earners and they are doing a great job indeed. The Government of India has defined a women entrepreneur is “an enterprise owned and controlled by a women having a minimum financial interest of 51% of the capital and giving at least 51% of the employment generated in the enterprise to women.” Entrepreneurship is necessary to initiate the process of economic development of both developed and developing countries. It is also instrumental in sustaining the process of economic development.

# **An Analytical Overview of Investment Strategies**

**Dr. Tanmaya Kumar Pradhan**

Professor, Department of Economics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

This paper inspects a bunch of investment strategies in light of past market data to assess execution and exchanging influence on the Canadian Market. In doing as such, we survey whether exchanging data enhances the adequacy of these strategies. Using variation models of four various approaches, we track serious areas of strength for down that upheld the Momentum Investment Strategy. The contention of whether the market is proficient has gone on for quite a while and it is fundamental for a financial backer to figure out what sort of investment methodology to pick confronting different market adequacy. It is significant to decide which sort of technique to use in various market stages.

**Keywords:** Investment Strategies, Industry, Market Stages, Investment Counsellors, Stock

## **1. INTRODUCTION**

Research on decisions of investment strategies get from an intriguing contention between the intellectual circles and industry. Obviously, scholastic exploration continuously accepts that the market is totally wonderful while practically speaking, according to the viewpoint of industry, cost can't mirror all the data on the lookout and a forceful investment procedure could continuously bring a positive premium return. Subsequently, in light of the contentions over, two sorts of investment thoughts arose. Retail financial backers require general data about the monetary turns of events occurring in the economy, protections market conduct and explicit data about the organizations whose protections are under thought for investment. They additionally require data connecting with the new issues of the organizations, investment guidance and suggestion with respect to the purchasing, holding what's more, selling of specific security data about profit, extra, privileges issues, record dates/book terminations of their property and so forth. The data required is acquired from Financial Press, Stockbrokers, Writing, Companies distributions and Advice and advising by Investment counsellors. Stock costs can't mirror all the data of the market, so the job of directors is connected considerably more significance. It means to surpass the typical return of the stock market by inside and out investigation and mastery and by taking full benefit of transient cost changes. Administrators ought to know when to move into or out of stocks, bond, or any resource. These portfolio chiefs attempt to decide when and where costs will change by considering subjective and quantitative factors.

# **Emergence & Evolution of Small Scale Units: A Journey of Eighties**

**Dr.Jyotirmaya Satapathy**

Professor, Department of Economics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The living standard of people among different countries varies considerably. Generally industrialized countries are termed as developed countries and the agriculturally pre dominated ones are referred as developing countries. Developing nations have normally traditional and conventional techniques to use whereas developed nations go for technological up gradation and expertise. Present study puts its focus on what type of growth pattern our small scale and tiny sector had in a period of industrial revolution. The president of World Bank once pointed out that around 40% people in developing countries live in absolute poverty. Their life is so degraded by disease illiteracy, malnutrition and hunger that the attainment of basic necessities seems to be attained difficult in near future. Agriculture supplies certain indispensable primary requisites- food for the population, raw material for industries and surplus for exports. No country, which aspires to be self-supporting, can do without agriculture. At the same time no a nation has become rich through agriculture alone. With the growth of civilization and the multiplication of human waste, the opportunities associated with manufacturing industries have increased in importance and are found to be more remunerative. Industrialization has become a necessity. With this background, industrial revolution in India started after getting independence.

**Keywords:** Developed, Developing, Growth, Industrialization, Up-gradation

## **1. INTRODUCTION**

Village and small industries in their different concepts are integral and continuing elements in the economic structure and in the scheme of national planning. The primary object of developing small industries in rural areas is to generate better employment opportunities, raise standard of livings and bring about a more balanced and integrated economy. The prevailing scarcity of capital for the promotion of large scale industries and lack of technical development favors the growth of small scale and tiny industries. Besides, the setting up of small but efficient units of production at suitable locations throughout the country would reduce the cost of transport involved in the haulage of raw materials on the one hand and provide employment to scattered unskilled population on the other.

# **Professional development among English language teachers: Challenges and recommendations for practice**

**Dr.Bairagi Patra**

Professor, Department of English  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Professional development of language preceptors is one major measure to insure that preceptors remain updated and avoid the threat of leaving the profession. Not all preceptors, still, attend professional development (PD) shops or engage in similar conditioning for the sake of developing professionally. Some preceptors attend PD courses on a routine base with little knowledge of what capabilities they're anticipated to gain as a result, and simply because taking part in similar programmes is an institutional demand. To explore the type of PD conditioning English preceptors in Iran share in and also to understand the provocations behind their participation, the experimenters canvassed 24 English preceptors (with the age range of 24 – 50) working at private language institutes and public high seminaries. The study set up that public academy preceptors were engaged in veritably many PD conditioning, and the type of PD conditioning private preceptors followed ranged from consulting online courses to watching educational vids to reading ELT handbooks.

## **1. INTRODUCTION**

As Burns and Richards (2009, 1) point out, the English language skills of the citizens of a country are vital for its development and active participation in the global economy and 'central to this enterprise are English teaching and English language teachers.' Freeman et al. (2015) estimate that there are currently about 15 million English teachers worldwide and that most of these are not native speakers of the language they teach. These observations imply that English teachers worldwide play a seminal role in the development of English competence among its learners, and for teachers to be able to deliver competent speakers, their own professional competence is also a priority. Although teachers are expected to be suitably qualified at the time of their recruitment, the changing and dynamic nature of the English teaching profession means that teachers have a need for on-going professional development, not only to keep up with changes and trends but also to address the high attrition rate among language teachers, with many leaving the profession after only a few years (Diaz-Maggioli 2003).

# **English writing pedagogy at the crossroads: The case of Oman**

**Ajit Kumar Satapathy**

Professor, Department of English

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The purpose of this report is to examine English writing pedagogy and factors affecting scholars' writing development in pre-degree General Foundation Programs (GFPs) across Oman, where the boundary between English as a Foreign Language (EFL) and English as a Lingua Franca (ELF) is getting increasingly blurred. This report describes how mastery in English writing has become an inestimable skill for scholars' academic, social and unborn professional mobility, as they attend English-medium colleges and universities where writing plays a pivotal part across the class. Scholars also need to develop an capability to communicate in English, orally and in writing, to secure an employment occasion at the multilingual and multilateral original job request. To meet this demand, the concerned educational and delegation bodies made necessary moves in terms of upgrading the class and establishing norms. Still, data collected from preceptors and scholars at different institutions using semi-structured interviews reveals that English writing is tutored through traditional pedagogical practices that don't have the influence to prepare scholars for grueling academic writing tasks at degree programs.

## **1. INTRODUCTION**

Furnishing perceptivity into L2 writing class and pedagogy in different educational surrounds (e.g., Al-Jarrah and Al-Ahmad, 2013; Cimasko and Reichelt, 2011; Ene and Mitrea, 2013; Naghdipour, 2016; Ruecker et al., 2014) has been a means of perfecting our knowledge of scholars' real needs in writing and of the most effective approaches, strategies and practices to address them. These studies described how contextual brokers and arising global developments shape the dynamics of English writing instruction in various international settings. Sharing L2 writing resources and strategies is particularly important in this new period of diversity in communication modes, stripes and discourse, and corrective communities. This can help scholars develop their English writing and knowledge chops to come resourceful and competent members of the international community and its job request.



# Graph- Theoretical Derivation of Brain Structural Connectivity

**Dr.Rama Chandra Dash**

Professor, Department of Mathematics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Brain connectivity at the single neuron position can give abecedarian perceptivity into how information is integrated and propagated within and between brain regions. Still, it is nearly insolvable to adequately study this problem experimentally and, despite violent efforts in the field, no fine description has been attained so far. Then, we present a fine frame grounded on a graph-theoretical approach that, starting from experimental data attained from a many small subsets of neurons, can quantitatively explain and prognosticate the corresponding full network parcels. This model also changes the paradigm with which large- scale model networks can be erected, from using probabilistic/ empiric connections or limited data, to a process that can algorithmically induce neuronal networks connected as in the real system.

## 1. INTRODUCTION

The brain is a complex organ composed by neurons, abecedarian units of this system; their connectivity has a pivotal part in determining the dynamics of both individual neurons and the whole network. The system can be considered a directed graph with the neurons soma as bumps and synaptic connections among neurons as edges. The computational parcels of different neurons and sub networks depend on their topological association( 1 – 3), and multitudinous brain diseases can be associated with abnormal topological structure( 4,5). Although several important results on the computational parcels of neurons can be delved at the single cell position, e.g. to explain some chaotic actions( 6), or to suggest an empirical explanation for the storehouse capacity of an individual neuron( 7,39), discovering the general rules underpinning the connectivity parcels of their networks is a abecedarian step to figure out how information is integrated and propagated within and between brain regions. The need to find a rule explaining how brain cells are connected can not be overemphasized. Any large action on brain exploration dedicates relatively significant sweats to this problem.

# **Emergent models in a reinvention activity for learning the slope of a curve**

**Dr.Sandhya Mishra**

Professor, Department of Mathematics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Introducing the pitch of a wind as the limit of the pitch of secant lines is a well-known challenge in mathematics education. As volition, three other approaches can be honored, grounded on direct approximation, grounded on multiplicities, or grounded on transition points. In this study we delved which of these approaches fits scholars most by assaying scholars' inventions during a assignment script revolving around a design problem. The problem is set in a environment that is meaningful to scholars and invites them to construct styles to construct a digression line to a wind an perpetration of the guided reinvention principle from Realistic Mathematics Education( RME). The tutoring script is grounded on the phased assignment structure of the proposition of Didactical Situations ( TDS). The script was tested with 44 groups of three scholars in six grade 9 or 10 classrooms. We classified the strategies used by scholars and, using the emergent models principle from RME, delved to which of the four approaches the pupil strategies connect stylish. The results show that the groups produced a variety of strategies in each classroom and these strategies contributed to a meaningful institutionalization of the notion of pitch of a wind.

## **1. INTRODUCTION**

The fine notion of pitch of a wind is a mathematization of the common sense idea of the steepness of a path. Geometrically it's defined as the pitch of the digression line (if it exists). In practice, scholars' anticipations of what a digression line is do not match up nicely with the common description of a digression line as a limit of secant lines. For case, in a test by Orton( 1977) 43 out of 110 math scholars had difficulty seeing the digression line as a limit of secant lines, and analogous compliances are set up in the work of Ferine- Mundy and Reuther Graham( 1991). Vintner( 1982) observed that early gests of the digression line in circle figure introduce a belief that the digression is the same as a bounding line a line that touches but doesn't cross the wind. A study among 196 Greek scholars ( grade 12) for their understanding of digression lines reached analogous conclusions( Biza, Christou, & Zachariades, 2008). In the Greek class the first digression lines scholars encounter are all bounding lines( as in the case of circles and parabolas).

# Exact and explicit traveling wave solution to the time-fractional Phi-four and (2+1) dimensional CBS equations using the modified extended tanh-function Method in mathematical physics

**Dr.Chetan Kumar Sharma**

Professor, Department of Mathematics  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

This current study's primary end is to discover new and exact traveling surge results to the time- fractional phi- four equation and the( 2 1) dimensional Calogero – Bogoyavlanskilshilf( CBS) equation in the perspective of nonlinear traveling surge marvels. The modified extended tanh- function system is assessed on the phi- four and the( 2 1) dimensional CBS equations in this case. Accordingly, lump, mixed lump, lump periodic, lump-periodic- kink, kink, singular kink, kink soliton, periodic, and singular results are displayed in trigonometric, hyperbolic, and rational function results. To enucleate, the underpinning traveling structures, achieved results are established by making their dynamic address of the exact results presented in three- dimensional( 3D), figure, and two- dimensional( 2D) map with computational software MATLAB. In terms of amenable outgrowth, fractional traveling surge metamorphosis, and the applied procedure, all the exact results attained are considered to be new. To comprehend the physical processes, we've portrayed the numbers of the estimated results.

