

PROCEEDINGS

A National Conference on "Applicability of Science in Engineering through Adaptive Implementation" (NCASSAI- 2021)

Date: 24.11.2021

Published Online In Association with-
International Journal of Computer Science & Management Studies
(ISSN: 2231-5268)



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 Automobile Engineering, 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 Computer Application More than 1100 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 Prakash 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 the 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 Gandhi Academy of technology and Engineering is organizing the National Conference on “Applicability of Science in engineering through adaptive implementation”. 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 “Applicability of Science in engineering through adaptive implementation”. 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 all 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.

Pinaki Bhusan Nayak

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NCASEAI- 2021

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Single gold nanocluster probe-based fluorescent sensor array for heavy metal ion discrimination

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ABSTRACT

There is a proceeding with popularity to plan compelling sensors for the assurance of weighty metal particles (HMIs) since they are risky to both human wellbeing and the climate. In this review, we revealed an easy fluorescent sensor cluster for quick segregation of HMIs in view of a solitary gold nanocluster (AuNC) test. This AuNC test was ready by utilizing 2-mercapto-1-methylimidazole (MMI) as a ligand and polyvinylpyrrolidone (PVP) as a scattering specialist. The fluorescence emanation of PVP/MMI-AuNC was seen to be firmly connected with the pH worth of the watery arrangement, which presentations yellow ($\lambda_{\max} = 512$ nm) and red ($\lambda_{\max} = 700$ nm) fluorescence at pH 12.0 and 6.0, individually. Further trials demonstrated that different HMIs can create differential outcomes on the photoluminescence of PVP/MMI-AuNC and subsequently produce particular fluorescent reactions at 512 and 700 nm. Based on this peculiarity, a fluorescent sensor exhibit in light of the PVP/MMI-AuNC was then constructed by just changing pH esteem in the sensor component.

INTRODUCTION

Weighty METAL Particles represent an extreme danger to human wellbeing and the environment inferable from their non-biodegradability and high poisonousness (Quang and Kim 2010; Unnikrishnan et al. 2021). As needs be, the plan of effortless, quick, and dependable techniques for the assurance of HMIs is fundamental for safeguarding natural climate and working on general wellbeing. Various logical methods, for example, nuclear assimilation spectroscopy (Safari et al. 2018), inductively coupled plasma outflow spectroscopy (Ebrahimi-Najafabadi et al. 2019), inductively coupled plasma mass spectroscopy (Alkas et al. 2017), and X-beam fluorescence spectroscopy (Hutton et al. 2014), have been utilized to screen HMIs.

Expeditious and practical synthesis of tertiary alcohols from esters enabled by highly polarized organ metallic compounds under aerobic conditions in Deep Eutectic Solvents or bulk water

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ABSTRACT

A productive convention was created for the amalgamation of tertiary alcohols through nucleophilic expansion of organometallic mixtures of s-block components (Grignard and organolithium reagents) to esters performed in the biodegradable choline chloride/urea eutectic blend or in water. This approach shows a wide substrate scope, with the expansion response continuing rapidly (20 s response time) and neatly, at surrounding temperature and under air, clearly outfitting the normal tertiary alcohols in yields of up to 98%. The practicability of the strategy is exemplified by the manageable combination of some delegate S-trityl-L-cysteine subordinates, which are a powerful class of Eg5 inhibitors, additionally by means of extended one-pot processes.

1. INTRODUCTION

Tertiary alcohols are significant primary subunits in compound building blocks and normal among naturally dynamic mixtures [1]. The augmentations of organometallic mixtures of s-block components (normally organolithium and Grignard reagents) to ketones or on the other hand esters are among the most effective and direct courses to getting to tertiary alcohols. At about this point, instructing reading material are clear: profoundly captivated organometallic reagents should be responded at low temperature (frequently $-78\text{ }^{\circ}\text{C}$), in aprotic solvents such as Et₂O or THF, under a dry, inactive climate of argon or nitrogen, with the comparing responses typically reaching a conclusion inside a not many hours [2]. Concerning the expansion to esters, these responses, when run under the previously mentioned conditions, are now and again tormented by the creation of diminished auxiliary alcohols, and combinations of ketones and carbinols can likewise be acquired, contingent upon the conditions utilized (Plan 1a) [3]. The rising mindfulness towards natural contamination and environment changes has induced research in natural combination to look for all the more ecologically mindful and less effective solvents instead of harmful and frequently perilous unpredictable natural mixtures (VOCs), which are known to represent around 80e90% of the complete mass utilized in any natural response [4], accordingly reshaping long-laid out standards [5].

NMR spectroscopy captures the essential role of dynamics in regulating bio molecular function

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ABSTRACT

Bimolecular are in consistent movement. To comprehend how they capability, and why breakdowns can cause infection, it is important to portray their three-layered structures as far as unique conformational troupes. Here, we exhibit how nuclear magnetic reverberation (NMR) spectroscopy gives a fundamental, dynamic perspective on primary science that catches bimolecular movements at nuclear goal. We center around models that stress the variety of biomolecules and biochemical applications that are amiable to NMR, for example, explaining utilitarian elements in huge atomic machines, describing transient conformities ensnared in the beginning of illness, and getting nuclear level portrayals of characteristically cluttered districts that make frail connections engaged with fluid stage partition.