## 1. INTRODUCTION

Nonlinear fractional partial discrimination equations( FPDEs), whose description was first established in 1695, are presently among the swift- growing study fields.<sup>1</sup> It's extensively used to observe the complex physical explanation of nuclear drugs, tube drugs, mathematical drugs, statistical drugs, solid- state drugs, astrophysics, mechanical engineering, biomechanics, fractional dynamics, strong state material wisdom, neural material wisdom, fluid mechanics, stochastic dynamics, geo- optic fibers, nonlinear optics, etcetera<sup>2</sup>. Throughout this environment, colorful system have been discovered and used to probe the exact result of FPDEs in multiple studies, similar as the streamlined simple equation approach,<sup>3</sup> the Hirota bilinear approach,<sup>4</sup> the first integral approach,<sup>5</sup> the modified extended tanh function system,<sup>6</sup> the expanded trial equation approach,<sup>7</sup> emblematic calculations,<sup>8,9</sup> a converted rational function system,<sup>10</sup> the ansatz scheme,<sup>11</sup> the sine – cosine scheme,<sup>12</sup> the new extended direct algebraic system,<sup>13</sup> the(  $G'/G$ )- expansion system,<sup>14</sup> the advanced  $\exp(-\varphi(\xi))$ - expansion system.

# **Malaria and COVID-19 co-dynamics: A mathematical Model and optimal control**

**Prakash Kumar Shukla**

Professor, Department of Mathematics  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Malaria, one of the longest-known vector-borne conditions, poses a major health problem in tropical and subtropical regions of the world. Its complexity is presently being exacerbated by the arising COVID-19 epidemic and the pitfalls of its alternate surge and impending third surge. We formulate and dissect a fine model incorporating some epidemiological features of the co-dynamics of both malaria and COVID-19. Sufficient conditions for the stability of the malaria only and COVID-19 only sub-models' equilibrium are deduced. The COVID-19 only sub-model has encyclopedically asymptotically stable equilibrium while under certain condition; the malaria-only could suffer the miracle of backward bifurcation whenever the sub-model reproduction number is lower than concinnity. The equilibrium of the binary malaria-COVID19 model are locally asymptotically stable as global stability is forestalled owing to the possible circumstance of backward bifurcation. Optimal control of the full model to alleviate the spread of both conditions and their co-infection are derived. Pontryagin's Maximum Principle is applied to establish the actuality of the optimal control problem and to decide the necessary conditions for optimal control of the diseases.

## **1. INTRODUCTION**

Malaria, a mosquito-borne contagious complaint, alone or in combination with other conditions kills millions of people in tropical and subtropical regions, causing an enormous impact on health systems and husbandry (1,2). Humans acquire malaria infection from infected womanish Anopheles mosquitoes during blood feeding, especially from Plasmodium falciparum. The chain of transmission can be broken through use of mosquito treated nets and anti-malarial medicines as well as other control strategies, see(1,3) and the references therein. The emergence of malaria medicine resistance and the lack of an effective and safe Mathematical models have been used to give frame for understanding the dynamics of contagious conditions. Models of COVID-19 transmission dynamics are flourishing in the literature (12 – 15), and the reference therein. Weiss et al.,(16) noted the huge implicit impact of COVID-19 affiliated dislocations in malaria intervention and control strategies.

# **Railway ballast stone contact wear and friction**

**Dr.Paramananda Jena**

Professor, Department of Physics

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Molecule grinding in railroad counterweight impacts emphatically the conduct of ballasted tracks. Modern challenges postured on railroad foundation increment the necessity for reenactments, which require the grinding coefficient as an input parameter. Measured contact coefficients of balance stone contacts were found as it were in two thinks about, both beneath consistent loads. In this work, two sorts of counterweight were examined in cyclic contact tests with incremental increment of the connected stack after a few cycles. Some time recently each stack increment, 3D-scans of a few counterweight stones permitted to calculate the contact region. Assessing the stretch within the contact, the stress-dependency of the grinding coefficient and wear were explored. These exploratory perceptions are examined with respect to their impact for contact displaying within the reenactment of railroad counterweight.

## **1. INTRODUCTION**

In railroads, ballasted tracks are the foremost common frame of track systems. One of the most assignments of the counterweight is to exchange powers (both within the vertical and horizontal bearings) from the wheel–rail contact to the ground. How these powers spread inside the counterweight for diverse sorts of operational conditions (e.g. speeds and pivot loads, digression vs. bended track) is still not fully understood.

The Discrete Component Strategy (DEM), presented in [1], may be a broadly utilized instrument for the recreation of railroad counterweight and/or ballasted tracks, because it takes under consideration straightforwardly the granular nature of the fabric and hence gives knowledge into distinctive wonders happening at the molecule scale. The DEM recreation strategy too permits the impact of modern track components being presented to be anticipated, e.g. diverse sleepers sorts, [2]; beneath sleeper cushions, [3,4]; beneath balance mats, [4,5]; or geogrids, [5–8]. The settlement conduct of railroad balance is of tall down to earth significance, but too challenging to demonstrate in DEM as a few impacts can contribute: frictional conduct and breakage of stones or wear.

# Experiments on dry and wet ice friction

**Bikram Kumar Sahu**

Professor, Department of Physics  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Tests on ice-on-ice contact both with and without water on the ice surface are displayed. The tests were conducted at  $-9.4\text{ }^{\circ}\text{C}$  on dry ice and at  $-2.8\text{ }^{\circ}\text{C}$  on both damp and dry ice. The sliding speed was shifted between 6 and 105 mm/s. The impact of scraped area of ice surfaces was found to be an critical marvel with respect to the grinding coefficient. Related to scraped area, the grinding coefficient expanded altogether in tedious tests particularly at warm temperature. Including water on the ice surface had as it were a minor impact on the grinding coefficient at sliding speed over 10 mm/s. In any case, at lower speeds, the grinding coefficient on damp ice was essentially higher than on dry ice.

## 2. INTRODUCTION

The grinding of ice is an critical marvel for case in car tire plan and different winter sports. Contact between ice and ice is an vital figure for case when assessing ice powers against ships and seaward structures (Tikanmäki et al., 2011). The grinding of ice has been explored both hypothetically (e.g. Bäurle et al., 2007; Lozowski et al., 2013; Makkonen and Tikanmäki, 2014) and tentatively. Exploratory inquire about has been conducted on wide extend of temperatures and speeds both utilizing common ice (e.g. Pritchard et al., 2012; Sukhorukov and Løset, 2013) and in research facility. In research facility ponders, both rotational and direct gadgets (e.g. Oksanen and Keinonen, 1982; Kennedy et al., 2000; Marmo et al., 2005) have been utilized.

In field considers, the exploratory setup might superior speak to the common behavior of ice. Be that as it may, in field thinks about, coming to comparable circumstances in terms of natural factors and the homo- geneity of ice is more troublesome, and the reproducibility of comes about endures from that reality. On laboratory-scale, it is more doable to control natural factors and create repeatability in ice surfaces. When planning any test setup for ice grinding it needs to be considered that the format of the exploratory course of action underpins catching the marvel of intrigued.

# **Analyzing and Comparing Asphalt Mixtures with Additives and Carbon Reinforcement for Moisture Sensitivity and Mechanical Strength**

**Dr. Harish Chand Giri**

Professor, Department of Civil Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Bitumen and stone elements are the two components of asphalt that are weak, and this leads to structural weakness in asphalt. To establish a suitable binding between bitumen and aggregates, several fibers and additives have been utilized for many years. Adding substances that have In recent years, structural resemblances or components of bitumen have also drawn increased interest from different researchers. One material that can be compared to bitumen quite closely is carbon. That Recently, material has been employed for concrete studies in both pure and fiber forms. Within this study, the This material's addition to bitumen in the form of fibers and powder has been examined and contrasted.

**Keywords:** asphalt mix, carbon fiber, carbon powder, and functional qualities.

## **1. INTRODUCTION**

Road surface design is based on the projected traffic for the design period and operation period [1-3]. Traffic parameters based on demand, safety, type of road operation, etc., predict the amount of traffic and the number of heavy and light vehicles in the coming years. Based on this forecast, determine the load on the pavement structure [4-8]. Vehicle safety is one of the most fundamental principles in traffic engineering and transportation planning in the world. Lack of safety principles in road engineering design, maintenance, and transportation planning of the country, has caused heavy damage to society in recent years, so that every year part of the country's construction budget is spent on drawing,

The predicted traffic volume over the design and operation periods is the foundation for road surface design [1-3]. Traffic parameters forecast the volume of traffic and the proportion of heavy and light vehicles in the upcoming years based on factors such as demand, safety, type of road operation, etc. Calculate the load on the pavement structure based on this forecast [4-8]. One of the most important concepts in traffic engineering and transportation planning worldwide is vehicle safety

# **Building a Crash Prediction Model and Applying It to Two-Way Suburban Two-Lane Roads (Case Study)**

**Dr.Jyotikusum Acharya**

Professor, Department of Civil Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

It is necessary to do research to determine how different factors affect the frequency of accidents and to implement realistic safety measures in order to raise the standard of road safety. In order to gather accident data for the years 2010 to 2012, the two inseparable axes of the Qazvin-Avaj suburban line were originally chosen as a case study in this study. The number of access roads and intersections, the number of horizontal curves, and the hourly traffic volume were chosen as the independent factors for modeling, while the number of accidents was chosen as the dependent variable. Depending on the hours of spring and fall, the duration of the day and night was split into two sections: the night and the day, and a matching

**Keywords:** non-isolated two-lane roadways, suburban roads, accident prediction models

## **1. INTRODUCTION**

Due to a lack of significant and ongoing research over the past few years, the rate of traffic accidents in developing nations, like Iran, is significantly higher than in nations that have given this topic enough attention and research. These statistics are based on the number of trips, number of vehicles, and length of roads. Held [1-4]. Road, vehicle, and human accidents are sometimes separated into three groups [5-7]. Although road engineers will focus more on the road and its surroundings, each of these categories can be discussed [8-10].

The parameters of the road and environment subset include traffic characteristics, weather, road geometry, pavement quality, and road environment [11]. Traffic volume, the proportion of freight vehicles, lane and shoulder widths, curves that are horizontal or vertical, roadside circumstances, and route access density are examples of predictive variables. In crash prediction models, the base crash rate is determined by these models [13]. Pearsad proposed the first crash prediction models for multi-lane roads in 1993. These models describe the relationship between traffic flow and crash statistics by hourly volume and daily average. The average hourly volume of daily traffic flow explains why the accident rate rises as traffic flow increases, according to the data [14].



# Concrete Beams with Post-Fire Tensioned Segmental Behavior under Monotonic Static Loading

**Narayan Tiadi**

Professor, Department of Civil Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

The investigation of the behavior of post-tensioned segmental concrete beams subjected to high temperatures is presented in this research. Twelve simply supported beams were made and tested as part of the experimental program. The beams were classified into three groups based on the quantity of precast concrete segments. Each specimen had the same length (3150 mm) but varied in the amount of beam segments that were included (9, 7, or 5 segments). Nine of the twelve beams were subjected to a high-temperature flame for an hour in order to replicate the real-world fire tragedies. The temperatures of 300°C (572°F), 500°C (932°F), and 700°C (1292°F) were chosen based on the standard fire curve (ASTM – E119).

**Keywords:** load capacity, segmental beam, post-tensioning, fire test, gradual cooling, and serviceability.

## 1. INTRODUCTION

The facilities provided during construction have led to a large use of post-tensioned segmental concrete girders in bridge engineering. Numerous benefits come with this construction method: significant cost savings due to the potential for weather-independent segment production and a shortened construction period; easy element assembly on the job site; the ability to replace deteriorating tendons; independent prestressing and concreting operations; small, light segments; easier verification of the main external steel profile; and potential reduction in friction. It is commonly recognized that exposure to a fire disaster reduces the strength of prestressed concrete and reinforced concrete members. Life safety and failure prevention are the two fundamental goals of fire safety. In the event that there is no collapse after a fire, fire-related damage might occur. It should be highlighted that determining whether a concrete building exposed to fire and its constituent parts survive structurally depends critically on the analysis of the heating history of the material. The visual examination of concrete for cracks, discolouration, and spalling is usually the first step in assessing structures for fire damage.

# Examining the Effects of Cement Kiln Dust and Fly Ash Mixture on the Compaction and Strength Properties of High-Plasticity Clays

**Ankita Jena**

Professor, Department of Civil Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

The impact of fly ash (FA) and cement kiln dust (CKD) on the strength and compaction properties of the high-plasticity clay that was taken from a northern Iranian forest road was investigated experimentally. In order to create mixtures, the soil was mixed with 15% CKD by dry weight, and 10%, 20%, and 30% FA were applied to partially replace the CKD. Specimens were cured for seven and twenty-eight days before being subjected to unconfined compressive strength tests. Using a scanning electron microscope (SEM), the microstructures of the treated and untreated specimens were also analyzed.

**Keywords:** Fly ash, cement kiln dust, soil stability, compressive strength, and high-plasticity clay.

## 1. INTRODUCTION

Due to their low carrying capacity, high-plasticity clays are found all over the world and seriously harm the pavements and buildings that are placed upon them [1, 2]. Depending on the kind of soil and the construction activity, several strategies are employed to improve the soil. Two types of soil stabilization are mechanical stabilization and chemical stabilization, and they are widely used in practically all building projects [3]. By adding fibrous and nonbiodegradable reinforcement or altering the soil's grade through compaction or induced vibration, mechanical stabilization can be accomplished physically [4]. The addition of chemically active compounds to soil can alter its properties, a process known as chemical stabilization. However, due to energy demand, resource conservation concerns, environmental issues related to CO<sub>2</sub> emissions from Portland cement production, and economic effects resulting from Portland cement production's high cost, cement stabilization is no longer desirable [6].

As a result, there has been a lot of work done recently to create non-traditional or alternative agents, especially ones that are more affordable and effective, for a long-term soil stabilization procedure [7–11]. As a by-product of making Portland cement, cement kiln dust (CKD) is made up of tiny particles that are collected from electrostatic precipitators while cement clinker is being produced [12].

# **GPS is used to geocode a postal address online while synchronous database access is made.**

**Dr.Dhaneswar Parida**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

In order to achieve corporate goals, postal addressing information is essential for any corporation, particularly in industrialized nations. Consequently, postal address data must be geocoded—a process that turns it into an absolute number similar to latitude and longitude coordinates. Discuss how to use map services to convert lengthy coordinates into a basic geocode in this article. In addition, run a smartphone application to save the geocode along with other pertinent data so that end users may utilize it as a GIS later on. Name, kind, phone number, and a brief remark about the address are included in the information. The app has the ability to search for certain locations, such as schools, restaurants, hospitals, etc

## **1. INTRODUCTION**

Huge amounts of data are created, manipulated, and consumed in the internet age, and they are regarded as "one of the essential value-added pieces of information" in the development of internet-based services [1-3]. Because of this, maps and location-based services and apps have become widely used recently [4-6]. As a result, location tagging is becoming a more common technique for many devices that employ GPS data [7-9]. More than 80% of these data include a geographic reference, or GIS, and spatial analysis is a technique that has been embraced by several areas [10, 11]. Therefore, a process known as geocoding is needed to transform physical location data, such postal addresses, to absolute values, like latitude and longitude coordinates [12, 13]. A postal address is a compilation of knowledge that includes several elements, including different nations have different postal addressing systems, each having its own unique component ordering, forms, and components [16]. Additionally, a postal address reflects the various grammar and languages used in various nations. A webpage with map services is being used by people to look for a certain location [17]. In online and global business procedures, the mailing address should be precise, current, user-friendly, and adaptable [18].

# **Internet of Things Network Security and Uses with Long-Range Technology**

**Dr. Subhendu Kumar Pani**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Our goal with this research project is to develop a multisensor fusion calculation-based safe localization system and application for the Internet of Things (LoRa). Using the sensors cloud, the Arduino UNO high-level development platform, and the multisensor fusion computing workstations, the LoRa technology is used to design a network security system and instantly address the computing system. The goal is to develop a network server host that gathers and processes position signals from the multisensing signal collection and analysis processing module and instantly detects location by network nodes. The results are then sent to the central monitoring system through the wireless devices of the LoRa network. Energy management, environmental management, information management, industrial monitoring, and renewable energy management are among the fields in which the secure localization computer chip created in this research might find use. The LoRa hosts in this project are part of the system.

## **1. INTRODUCTION**

A new area of information technology development known as the Internet of Things (IoT) is distinguished by quick deployment, cooperative perception, and high failure tolerance. As such, it has wide potential applications in the fields of forecasting, environmental monitoring, military affairs, and city administration. The position data of nodes in most Internet of Things systems significantly impacts how effective an application is. Because the Internet of Things is closely linked to the real world, it must establish the spatial relationships inside the network based on the position data of its nodes, which then report events and monitor outside items as necessary.<sup>1–3</sup> Furthermore, node location data is a crucial component of many network operations, including self-configuration of the network architecture, instantaneous assessment of the coverage quality and routing assistance, and Determining a node's or event's exact location is crucial for IoT monitoring activities because it not only provides the necessary information to monitor an event and its target location, but it also self-configures the network topology, improves routing efficiency, notifies the deployer of the quality of the network coverage, and provides the foundation for network functions like namespace.

# **Face recognition using neuro-fuzzy inference system With feature extraction**

**Dr.Sachi Nandan Mohanty**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The technique for identifying individuals in pictures or videos is called human face recognition, or HFR. Numerous HFR techniques exist, including feature-based, eigen-faces, hidden Markov model, and neural network (NN) based approaches. The preprocessing or feature extraction employed in the first three approaches is linked to the category of the picture that has to be identified. The NN approach, on the other hand, offers better accuracy while allowing any kind of picture to be helpful without the need for specific image type data. This work presents the introduction of the neural-fuzzy (NF) based HFR system. The backpropagation (BP) technique in the neural network (NN) system is utilized for supervised learning to update the weights of the neurons. For network testing and training, two sets of images have been utilized. The system will identify the test image if it matches one of the training sets of images. Additionally, the system will return "not recognized" if the test picture does not match one of the image's learned sets. This study employs Geometric Moments and Color feature extraction techniques for feature extraction. 95.556 percent recognition rate was attained.

## **1. INTRODUCTION**

In the domains of artificial intelligence and pattern recognition, human face recognition has gained significant attention lately. HFR has a number of problems, including the ability of hair and expressions to alter a face, the resemblance of several faces, and the various perspectives from which a face might be observed. Strong HFR systems are necessary to address these problems. (1). The three steps of the HFR system are detection, feature extraction, and recognition .

Artificial neural networks (ANN) have been extensively employed in the development of intelligent computer systems that rely on pattern recognition and image processing . The most popular ANN model that can be trained with the BP technique is the backpropagation neural network (BPNN) . several research on the HFR system, all of which rely on various techniques.

# Test Automation in Open-Source Android Apps: A Large-Scale Empirical Study

**Dr. Aurobindo Kar**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Robotized testing of portable apps has gotten noteworthy attention in later a long time from analysts and professionals alike. In this paper, we report on the largest empirical study to date, aimed at understanding the test mechanization culture predominant among mobile app developers. We systematically examined more than 3.5 million repositories on GitHub and identified more than 12,000 non-trivial and real-world Android apps. We then analyzed these non-trivial apps to explore (1) the predominance of selection of test automation; (2) working habits of mobile app developers in regards to automated testing; and (3) the correlation between the selection of test computerization and the notoriety of ventures. Among others, we found that (1) only 8% of the mobile app development projects leverage automated testing practices; (2) developers tend to take after the same test computerization honeys over ventures; and (3) well known ventures, measured in terms of the number of supporters, stars, and forks on GitHub, are more likely to embrace test mechanization honeys.

**Watchwords:** Empirical Study, Automated Testing, Mobile Apps, Android

## 1. INTRODUCTION

Testing is a vital stage of computer program advancement life cycle. It is the primary way through which quality of software is detailed to be more profitable for a number of reasons, such as unwavering quality, repeatability, and execution speed, particularly within the setting of persistent integration [16]. Since versatile apps are an integral component of our standard of living and utilized to perform assignments in critical fields such as banking, health, and transportation, automated testing of versatile apps has gotten critical consideration in later a long time from researchers and professionals alike.

# **An Examination of WSN Security Requirements: Emphasizing the Features Associated with Security**

**Dr.Jibanananda Mishra**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

**Theoretical:-** As WSNs combine with a differing qualities of next-generation advances, remote sensor networks (WSNs) have picked up impressive consideration as a promising omnipresent innovation. Indeed in spite of the fact that a few considers on WSNs are being embraced, few methodically analyze the security issues relating to them. Additionally, later frameworks tend to be executed without adequate thought approximately claims security necessities, which can lead to deadly dangers. Frameworks that don't consider security necessities may give assailants the opportunity to diminish the generally effectiveness and execution of the framework. This implies that insufficiently connected security prerequisites can result in inadequate security of frameworks. In this manner, in this ponder, we emphasized the significance of security necessities to raise mindfulness with respect to them. In expansion, we analyzed literature that can be moved forward by counting WSNs security prerequisites such as characteristics, limitations, and dangers.

## **1. INTRODUCTION**

The later improvement of sensors has encouraged differing qualities in their capacities, and they are presently broadly utilized in different areas. Thus, the capacities and advances of sensors are advancing. Moreover, sensor arrange innovations that collect, prepare, and transmit data to applications are too being created. In specific, with the introduction of sensors within the Web of Things (IoT), sensor systems have been creating quickly, and their utilization has expanded exponentially. Sensor systems are for the most part classified into wired sensor systems and remote sensor systems (WSNs). Wired sensor systems are not reasonable considering omnipresent patterns. In differentiate, WSNs that back communication between objects with moo control and assorted usefulness are getting to be standard by integration with next-generation advances [1]. Be that as it may, most WSNs gadgets have one of a kind imperatives, such as an environment without an director and moo computing control [2].

# **The computer system architecture of our first real-time, real-time adaptive traffic light experiment andquot;Connected and quot; vehicles**

**Dr.Chinmaya Ranjan Pattnaik**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering,Berhampur, Odisha, India

## **ABSTRACT**

Connected vehicles can transmit real-time information to traffic management systems. Despite recent technological advances in telecommunication networks and mobile computing, no real-time adaptive traffic light control experiments have been conducted with connected vehicles. Most research in this area has been done only through simulations. In this work, we present a computer system that was introduced to control traffic lights in real time and whose only source of information are vehicles connected to a smart phone. We present the description of the computer system architecture implemented in the experiment of adaptive traffic signal based on Floating Car Data (FCD), where the traffic light is regulated in real time 100% "smart phone connected" and quot; vehicles The description of a system based on common technologies can help others develop and implement new traffic light control systems in new and quot; connected and quota; intersections

**Keywords:** adaptive traffic signals; Intelligent Transportation Systems (ITS); Floating Car Data (FCD); traffic management; connected and autonomous vehicles.

## **1. INTRODUCTION**

Both connected vehicles and connected traffic lights will become an important part of the Internet of Things (IoT) and Intelligent Transportation Systems (ITS) in the future. Connected vehicles can help drive and manage traffic in a number of new ways. Classic road traffic engineering was based on efforts to allocate demand to transit systems [1] and better road traffic management using tools such as traffic simulation [2-7] dynamic network load balancing and dynamic models [8-11] and deployment. of activities that influence users' route choices [12–16]. In recent years, no practical progress has been achieved in the regulation of traffic lights, and traffic lights are very often controlled by predetermined signs that do not always match the changing traffic flows.



# **Midimew Connected Torus Network for Venonta Generacia Massively Parallel Computing System**

**Dr. Tanmaya Kumar Pattnaik**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Critical scientific and technical applications require high-performance computing. Massively parallel computing (MPC) systems can provide this. A sensitive step in the maintenance of such systems is the connection network used to connect the computing nodes. The topology used has a significant impact on network costs and performance. Hierarchical Interconnection Networks (HINs) have been introduced, which have several attractive features such as low latency, low cost, and high fault tolerance. This paper proposes a new HIN named Midimew connect Torus Network (MTN), which offers a constant node degree, high arc connectivity, high fault tolerance, and reasonable half-width. A performance evaluation of the proposed MTN mobile network was conducted and compared with other networks. The comparison included traditional topologies such as 2D Mesh and 2D Torus, as well as hierarchical topologies such as TESH and TTN.

*Keywords:* Messively Parallel Computers; Hierarchical Interconnection Network; Static Network Performance;

## **1. INTRODUCTION**

This is where MPCs play an important role in our daily lives, solving computationally demanding problems. They are used to solve problems or achieve specific goals 1 at exaflops of computing speed 2. They help solve big challenges like brain function, lower the cost of solar energy, combat asteroid threats and make electric vehicles affordable 3. , MPCs are important . in the development and testing of powerful and advanced security devices, including nuclear systems. In fact, almost every major field uses such systems, 4 including education and research, energy coordination, weather forecasting, neural networks, and medical development 5 . Thus, MPCs attracted the interest of a significant number of researchers who proposed new topologies for interconnecting these systems.

# Energy-efficient data integration through cloud and edge computing collaboration in IOT networks

**Sachin Kumar Patra**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Internet of Things (IoT) networks have become the infrastructure to enable anomaly detection and response in various fields, where an efficient sensor data collection mechanism is essential because the energy and computing power of IoT nodes are usually limited. In addition, most applications can experience occasional outages, while most durations can respond to a healthy situation. In this configuration, the range, not the exact value of the sense data, should be of interest to domain applications, and the range is presented as a class of sense data in this article. To reduce the energy consumption of IoT networks, this paper proposes an energy-efficient sensor data collection mechanism in which a class of sensor data is processed using a compressed sensor algorithm. The data is predicted by a data prediction model in the cloud, and the detection data of an IoT node only needs to be sent to the cloud for synchronization when the class provided by this IoT node is different from the predicted value in the cloud. Experimental results show that our approach outperforms the benchmark in terms of network traffic and energy consumption.

**Keywords:** Compressed Sensing; Sensory Data Prediction; IoT Networks; Energy Efficiency

## 1. INTRODUCTION

In recent years, Internet of Things (IoT) networks as a promising and rapidly developing research field have been applied to support various domain applications, such as traffic flow monitoring in Intelligent Transportation Systems (ITS) [1], where continuous sensory data collection is essential to support environmental monitoring and anomaly detection in industrial applications. Intuitively, IoT smart things, also known as wireless sensor networks (WSN) sensor nodes, periodically detect environmental variables and forward sensor data packets to a center, such as a WSN sink node, for anomaly investigation and source determination. Considering that the majority of monitoring times can reflect the health status of most applications and the relatively high energy consumption of sensor nodes to send sensor data packets on roadways, reducing the amount of sensor data transmitted in the network is essential for extension.

# **Integrating Big Data and Cloud Computing Topics into Computing Curricula: Modula Aliro Gandhi Academy of Technology and Engineering**

**Pinaki Bhusan Nayak**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Together, big data and cloud computing offer a paradigm shift in the way companies acquire, use and manage information technology. It assumes that every CS student has a basic understanding of this collective paradigm and hands-on experience in deploying and managing big data applications in the cloud. This study argues that in order to comprehensively cover the concepts and skills of big data and cloud computing, related topics should be integrated into several core courses in the CS curriculum, rather than creating additional courses and undertaking a major revision of the curriculum. Our approach to incorporating these topics is to develop stand-alone competency-based learning modules for specific core courses where their coverage could find an appropriate context. This article examines four such modules and documents our classroom experiences during these interventions. Student performance data and research findings show reasonable progress in student achievement, increased engagement and interest.

**Keywords:** Big data, Cloud computing Module, CS curriculum, Competency-based learning

## **1. INTRODUCTION**

In today's world, analyzing "big data" is becoming a very important task in many fields of research, and data discovery and decision-making processes now drive many sectors of our business and economy. At the development level, analyzing big data requires the mastery of specific algorithms and methodologies due to the fundamentally distributed and parallel nature of workloads. In contrast, cloud computing capabilities are critical at the infrastructure level to acquire virtual resources on a piecemeal basis to deploy and manage these workloads. As an application area of parallel and distributed computing (PDC), big data and cloud computing together offer a paradigm shift in the way businesses acquire, use and manage information technology.

# EncryptionFileSystemFramework-ProofofConcept

**Bhabani Sankar Panda**

Professor, Department of Computer Science and Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Edge Computing, also known as the IoT ecosystem, has recently become the cornerstone of computing development. Recently, challenges have emerged in protecting such technology, which has made it increasingly popular in recent years, and its growth has also been accompanied by security concerns due to the recent increase in hacking incidents. Recent challenges rely on IoT technologies such as virtual interfaces to provide solutions to end devices, and securing this connection is very important, so these end devices are usually in the pocket of the end user, along with other personal data. There are several tools available to developers to protect data, including reasonable international mandatory security rules. The goal of this project was to create a specific and unique framework in which the developer does not need to have cryptographic knowledge to perform security operations on files whose data is encrypted.

**Keywords:** IOT, developers, cryptography, framework, operations, files.

## 1. INTRODUCTION

Technical development occurs rapidly. The year 2020 is expected to be the year of the so-called great technological leap [21]. Industries are rapidly preparing to move into a new era where robots, the Internet of Things (IoT) and other innovative trends are the protagonists of our time. The existence of IoT devices is an inevitable reality. We are no longer in the implementation phase, but more and more such devices are coming to the market. IoT already plays a central role in the digital transformation processes of organizations, and the current performance of these types of devices will increase in the coming years. Along with the growth of technology, more precisely IOT, the number of projects made for them also increases, where a large part of the projects deal with data files, and losing the privacy of the same data is not the goal of the developers. To combat this, they use encryption to protect the same information from third parties [1, 21].

The creation of this project helps the programmers of these complex systems without needing to acquire knowledge of the encryption domain to perform operations on the files, preserving the security of the data in the files.

# Development and Streamlining of an Integrated Generator-Rectifier System for Offshore Wind Turbines

**Dr.Jyoti Prasad Patra**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Numerous modern high-power direct-drive wind turbines incorporate permanent magnet synchronous generators (PMSGs) coupled with fully rated active rectifiers to manage and transmit power to the primary grid. Yet, the inherent speed limitations of wind turbines present an opportunity to diminish the requisite active rectification, thereby reducing drive costs and enhancing system reliability. This study outlines a process for designing and optimizing a direct-drive PMSG united with an integrated generator-rectifier system. To implement this hybrid approach, a multi-port generator featuring multiple diode rectifiers and a single active rectifier is devised. The paper details the optimization procedure for a 10 MW generator-drive under this proposed architecture using two distinct implementation methods. A comparison of these implementations is conducted, assessing the optimal Pareto front based on system-level efficiency and weight considerations.

**Keywords:** integrated generator-rectifier optimization, offshore wind generator, permanent magnet synchronous generator

## 1. INTRODUCTION

Advanced offshore wind turbines, exceeding 10 MW, have become increasingly accessible in the current landscape. Traditionally, wind generators ranging below 5 MW output power predominantly employed the permanent magnet synchronous generator (PMSG), wound-rotor synchronous generator, or doubly-fed induction generator. However, for power ratings surpassing 5 MW, the industry markedly favors the adoption of the PMSG [2]. In these conventional PMSG-based wind turbines, a full-power-rated active rectifier is utilized to manage power flow. To enhance efficiency and reliability while reducing the demand on active switches, an innovative integrated generator-rectifier system has been proposed. This system notably diminishes the rectifier size and introduces a notable advancement in efficiency.

# Implementing Coordinated Control Methods for Synchronizing Synchronous Generators in Power Plants

**Dr.Dhanurjaya Mahar**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

The paper focuses on the synchronization of steam turbo generators during parallel operation, a process historically conducted individually for each generator. However, this study explores a novel approach: synchronization by adjusting the rotational speed of not just one turbo generator but a cluster of generators within a power plant. Achieving this involves amalgamating multiple turbo generators into a unified coordinated control system, employing the coordinated control method. The primary objective of coordinated control is to maintain uniform rotor rotation angles across the generator group. This control system operates by regulating the average rotation angle of the generator rotors within the cluster, enabling rapid synchronization of the entire group. A mathematical model representing the generator is established, emphasizing relative deviations in variables to ensure the generator operates in its rated mode.

**Keywords:** coordinated control; steam turbo generator; generator synchronization; modal controller

## 1. INTRODUCTION

Synchronizing a single synchronous generator is crucial when multiple synchronous generators operate in parallel. This synchronization is typically facilitated using synchronizers. The concurrent operation of generators relies on ensuring the coincidence of the generated voltage sinusoids among all phases of the generators operating in parallel. Achieving this synchronization necessitates maintaining equal rotation angles of the rotor shafts across all generators.

External disturbances can perturb the rotational speed of a generator's rotor during operation, disrupting its synchronized functioning. Hence, the synchronization of generators during parallel operation becomes imperative. This synchronization hinges upon equating the rotation angles of their rotors, thereby requiring adjustments to their rotational speeds. Various methods are employed to tackle this synchronization challenge, including techniques like program trajectories, adaptive systems, and others.

# **Design and Visualization of Non-Contact Aircraft Electrical Generators**

**Dr.Jagadish Chandra Pati**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The fundamental components in on-board power supply units are the direct current (DC) or alternating current (AC) generators. Contactless generators, a type of alternating electric machines, possess unique constructions and unconventional methods of excitation. Leveraging 3D modeling through CAD systems has markedly enhanced the analysis of generator construction and its operational characteristics. This advancement has resulted in reduced weight and size of the generators without compromising power output.

**Keywords:** 3D modeling, CAD systems, contactless generators, NX Siemens.

## **1. INTRODUCTION**

Aircraft heavily rely on generators as their primary sources of electricity. These generators, specifically designed for aviation conditions, must meet stringent criteria: they need to ensure high reliability and operational safety, possess compact dimensions and low weight, exhibit robust mechanical, electrical, and chemical stability, maintain stability in varying environmental conditions (including pressure, temperature, humidity), operate independently of spatial orientation, and not interfere with radio equipment and antennas. Addressing these specialized requirements, aircraft employ a beneficial design solution known as contactless generators. These are electric rotating machines that lack sliding contacts within their construction, such as commutators, slip rings, or carbon brushes.

# **Analysis of Analog and Digital Noise Generator Characteristics for Protective Devices**

**Dr. Ajaya Kumar Swain**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Among the various potential technical leakages, acoustic information poses a significant threat. This paper presents the design and analysis of two noise generators: analog and digital. The primary investigated parameters include their frequency ranges and noise quality factors. The methodology for computing the entropy coefficient, a measure of noise quality, is also discussed. Both designed generators meet the specified criteria and have the potential for integration within vibroacoustic protection systems.

**Keywords**—noise generator; analog generator; digital generator; noise quality factor; white noise; signal amplifier; acoustic technical leakage channel

## **1. INTRODUCTION**

To safeguard against speech information leaks, a vibration-based acoustic protection mechanism is employed, generating acoustic noise within a room. Typically, such protection systems comprise a noise generation unit and speakers. Presently, two primary types of noise generators prevail: analog and digital.

This study aims to devise analog and digital noise generators using the National Instruments Multisim electronic circuit simulation environment. It seeks to compare their key characteristics based on the noise quality factor criterion.

Designing noise generators for acoustic protection necessitates the consideration of specific factors:

- The generated noise should cover seven-octave bands of a speech signal, with geometric mean frequencies set at 125, 250, 500, 1000, 2000, 4000, and 8000 Hz.
- The noise quality factor must reach a minimum of 0.6, indicating proximity to white noise.



# **Analysis of Dynamic Modes in a Brushless Doubly-Fed Generator for Wind Turbines**

**Dr.Satyajit Mohanty**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Wind turbines play a crucial role in today's power generation landscape, contributing significantly to the electricity supply. As electrical networks incorporate generators of relatively lower power, the need arises for multiple generators to operate in parallel to meet substantial energy demands. Achieving control over voltage and frequency parameters at the generator output becomes challenging in conventional synchronous generators equipped with permanent magnets. This challenge finds a resolution by employing a doubly-fed machine as the electric generator, allowing direct control over voltage and frequency parameters at the generator output, independent of the wind turbine shaft's rotation speed. Unlike the conventional dual conversion process involving rectification and inversion, this approach doesn't necessitate full power conversion from the wind turbine.

**Keywords**—wind turbine, generator, permanent magnets, field winding, three-phase electrical circuit, feedback

## **1. INTRODUCTION**

Power semiconductor converters play a pivotal role in supplying power to electrical networks, industrial consumers, and various technological processes within the power industry. Contemporary advancements in power electronics enable the operation of Insulated Gate Bipolar Transistors (IGBTs) at elevated voltage and current levels, facilitating their switching in alignment with control system signals. The quality of the output voltage relies on Pulse Width Modulation (PWM) modulation's carrier frequency, improving proportionally with its escalation. Nonetheless, as the carrier frequency rises, there's a simultaneous increase in switching heat losses within the IGBT transistors and radio frequency interference levels. Consequently, this escalates the converter's unreliability since heightened heat release impairs the reliability and longevity of its component elements. Hence, a paradox emerges between enhancing voltages and currents and the converter's reliability.

# **An Experimental Look at the performance of a solar Flat plate collector with triangular Geometry**

**Dr.Jyoti Prasad Patra**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The flat plate collector is the most famous and simplest form of solar collectors that is used as a water heater. On this examine, a sun flat plate collector with triangular geometry and with zigzag and non-riser tubes turned into experimentally tested. To evaluate the collector, the ASHRAE general changed into used in warm and dry climate situations. The test web page turned into located in southwestern Iran and became examined inside the early months from March to June 2020. The measured parameters consist of the environmental and thermal parameters of the collector and the fluid, and the first-class records have been selected and provided. The effects of the have a look at showed that the collector had a appropriate performance; the lowest recorded value became 32% and the best changed into fifty eight.9 %. Hence, it could be used as a sun water heating system in each home and industrial sectors. in the stress drop testing, the effects confirmed that in all waft fees used, the stress drop in the collector become much less than 0.1 bar. Additionally, the overall performance of the collector was supplied primarily based on environmental variables which include temperature and radiation, as well as fluid variables which include input temperature and drift charge

## **1. INTRODUCTION**

The want to make bigger and develop renewable energy isn't hidden from anyone within the international today. it's far safe to say that the most practical and kind of renewable electricity is sun energy, which has long been utilized by humans heaps of years in the past. Solar energy can be utilized in not unusual sorts of energy: heat and photovoltaic. In solar thermal energy a warmness exchanger known as collector is used. In fact, a solar collector is a thermal tool for soaking up solar radiation and converting it into the specified heat in a gadget including a water heater. Collector performance enhancement is one of the most important topics in solar thermal engineering. Cosequently, there are numerous approaches to beautify collector performance. converting the geometry of the solar collector and growing the thermal specification of the coolant consisting of nanofluid are key ways to clear up this trouble.

# **Single and 3 Levels sensitive load compensation Via. Electric Powered spring the usage of proportional- Resonant and repetitive controllers.**

**Dr.Arul Kumar P**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Electric springs (ES) are frequently stated to be demand-aspect strength manage systems in decentralized grids with renewable power assets, which, due to their nature, inject unreliable electricity into the device. The second one sort of electric spring (ES<sub>2</sub>) produces a sensible load thru placing it subsequent to a sensitive load, which, in addition to regulating the voltage degree, will optimize numerous parameters of the power for the touchy load. In imbalance grids with harmonic voltages and close by non-linear load, wherein conventional controllers are used, the sensible load cannot improve the energy first-class for a sensitive load. In this paper, a proportional resonance (PR) controller is used to adjust each the voltage degree and the deliver voltage imbalances due to the least tracking error inside the sinusoidal mode in addition to a repetitive controller (RC) is designed to lessen THD and beautify the strength issue thanks to its infinite poles at the imaginary axis. In the long run, these suggested controllers had been tested concurrently in three-phase and unmarried-phase grids thru mathematical and gadget simulation. The grid considered on this paper has harmonics up to reserve 17 and voltage fluctuations within the variety of 0.954 to one.

## **1. INTRODUCTION**

The software of easy energies together with sun and wind power is increasing because of their environmental benefits. However, renewable energies manufacturing is erratic and unreliable, causing it not possible to forecast the technology of power. Variability of production energy collectively with the lack of ability to be expecting output energy causes voltage fluctuation within the grid that aren't suitable for touchy loads. Alternatively, due to the local non-linear hundreds, harmonics are created on the grid modern and voltage. Electric springs have been first added in smart grids for voltage regulation on the load aspect in 2012, where for the first time the grid hundreds were divided into the two sorts of touchy and non-sensitive.

# **Solar Micro grids Fast and Accurate Fault Detection, location and classification strategy using on-line phase let, Current injection Kits', Traveling- waves, and mathematical Morphology**

**Dr. Bidyut Ranjan Das**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

In this paper, a new rapid and correct technique for fault detection, vicinity and category on multi-terminal direct current (MTDC) distribution networks linked to solar disbursed generation and loads provided. a few issues such as DC resources and masses expanding, and attempt to the energy nice increasing have brought about MTDC networks' development. it's far critical to understand the fault kind which will retain carrier and prevent in addition damages. on this method, a circuit kit is hooked up to the network. Fault detection is carried out with the dimension of the modern of the connected kits and the traveling-waves of the fault modern and making use of it to a mathematical morphology filter out, inside the Fault time. Determine the sort and region of faults the use of a mathematical morphology filter, circuit equations and modern calculations. DC series and ground arc faults are taken into consideration as DC distribution network disturbances. The provided technique was examined in a sun DC network connected to strength storages and sun assets with many faults.

## **1. INTRODUCTION**

The rapid and correct detection, vicinity and classification of the fault are fairly effective in growing the reliability indexes, diminishing predicted strength now not deliver, and increasing the speed of network recovery and reconstruction. Developing DC intake in distribution networks, connecting photovoltaic resources to the network, looking to decorate the energy excellent and responding to in addition masses has expanded MTDC sun networks.

The implementation of conventional schemes for fault detection and place on MTDC networks has a few issues. The accuracy of impedance-primarily based methods isn't always sufficient at strength frequency for distribution networks. traditional protection techniques which might be primarily based on under voltage /over current, rate of alternate in modern/voltage, or both lack the desired sensitivity for detecting high- resistance faults, or are Unreliable to verbal exchange postpone and failure.

# **Energy, Economic and Environmental (3m) Evaluation of a Tank-in-tank solar Combi system**

**Tushar Kanta Satapathy**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

In this take a look at, the thermal overall performance of a tank-in-tank sun combi system is dynamically simulated to investigate the effect of various parameters together with collector kind and location, garage tank volume, building specifications, warmness change terminal units, and climatic conditions on gadget performance. The results confirmed that through increasing the collector region, tank extent and thickness of wall insulation, the solar fraction will increase. It changed into additionally discovered that using floor heating instead of a radiator device improves the device overall performance. The sun fraction using the evacuated tube sun collector is 2.3% better than that the use of flat plate sun collector. the once a year solar fraction of 45.6%, 63.4%, 41.2%, 34%, 57.3% and 88.1% is acquired in hot-Dry (Tehran), warm-Dry (Yazd), cold-Dry (Tabriz), slight-Humid (Rasht), warm-semi Humid (Abadan), and hot-Humid (Bandar Abbas), respectively. The environmental evaluation suggests that the use of the proposed solar combi system should keep 2241.3 m<sup>3</sup> herbal gas and offsetting 4731.5 kg much less CO<sub>2</sub> emissions throughout a year. The life cycle price evaluation shows that the payback time of the proposed gadget for the economic situations of Iran is 7 years.

## **1. INTRODUCTION**

A solar combisystem (SCS) is a solar heating gadget which delivers simultanously home warm water (DHW) and space heating (SH) needs of residential homes. SCSs typically consist of five sub-structures: solar collector loop, warmness storage, heat distribution, controls, and auxiliary warmers. One key benefit of the SCS compared to traditional sun water heaters is that SCSs increase the solar collector's utilization unbiased of occupant warm water intake due to the fact the warmth collected by way of the solar collector additionally makes use of for the gap heating.

# **Rethinking carbon neutrality supported by energy systems**

**Manoj Kumar Patnaik**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Research on carbon neutrality is summarized in this article. First, let's discuss the general concept of CO<sub>2</sub> neutrality. Next, we discuss the impact of CO<sub>2</sub> neutrality on the energy and power industries. Finally, a new energy system solution to achieve the goal of carbon neutrality was presented from an energy system perspective. This study provides guidance for considering carbon-neutral solutions.

**Keywords:** carbon neutrality; power system; digital twin power grid; flexible solutions; integrated energy system

## **1. INTRODUCTION**

During the general debate of the 75th United Nations General Assembly, Chinese President Xi Jinping proposed that China achieve carbon neutrality in 2060. So far, the journey to and achievement of carbon neutrality has sparked great interest in science. Many important research results were achieved. Research on carbon neutrality is summarized in this article. Explain the general concept of carbon neutrality. Then, the impact of carbon neutrality on energy and electric power industry is introduced. Finally, this paper introduces the solution of the new power system to achieve the objective of carbon neutrality, from the perspective of power system.

# **Design and implementation of business access control in new generation power grid distribution and control systems**

**Ajaya Kumar Nahak**

Professor, Department of Electrical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

This paper analyzes the changes of the new generation power grid dispatching and control system in system architecture, human-computer interaction mode, business organization mode, etc., combs the new requirements of the new generation power grid dispatching and control system for access control and proposes the access control solution for business in the new generation power grid dispatching control system. Key technologies are studied, such as path-based resource identification definition, metadata-based resource management, multi-factor access control based on rule engine, cross-system access control based on upper and lower organizational relationships. The solution is verified in the prototype system and provides multi-dimensional security access control means for business in the new generation power grid dispatching and control system.

## **1. INTRODUCTION**

In early 2017, State Grid Co., Ltd. proposed to develop a new generation power grid dispatching and control system. On the basis of inheriting the achievements of the existing power grid dispatching and control system, the new system introduces new technologies such as cloud computing, big data and artificial intelligence, adopts a new system architecture of "physical distribution and logical unification", deploys cloud terminals with "location independent, authority constraint and simultaneous display" characteristics, constructs business with "full, fast and accurate" characteristics, and comprehensively supports the new generation power system safe and stable operation. No matter the change of system architecture and interaction mode, or the introduction of new technology and new business, higher requirements are put forward for the security protection of new system, and business security is an important part. In recent years, there have been many researches on the security protection of power grid dispatching and control system, mainly focusing on the network security, especially on the network border security protection [6,7], but less on the business of security protection.

# **Toward a green cloud computing algorithmic approach for energy minimization in cloud data centers**

**Dr.Sudhansu Sekhar Khuntia**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

The article presents an efficient energy optimization framework based on dynamic resource scheduling for VM migration in cloud data centers. This increasing number of cloud data centers all over the world are consuming a vast amount of power and thus, exhaling a huge amount of CO<sub>2</sub> that has a strong negative impact on the environment. Therefore, implementing Green cloud computing by efficient power reduction is a momentous research area. Live Virtual Machine (VM) migration, and server consolidation technology along with appropriate resource allocation of users' tasks, is particularly useful for reducing power consumption in cloud data centers. In this article, the authors propose algorithms which mainly consider live VM migration techniques for power reduction named “Power\_reduction” and “VM\_migration.” Moreover, the authors implement dynamic scheduling of servers based on sequential search, random search, and a maximum fairness search for convenient allocation and higher utilization of resources. The authors perform simulation work using CloudSim and the Cloudera simulator to evaluate the performance of the proposed algorithms. Results show that the proposed approaches achieve around 30% energy savings than the existing algorithms.

## **1. INTRODUCTION**

Cloud computing is evolving as a new standard of comprehensive distributed computing. It has moved away the computation from home PCs and small organizations to large-scale data centers and made it advantageous for consumers and IT organizations by chunking huge amount of capital investments. Cloud is offering cost-effective solutions to almost all types of large scale computations by letting users to access scalable remote resources (e.g. servers, storage, networks, applications etc.) at any time, from anywhere, on-demand basis and also on pay-per-use basis. This ever-proliferating demand of cloud computing has led the cloud data centers to grow rapidly. Consequently, it is now leading to a concerning issue of increasing amount of power consumption of cloud resources (Duy et al., 2010; Beik, 2012) and excess carbon footprint in the environment. It has been measured that power consumption of worldwide data centers has increased almost ten times over the past decade (Priya et al., 2013).



# **Game- Theoretic Resource allocation to minimize the total energy Of a mobile cloud system**

**Dr.Sangate Pavan Kumar**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Cloud computing and virtualization techniques provide mobile devices with battery energy saving opportunities by allowing them to offload computation and execute code remotely. When the cloud infrastructure consists of heterogeneous servers, the mapping between mobile devices and servers plays an important role in determining the energy dissipation on both sides. From an environmental impact perspective, any energy dissipation related to computation should be counted. To achieve energy sustainability, it is important reducing the overall energy consumption of the mobile systems and the cloud infrastructure. Furthermore, reducing cloud energy consumption can potentially reduce the cost of mobile cloud users because the pricing model of cloud services is pay-by-usage. In this paper, we propose a game-theoretic approach to optimize the overall energy in a mobile cloud computing system.

**Keywords:** Congestion Game, game theory, mobile cloud computing, power management, virtualization.)

## **1. INTRODUCTION**

The emerging paradigm of mobile cloud computing (MCC) moves the processing, memory and storage requirements all together from the resource limited mobile devices to the resource unlimited cloud. MCC provides many advantages to the mobile devices [3]. It extends the storage capacity for mobile users [4] and also reduces the risk of data and application lost on mobile device by backing up users data on several computers in the cloud. Security services such as virus scanning and malicious code detection provided by the MCC improves the safety and reliability of the mobile device. One very important benefit brought by MCC for mobile users is the extended battery life time. The MCC helps the mobile devices to run the computation intensive applications, which normally consume a large amount of battery energy. This is enabled by virtualization technique which allows the cloud infrastructure to run arbitrary mobile applications from the mobile users or service subscribers. We refer to this technique as computation offloading.

# High band VLSI Architecture with low- Resolution ImageORB Grand

**Dr.Lokanath Sarangi**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Guessing Random Additive Noise Decoding (GRAND) is a recently proposed approximate Maximum Likelihood (ML) decoding technique that can decode any linear error-correcting block code. Ordered Reliability Bits GRAND (ORBGRAND) is a powerful variant of GRAND, which outperforms the original GRAND technique by generating error patterns in a specific order. Moreover, their simplicity at the algorithm level renders GRAND family a desirable candidate for applications that demand very high throughput. This work reports the first ever hardware architecture for ORBGRAND, which achieves an average throughput of up to 42.5 Gbps for a code length of 128 at an SNR of 10 dB. Moreover, the proposed hardware can be used to decode any code provided the length and rate constraints. Compared to the state-of-the-art fast dynamic successive cancellation flip decoder (Fast-DSCF) using a 5G polar (128, 105) code, the proposed VLSI implementation has  $49\times$  more average throughput while maintaining similar decoding performance.

**Index Terms**— Guessing Random Additive Noise Decoding (GRAND), Ordered Reliability Bits GRAND (ORBGRAND), Maximum Likelihood Decoding (MLD).

## 1. INTRODUCTION

Channel coding techniques are an integral part of all modern communications systems. Since their inception [1], a lot of effort was focused on finding practical channel coding schemes that could approach channel capacity. Over time, various capacity-approaching codes have been designed, such as Turbo codes [2] and LDPC codes [3]. Polar codes [4], proposed in 2009, are able to asymptotically achieve the channel capacity. Each of these aforementioned channel coding techniques, along with many others, require a dedicated decoder. However, there exists an alternate paradigm of decoders that do not rely on the underlying channel code and hence can be used to decode any code. Guessing Random Additive Noise Decoding (GRAND) is a recently proposed approximate Maximum Likelihood (ML) decoding technique for linear error-correcting codes [5]. Instead of decoding the received codeword, GRAND attempts to guess the noise present in the codeword. Hence, GRAND can be used for any linear block code.

# Performance Evaluation of memristor, Finfet and Graphene TFET in VLSI Circuit Design

**Dr.Srinivas Mantha**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

CMOS transistors have limitations as the technology shrinks. The problem of short channel effects (SCE) became prevalent, causing malfunctions and failures in CMOS circuits. A variety of devices are proposed to extend Moore's Law and the roadmap for the semiconductor industry. The memristor is a two-terminal passive device that has proven to be compatible with MOSFET microfabrication processes and also offers some special features. It is a nanoscale device, so it saves a lot of mold space and consumes less energy. Also, the FinFET structure contributed to a better electrostatic control of the transistor channel. Leakage current and power are reduced, so its performance is better than MOS transistor. FinFET has a temperature effect inversion (TEI) because its  $\beta$  increases even in the threshold region. The integration of graphene nanoribbon (GNR) FETs in IC design has shown many improvements in speed and power. In this work, we introduce the characteristics of GNR FET and design the inverter circuit using Cadence/Spectre.

**Keywords:** FinFET, Graphene FET, Memristor, Phase Noise, Ring Oscillator (RO), VLSI I.

## 1. INTRODUCTION

As the scaling of MOS transistors continues to advance technology, the field of VLSI is looking for more efficient devices to design and fabricate new analog and digital devices, memories and circuits. Although transistor miniaturization has been successful in recent years, the inherent level structure of the CMOS transistor presents challenges that lead to short channel effects (SCE) [1]. When a high voltage is applied to the drain terminal of a short-channel device, the drain electric field interacts with the electric field surrounding the source terminal. The potential barrier required for the flow of electrons decreases and thus increases the current  $I_{DS}$ . This causes the threshold voltage ( $V_{th}$ ) of the nMOS and pMOS transistors to decrease and causes positive and negative changes in the threshold voltage. A memristor is a two-terminal device that determines the relationship between an electric charge and a current connection [2]. One of the most important properties of a memristor is its ability to maintain its final resistance by modulating its internal state variable. That's why it's called "MEMORY RESISTOR".

# Accelerated addition in a resistive RAM System using parallel- Friendly majority GATES

**Dr.Sanjay Kumar Padhi**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

To "overcome the Von Neumann bottleneck", memory computing methods are being explored in many new memory technologies, including resistive RAMs (ReRAMs). Majority logic is effective in synthesizing arithmetic circuits compared to NAND/NOR/IMPLY logic. In this work we propose a method to apply a majority gate to the ReRAM array used by the transistors during a READ operation. A port implemented in memory was also NOT recommended the gate forms a functionally complete Boolean logic capable of any digital logic implementation. The calculation is simplified a The order of READ and WRITE operations and is not required some important changes in the surrounding area set Although many methods have been proposed recently implements Boolean logic in memory, memory latency adders implemented as a series of such Boolean operations irrational ( $O(n)$ ). Parallel prefixes use prefix counting speed up addition in traditional CMOS-based adders.

**Keywords:** Resistive RAM (ReRAM), non-volatile memory (NVM), Majority Logic, Majority Gate, Memory Adapter, 1 Transistor 1 Resistor (1T-1R), von Neumann Bottleneck, In-Memory Computing, Sense Amplifier, In-Memory Processing, Parallel Prefix Adder, logic in memory, calculation in memory, read circuit.

## 1. INTRODUCTION

THE information flow between processing and memory units are the main cause of impaired performance (both in terms of energy and latency) in modern computing systems often referred to as the "von Neumann bottleneck" or "wall of memory". "Computing energy" is dominated by "data".kinetic energy" because the working energy of the memory increases exponentially along the memory hierarchy (from cache to off-chip DRAM) [2]. As a quantitative example, [3] points out that the energy of using DRAM is 3556 times higher 16-bit addition in 45 nm CMOS technology. Same DRAM access delay is  $\approx 100$  ns [4], while the latency of a 32-bit adder is 4 in the so-called CMOS technology [5], which is related to the movement of data latency is a significant part of computing latency the traditional von-Neumann computer model.

# **Addition, Subtraction and shaped Beam Pattern Synthesis with Unequal Spacing and Phase Control**

**Dr.Rakesh Muthukuru**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Design procedure for the synthesis of nonuniform spaced linear arrays using the Poisson sum expansion of the matrix factor presented in the literature are presented. Considering the non-zero phase term in the existing formula and using suitable line source patterns synthetic methods, general The design procedure can be used to synthesize any type of pattern, such as sum, difference and form bars. This approach makes a difference a nonlinear complex pattern synthesis problem for nonuniformly spaced linear arrays into a simple problem that does it is quick and easy to implement. In addition, further optimization A process is added to the synthesis procedure to improve the final model and check the calculated parameters.

**Keywords:** linear arrays, unequally spaced arrays.

## **1. INTRODUCTION**

USING unequally spaced linear arrays instead of evenly spaced linear arrays were an attractive topic in the antenna field for several years. Simplicity The supply network for linear arrays with unequal spacing is the most important feature of this type of table. In 1960, Unz [1] analyzed and developed a non-uniformity matrix formulation spaced linear arrays. Harrington [2] developed a repeated method for reducing the sidelobe level of a uniformly excited N-cell line array to approximately  $2/N$  times the field strength. main lobe unequally spaced. Of an element positions appear in the argument of the exponential function synthesis of the desired pattern by calculating the element correctly stations is a non-linear and complex problem. About that In fact, most previous works have attacked the problem using numerical and computer-aided iteration [3] or stochastic optimization methods [4]–[6]. Development non-uniform fast Fourier transform (NFFT) and its applications lowering the level of the sidebar are currently interesting research activity [7]. In most of these works, the main goal is only to reduce the level of cheek browns and they cannot do that synthesize patterns of any form. Although there is a lack of analytical formulas for this type of tables, but in recent years almost no work has been done in that area [8]

# Navigation System for the Blind- The Third Eye

**Dr.Kommu Naveen**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Visual impairments people with severe condition are unable to move independently. In this fast moving world, these people are generally left underprivileged. Few methods have been used to help them and provide them with some level of mobility comfort. Conventional methods such as trained dogs or a cane are not reliable enough in providing sufficient information of possible hindrances. Moreover, training and managing dogs is challenging task. There are some guidance systems which use RFID technology. However, this technology cannot be used in an outdoor open area. In this paper, an AI based system titled “Navigation System for Blind - Third Eye” is proposed. In order to support blind and visually impaired people’s mobility indoor and outdoor, this work proposes a simple electronic guidance embedded vision system which is configurable and efficient. The system utilizes three types of devices including IR sensor, sonar sensor and camera. A microcontroller processes the reflected signals from all devices in order to classify front obstacle. This system can be fasten to a hat or to a pen-sized hand mini stick.

**Keywords:** IR, RFID, There, This system ,Conventional

## 1. INTRODUCTION

As derived from —World Health Organization report and fact sheet updated on October 2017 on visual impairment, the estimated number of people live with vision impairment is about 253 million; 36 million are totally blind while 217 million suffer from moderate to severe vision impairment. Globally, the main cause of vision loss is the chronic eye diseases while the top two causes of visual impairment are in-corrected refractive errors and un-operated cataract. In this fast moving world, visually impaired people are left behind and not treated equally. To help them and provide them with some level of comfort, many solutions and techniques have been tried and developed. One of these techniques is called orientation and mobility. In this technique, a specialist helps the visually impaired and blind people and trains them to move on their own. They are trained to depend on their other remaining senses to move independently and safely. Another method is through using a guide dogs. In this method, the dogs are trained specially to support the movement of the blind people. The dogs navigate around the obstacles as an alert to the user to change his way.

# Virtual Assistance Car using Raspberry PI

**Dr. Bright Anand D**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

Smart devices as voice assistant are a prevalent feature in the cars these days. Voice assistants are software agents that can interpret human voices or commands and respond through smart speakers. Users can convey any feature and the voice assistant can provide answers to what they ask and user can handle and control the car as they want using the commands over voice. Along with this, the special features to the voice assistant which can execute any task given by the user. The basic feature of this technique is to set off controlling the Air conditioning depending on the weather condition and the temperature of the surrounding, functionality of wipers, controlling the music system, varying the window lights and car lock system, which can be controlled by using voice assistant with the help of Raspberry Pi. In order to secure the car from the access of an outsider or unauthorized user, RFID is used. The RFID band is used here which contains a specific serial number, the door gets unlocked when the reader recognize the correct serial number.

**Keywords:** Google Speech Recognition, Car Automation, Raspberry pi, RFID Band .

## 1. INTRODUCTION

Automation is the application of machines to perform the tasks performed by human beings or the problems that are difficult to solve. Car automation plays a vital role in the high-tech automobiles from current generation where several functionalities are performed automatically by voice commands.

**AUTOMATION:** In today's life, automation plays a major role in order to make the process/task simpler, without the help of Human power. The major aspect of implementing automation is to reduce the work, time and error made by a normal human being. Automation or automatic control is the technology were a range of control systems for operating equipment such as machinery, automobiles, switching on telephone networks, aircraft and other applications are performed with reduced human involvement.

# Developing Smart City Services by Mobile Application

**Dr. Mantravadi Lalitha Mahalakshmi**

Professor, Department of Electronics & Telecommunication Engg.  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

The smart city concept brings together technology, government and different layers of society to utilize technological enablers such as the internet of things (IoT) and artificial intelligence (AI). These enablers, in turn, facilitate the development of various aspects of the smart city including, e.g., transportation, governance, education, safety, and communication. However, the transition toward smarter cities involves not only technological development but also the changing and evolving roles of citizens, service providers, and city authorities. In this transition, the key issue is the growing and evolving roles of collaboration, participation, and co-ordination. The purpose of this paper is to present a practical example of a smartphone application that provides citizens with the most essential everyday city services in an easy and accessible manner. The application also acts as a platform for communication between the citizens and city authorities, facilitating collaborative processes and digital participation within the smart city.

**Keywords:** Smart city, mobile application, digital participation.

## 1. INTRODUCTION

The concept of smart city derives from the intersection of studies in urbanism and the development of information and communication technology (ICT), combined with the dimensions of creativity and humanity (Nam and Pardo, 2011; Pereira et al., 2017). The smart city concept represents new ways of organizing city functions and urban life for environmental purposes, based on digitalization (Öberg, Graham and Hennelly, 2017). In the field of ICT, rapid development of software, hardware, and networks has made it technologically possible to connect people and the facilities serving their everyday needs in the cities (Pereira et al., 2017). Thus, the smart city concept brings together technology, government, and different layers of society to utilize technological enablers such as the internet of things (IoT) and artificial intelligence (AI). These enablers, in turn, facilitate the development of various aspects of the smart city including, e.g., transportation, governance, education, safety, and communication.



# **Impact of repeated heated rolling on the mechanical characteristics and microstructure of 304 stainless steel produced via an aluminothermy reaction**

**Dr.Nabnit Panigrahi**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

304 stainless steels were arranged by aluminothermic response strategy; to begin with steels are strengthened at 1000°C and after that rolled at 700°C for diverse distortion. The microstructures advancement and mechanical properties were recognized in subtle elements. It was found that the steel contains nanocrystalline/sub microcrystalline/microcrystalline austenite and sub microcrystalline ferrite. After rolling to a thickness decrease of 30%, 50%, and 70%, the mechanical properties of the rolled steels were significantly expanded, as the distortion expanded from 30% to 50%, the malleable quality expanded from 650 to 1110 MPa, the abdicade quality expanded from 400 to 665 MPa, and the prolongation expanded from 8% to 8.5%.

## **1. INTRODUCTION**

304 stainless steel considered as a wide assortment of applications due to its fabulous weldability, erosion resistance, and formability. But its moo abdicade quality. As of late, numerous approaches have been recommended to make strides the reinforcing of the steel without misfortune more ductility such bimodal grain measure conveyance, nano-twinned structure, warm treatment, the strain-induced martensitic change, and lamellar structure. In common, the surrender quality of combinations may be profoundly upgraded by precipitation, grain refinement, and stage change. It is found that distortion beneath conditions of warm working may get great ductility and tall pliable quality in steel. Z Yanushkevich et al. and F Chen et al. have depicted that grain refinement may well be gotten by variety the rolling heading in multi-pass rolling, which was valuable to the formability of the combination sheets. At tall rolling speed, energetic recrystallization (DRX) can be fortified and advance upgraded by expanding thickness decrease. As the microstructure was refined, both ductility and quality of the tests were moved forward by DRX. YW Kim et al. have asserted that the degree of DRX is related to the rolling temperature. In this manner, warm rolling beneath conditions of distortion may be a exceptionally productive way to upgrade the mechanical properties of the combinations and metals.

# **An automated transmission solenoid tester for wheeled Vehicles' design and development**

**Dr.Dillip Kumar Biswal**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Solenoids are the foremost basic components in programmed transmissions. They are utilized to control the move focuses, clutch locking, or weight control of programmed transmissions. Since the number, sort, and arrange of the solenoids all contrast when they are utilized in numerous vendor's automatic transmissions, making precise normal/abnormal choices for solenoids is exceptionally troublesome, because it can lower the upkeep quality, to squander labor and fabric taken a toll, and indeed decrease driving security. This article proposes an "abnormal" assessing strategy (i.e. for anomaly) for solenoids with tall review capacity and creates a learnable programmed transmission solenoid analyzer. This analyzer can perform solenoid testing on numerous channels at the same time. The test result insights for all channel solenoids tried are produced consequently.

## **1. INTRODUCTION**

In comparison with followed vehicles, wheeled vehicles have such preferences as quick speed, tall versatility, long running remove, moo cost, and helpful support, but with moo cross-country control and expansive turning sweep as their shortcomings. Followed vehicles are for the most part military, for illustration, armored cars and tanks. Wheeled vehicles are the preeminent sort of civilian vehicle (e.g. cars and trucks). The programmed transmission (AT) could be a key component of wheeled vehicles; it consequently changes the adapt proportion whereas running, acting as the AT for the gearshift or weight alteration. At display, the AT vehicles with programmed moving work utilize electronically controlled programmed transmissions (ECAT).<sup>2</sup> This kind of AT can utilize distinctive sensors to educate the driving computer of the working condition of motor; the driving computer then sends signals to activate distinctive solenoids within the water powered control framework to alter the oil conduit within the AT to control the gears or alter the weight. Within the ECAT, the solenoids can control the move focuses and clutch locking or control the line weight. Concurring to involvement in viable repair and upkeep, the brokenness of AT generally comes about from the abnormities or deficiencies of the solenoids.

# **An overview of the incorporation of thin gradient lattice structures into items produced using additive manufacturing**

**Dr.Ritanjali Sethy**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

This review examines the plan, mechanical behaviors, manufacturability, and application of angle cross section structures fabricated by means of metallic added substance fabricating innovation. By shifting the plan parameters such as cell estimate, strut length, and strut distance across of the unit cells in grid structures, a slope property is gotten to attain distinctive levels of functionalities and optimize strength-to-weight proportion characteristics. Angle grid structures offer variable densification and porosities; and can combine more than one sort of unit cells with different topologies which comes about completely different exhibitions in mechanical behavior layer-by-layer compared to non-gradient grid structures. Added substance fabricating procedures are competent of fabricating complex lightweight parts such as uniform and angle grid structures and subsequently offer plan flexibility for engineers. In spite of these points of interest, added substance fabricating has its claim interesting downsides in fabricating grid structures. The rules and methodologies in overcoming the imperatives are talked about and proposals for future work were proposed.

## **1. INTRODUCTION**

Angle forms are common in nature, it can be found within the microstructure of creatures, plants, and in human bones. For case, the microstructure of a bamboo may be a slope permeable structure with tall porosity exterior the surface encompassing the circulate structure of the bamboo and lower porosity drawing closer the internal surface. Other slope permeable structures in living life forms are found in butterfly wings, femur, and trabecular bones. Over the a long time, an extraordinary number of writing examined added substance fabricating (AM) innovation in building exact low-density metallic grid structures. AM innovations are favorable compared to customary machining since of its capacity to make complex parts straightforwardly from the computer-aided plan (CAD) demonstrate to end-user portion. In expansion, the sum of vitality utilized by AM is distant less than conventional machining in terms of tooling and workers. Cross section structure could be a permeable structure shaped by orchestrating unit cells where its designs impact the mechanical execution of the structure.

# **Synchronization of a dual-exciter coupling with torsion Spring in far-resonance system**

**Dr. Atul**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

In-phase self-synchronization of two unconventional rotors with common rotational hub is barely actualized in far-resonance framework. In this article, a double engine coaxially coupling with a torsion spring is proposed to get in-phase synchronization between the unconventional rotors. To investigate the energetic and synchronous characteristics of the proposed framework, the mechanical demonstrate is to begin with set up with Lagrangian definition. Moment, the unfaltering reaction of the framework is calculated based on differential movement conditions. Along these lines, the synchronous component between the unconventional rotors is talked about by found the middle value of little parameter strategy. At long last, a few numerical computations are assist actualized to confirm rightness of hypothetical investigation. The result appears that the synchronous state is decided by solidness of torsion spring, masses of offbeat rotors, and separate between the engines.

## **1. INTRODUCTION**

The phenomenon of synchronization alludes refers alludes to the realization of comparative or indistinguishable shapes of movement or physical shapes of things or watched objects. In building of plan and make, synchronous wonder and synchronous issues frequently show up. For case, numerous mechanical gadgets utilized in cutting edge mechanical generation require two or more working parts, such as the parts of pivoting shafts, offbeat rotors (ERs), and pendulum; relocation speed, increasing speed, stage, and connected constrain of the parts ought to be synchronized when the framework is worked in consistent state. With the ceaseless advancement of science and innovation, synchronous apparatus in metallurgy, development materials, vitality, and fabric screenings play an imperative part. Hence, the advancement of the vibrating apparatus will be advanced and sped up for investigating the marvel of synchronization in building. Agreeing to the think about of synchronization, the synchronization can be separated into self-synchronization, synchronization control, and constrained synchronization.

# **Investigation of the mechanical characteristics of titanium alloy using a ball-end milling cutter with micro texture and various cutting edges**

**Dr.Soma Dalbehera**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

When accuracy cutting titanium alloy, the cutting portion of cutting apparatus is primarily concentrated within the cutting edge range, so there's a solid accentuation upon the cutting edge's geometric parameters. Considerers have found that putting a micro-texture on the cutting surface can diminish the cutting constrain. This article looks at the processing drive included in cutting titanium combination with a micro-textured ball-end processing cutter with diverse formed cutting edges. To begin with, a processing show relating to distinctive cutting edges is built up based on the conventional show of processing constrain. At that point, the impacts of diverse cutting edge geometry parameters and micro-texture parameters on milling constrain are mimicked and tried employing a limited component strategy.

## **1. INTRODUCTION**

Titanium alloy is one of the foremost imperative metals utilized in 21st-century society. As science and innovation have created, the worldwide request for titanium combination and its extend of applications have expanded. Titanium combination is presently broadly utilized in aviation, therapeutic gear, and other areas since of its extraordinary quality and execution. The degree of its application has gotten to be symbolic of a country's fabricating advancement and skill. Be that as it may, its moo distortion coefficient, tall particular quality, and common durability can result in a number of issues amid its machining. These incorporate the huge cutting drive required per unit range, its tall cutting temperature, and the velocity with which it wears out cutting apparatuses. Within the case of exactness processing, intemperate processing constrain is the most cause of apparatus wear and high temperatures. When cutting metal, the shape of the cutting edge includes a noteworthy affect on the warm perspectives of the machining and the surface quality of the work piece. Typically especially the case for accuracy cutting where the sum of metal expelled is exceptionally little and most of the cutting is finished by the cutting edge.

# **Numerical modeling of a marine diesel engine's emissions and Performance under various gravity settings**

**Dr.Bhabani Prasanna Pattanaik**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

A computational liquid elements show of the marine diesel motor was built up and approved, and the recreation thinks about were carried out utilizing this demonstrate. Distinctive gravity conditions were set within the computational liquid elements demonstrate to explore their impact on marine diesel emanations and execution. By comparing the reenactment comes about beneath diverse essential lattice sizes, 1.2 mm was chosen as the fundamental lattice estimate of the computational liquid flow demonstrate. The demonstrate employments the exploratory information counting barrel weight, warm discharge rate, and nitrogen oxides (NO<sub>x</sub>) emanations to calibrate and approve the show. The recreation comes about are exceptionally near to the test information, and slight mistakes are too inside the passable extend. In specific, when considering the warm exchange of the combustion chamber divider, the reenactment comes about of the warm discharge rate are closer to the experimental information. The recreation comes about appear that gravity incorporates a slight impact on barrel weight and warm discharge rate, and incorporates a certain degree of impact on fuel splash and atomization..

## **1. INTRODUCTION**

As the quality of air environment proceeds to break down, individuals proceed to have concern almost natural issues. Poison emanations from marine diesel motors, particularly NO<sub>x</sub> and sediment, have drawn expanding consideration. The Worldwide Oceanic Organization (IMO) forces limits on the NO<sub>x</sub> emanations from marine diesel motors by creating and distributing Tier-III regulations. The presentation of the Tier-III standard has caused a significant affect on bounty of shipping nations and shipping companies. The Tier-III standard is diminished by 76% compared to the Tier-II standard, which suggests more rigid directions are upheld to decrease marine diesel NO<sub>x</sub> emanations. At display, the standard NO<sub>x</sub> outflow diminishment innovations incorporate debilitate gas distribution (EGR), specific catalytic diminishment (SCR), normal gas motors, and so on, all of which have made breakthrough within the diminishment of NO<sub>x</sub> emanations.

# **Examining and using the structure of cleaning tools in a negative pressure reverse circulation wellbore**

**Dr.P Palupandian**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Silt regularly show up at the foot of oil and gas wells within the foot of carbonate rocks amid completion or generation, truly influencing the efficiency. In arrange to illuminate the wellbore cleaning issue, this article applies the Bernoulli condition hypothesis strategy, the limited component strategy based on the standard turbulence show and the research facility test to confirm a kind of negative weight wellbore cleaning instrument which can build up neighborhood invert circulation beneath the activity of high-pressure water fly and rescue the foot flotsam and jetsam. Through the numerical examination of the cleaning device structure, it is found that the divider confront breadth is at slightest two times of the spout gap distance across to viably play the cleaning tool execution. In the event that the whole zone of spout outlet is  $48\pi$  mm<sup>2</sup>, the cleaning device angling capacity of six spout structures is made strides the foremost. The examination of the versatility of the cleaning instrument appears that the cleaning instrument with an external distance across of 104 mm is most appropriate for the casing shaft with an inward breadth of 127.3 mm. The cleaning instrument was connected to the field operation and effectively cleaned the wellbore, viably expanding the wellbore efficiency.

## **1. INTRODUCTION**

In recent years, routine oil and gas assets have been persistently depleted, and the abuse of unusual characteristic gas, such as shale gas, has been created quickly around the world. In any case, within the prepare of shale gas misuse, dregs may show up at the bottom of the well, which cannot as it were influence the downstream of consequent apparatuses, but too piece the generation layer amid the generation prepare, driving to the generation capacity decrease and indeed halt generation. There are two primary reasons for the testimony of shale gas wells. To begin with, the store arrangement of shale gas is primarily characterized by adsorption state or Free State, and even well casing completion and portioned breaking and fermentation innovation are frequently utilized within the misuse..

# Dual solutions about the critical point in the modeling and analysis of the megneto-Carreau fluid with radiative heat flux

**Debasish Panda**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## ABSTRACT

In this article, we point to analyze the double solutions for the stream of non-Newtonian fabric (Carreau liquid) over a radially contracting surface. Magneto hydrodynamics liquid is considered. Concept of Stefan Boltzmann steady and cruel assimilation coefficient is utilized within the numerical modeling of vitality expression. Mass exchange is examined. The upper and lower department arrangements for the Sherwood number, skin contact coefficient, and Nusselt number are calculated for diverse germane stream factors. Fitting change factors are utilized for diminishment of halfway differential conditions framework into standard differential conditions. Double arrangements are gotten for the non-dimensional concentration, temperature, speed, angle of concentration, slope of temperature, and angle of speed. The basic values for each upper and lower arrangements are gotten for the case of angle of speed, slope of temperature, and angle of concentration. It is shaped that concentration and temperature areas show same affect with respect to both upper and lower department arrangements for speed proportion and temperature proportion parameters.

## 1. INTRODUCTION

It is exceptionally well recognized that the non-Newtonian materials are more appropriate than thick materials in forms of designing, geophysics, and biomechanics.<sup>1,2</sup> Numerous non-Newtonian materials exist in nature for their diverse characteristics. The distinction between these materials can be recognized from the utilitarian connection between shear push, the constrain per unit region required to endure a consistent rate of shear rate and fluid development, and rate of speed alter when distinctive layers of liquid or one layer passes through an adjoining layer. In terms of the rheological affect, the non-Newtonian materials are moreover classified as either shear thickening or shear diminishing materials. The clear thickness of shear diminishing materials like froths, arrangements, polymer softens and emulsions, and suspensions rot by means of connected shear push. Various models have been presented to explore the philosophical affect of such sorts of materials.



# **Maintaining equilibrium while standing using virtual suspension model control for a four-legged robot**

**Dinesh Kumar**

Professor, Department of Mechanical Engineering  
Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Legged robots request to keep the adjust beneath required terms when performing standing and movement. It may be a challenge for legged robots to preserve adjust amid standing without activation from lower leg joints and association of back polygon plane to appraise the center of mass (CoM). In arrange to preserve the standing adjust of legged robots beneath such a situation, we propose a virtual suspension demonstrate control (VSMC) strategy which is brief and can get freed of overhauling show emphases on advanced flow. Moreover, we optimize the run and propose the criteria for the virtual tallness of the CoM for rapidly altering parameters and adjusting to assignment characteristics. Recreation tests on adjust keeping are performed for single-leg robot vertical standing, quadruped robot inclining standing and biped robot parallel standing cases, and the proposed strategy can accomplish promising comes about inside the approximatively genuine setting condition that illustrate the achievability and solid anti-interference capacity of the VSMC approach.

## **1. INTRODUCTION**

The capacity of legged robots to preserve adjust is essential some time recently performing motion errands. Right now, there are two standard conduct to preserve adjust for legged robots, one is to let legged robots keep stable standing or low-speed pace state, whereas another is to arrange steady apace leg movement. For the previous one, it requests the Middle of Gravity (CoG) to be inside the zone interior the raised locale of the supporting, and another detailing beneath typical circumstances for accomplishing energetic harmony is to require the zero minute point (ZMP) to be inside the back boundary. Ordinarily, biped robots take lower leg and hip procedure single or blended to check irritations or the gravity minute but cannot fulfill both translational and rotational of the CoM due to the coupling impacts, additionally requires the soles with certain region and lower leg to react with the ground for lower leg technique.

# **Building a Vital Talent Pool in an Organization**

**Dr. Bijay Bhujabal**

Professor, Department of MBA

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

More than 60 percent of the companies surveyed intended to build up their internal talent pipelines, and more than half (51 percent) intended to create more development opportunities for talented employees in the future. However, the other 40 percent are still of the opinion that fresh blood may get newer ideas onboard and hence the out of box approach. But the above mentioned points are debatable and have implications on the company directly or indirectly and hence it becomes imperative that the organizations invest in sessions to understand the industry dynamics and hire accordingly.

**Keywords:** Talent Pipelines, onboard ideas, out of box approach

## **1. INTRODUCTION**

Good talent in today's world is the competitive/comparative differentiator that makes the difference between an institute that is flourishing and one that is sluggish or declining. However, the impact of the roles performed by that talent is not the same across an institute. Some roles have a superior impact than others. Company in all industries have a set of critical role: work that must be performed—and performed well—for the companies to succeed. These positions are not confined to leaders and executives. Critical positions may lie at the core of conducting everyday business or be central to long-term new product strategy. Companies that do not have the right people in critical jobs forfeit revenue growth, innovate very slowly, and/or lose competitive advantage because they are unable to adapt to market dynamics. Organizations need to define, attract, and develop the right mix of critical talent to support and grow their businesses. To ensure a flow of the right talent for these roles over time, the best practice is for organizations to building a vital talent pool. Although these talent management practices take place within organizations, these activities occur in the context of the broader business scenarios. Macro factors affecting talent pools include the trend toward global talent mobility, the scarcity of specific skill sets, and the volatility of the economy and marketplaces. Further complexities arise from the imperative of business agility, requiring fast response to fluid conditions. New products, new markets, and evolving corporate strategies may drive the need for key talent with new skills or different skills. For some organizations, a critical job may not have existed before.

# **The Portrayal of Women in Advertising and its effects on target audiences: A retrospective Analysis**

**Dr.SitanathRaiguru**

Professor, Department of MBA

Gandhi Academy of Technology and Engineering, Berhampur, Odisha, India

## **ABSTRACT**

Today, advertising is a key driving force behind varied conceptions of beauty. Models with revealing clothing, fair skin, and bare midriffs are the ones who play influential paradigmatic roles in society, not “size-zero” models. Such methods are troublesome for India because the media's definition of beauty is heavily westernized. The feminist movement and the evolution of women's positions in society have sparked a lot of academic interest in how women are depicted in advertising. Traditional representations of housewives, women who rely on a man's protection, and depictions of sexual objectification were common in early studies. For more than four decades, advertisers have been accused of employing inappropriate and degrading stereotypes when it comes to the representation of women in advertising. This is a major worry in the United States right now. Despite the fact that a reduction in gender stereotyping would be reasonable, This does not appear to be the case in today's culture, which mandates many gender roles: There is a plethora of information available in the literature. Female stereotyping is alive and well, according to studies, even if it takes on different forms and patterns now than it did in the past.

**Keywords:** Marketing, television commercials, advertising, portrayal of women, Indian media

## **1. INTRODUCTION**

Marketing is frequently described as a battle for consumer attention. The major goal in today's dynamic business environment is to attract customers, but the question remains as to how low one can go to acquire this fleeting appeal. Is it acceptable to denigrate women and portray them as sexual objects in order to elicit a second look at the advertisement? Though not universally embraced and derided by many, the use of overt sexual appeal in advertising has expanded significantly. According to literature, such explicit portrayals only cause a major outcry and a poor perception of the company in the long run. “Advertiser’s main aim is to increase sales through positive impressions on audiences, about their products and services, by grabbing their attention, through persuasion in a very short span of time; before turning the page of a magazine/ newspaper, before changing the channel of the TV.