1. INTRODUCTION

Endeavors in primary science have prompted significant advances in giving a generally static portrayal of the particles of life, producing bits of knowledge into how such particles capability in an extraordinary many cases. What has been remarkably missing, be that as it may, has been a similarly thorough tentatively based atomistic portrayal of how atoms change their conformities over time, and a comprehension of how these conformational revisions balance capability. To some degree, this trouble has emerged since the accessible innovation for acquiring three-layered depictions of biomolecules performs ideally when particles expect to be a solitary, or a modest number, of conformities. The actual course of balancing out atoms of interest for point by point studies, in any case, frequently extinguishes their elements. In this way, albeit the subsequent designs got are of high goal, they are to some degree one-sided to conformities that can be settled in any case, as opposed to those that are the most significant organically. With the rise of cry electron microscopy (cryo-EM) also, the proceeded with advancement of X-beam diffraction and atomic attractive reverberation (NMR) strategies for investigations of bimolecular structures, there is an expanded impulse to create extra integral innovations that utilization these nitty gritty designs as beginning stages to comprehend how atomic elements decipher into capability.

Highly sensitive sensing of food additives based on fluorescent carbon quantum dots

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ABSTRACT

A vigorous fluorescence-based detecting methodology was planned considering significance of breaking down compound added substances in industrialized food. In this review, a detecting approach was created utilizing fluorescent carbon quantum spots (CQDs) as a chemometric instrument. CQDs were combined by a basic one-step aqueous course utilizing the American regular seed *Caesalpinia pulcherrima*, and further described in regards to their compound construction. Five food added substances were distinguished, citrus extract, lactic corrosive, ascorbic corrosive, sodium benzoate and potassium sorbate, which showed an exceptionally touchy reaction with a restriction of discovery (LOD) as low as 252 ng mL⁻¹. The detecting stage was planned involving the directed technique for perceiving examples of straight discriminant examination (LDA), where we could distinguish various groupings of added substances, after advancement of exploratory boundaries.

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

1. INTRODUCTION

Food added substances are regular or engineered synthetic substances used to work on the nature of assembling type food chiefly with respect to its taste, appearance and surface. To be sure, added substances assume a critical part in the safeguarding of groceries which can forestall oxidation and other debasement processes [1]. Other than various food added substances might be harmful, they should be fundamental thinking about financial view and around the world populace development. Thus, the utilization of these synthetic substances are checked to forestall any sort of human existence harm, for example with no gamble to shoppers wellbeing [2,3]. For example, as indicated by the Brazilian Public Wellbeing Reconnaissance Office (ANVISA), contingent upon the kind of food, a few added substances, for example, ascorbic corrosive, sodium benzoate furthermore, potassium sorbate can be just utilized at a focus scope of 0.03–0.1 g per 100 g of food.

Theory of Gas Chromatography

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ABSTRACT

Insightful gas chromatography (GC), Fig. 2.1, is a procedure of partition of parts of combinations (tests) determined to acquire data about their sub-atomic arrangement. The data got from a chromatographic investigation can incorporate a chromatogram (a graphical picture of a locator yield), data with respect to levels and the areas of settled (enough isolated) tops in a chromatogram, their sub-atomic personality, and so forth.

1. INTRODUCTION

This part is for the most part founded on its past release [1]. As in the past, it is expected to be here that the peruser knows all about the fundamental GC ideas furthermore, designs like the slim, i.e., opentubular segment (OTC), transporter gas as the versatile progressively ease in GC, fluid and strong fixed stages, the critical instruments of the association of the solutes relocating (being conveyed by the transporter gas) through a segment with the fixed stage, temperature and additionally pressure programming, and so forth. A few sections of this volume and different sources [2e12] could assist with invigorating this data. A hypothesis of GC can be customized to underscore various parts of GC activities. It very well may be centered, for instance, on precise expectation of maintenance times and level of partition of all or on the other hand a few foreordained parts of the example. As the automated estimations are for the most part adequate for such expectations, intricacy of the models turns into a generally minor issue contrasted with their precision. It could turn into vital for the precise expectations to account for such by and large minor variables as nonideal transporter gas, impacts of the fluid fixed stage surface, no uniform segment fixed stage thickness, and so forth. These elements, in any case, are beyond the principal worry of this section. Its principal center is around the impact of the functional boundaries of GC investigation on its overall execution. The hypothesis introduced here is intended to address such issues as the impact of section aspects, transporter gas type and stream rate, temperature programming, and different variables on length of examination, the quantity of pinnacles that can be settled, recognition limits (DLs), and the compromises between these exhibition factors.

A Study on “Role of Emotional Intelligence in Managing Stress at the Workplace with Specific Reference to ITES Sector”

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ABSTRACT

IT-enabled services (ITES) are the outsourcing services that use information technology in the processing and delivery of the service.. ITES related professionals are at a constant pressure to deliver services efficiently and have to be cost effective. Employees working in ITES industry are prone to develop a lot of health problems due to continuous physical and mental stress of their work. A good knowledge of one’s own and others emotions and ability to manage them can also help a person to cope up with job stress in a work environment. Individuals with high emotional intelligence are more capable of understanding and managing their emotions, which allows them to adjust to their surroundings and become more tolerant to challenging conditions, including stress. Because stress is a perceived concept, emotional intelligence plays a role in the mental process of determining the source of the stress.

Keywords: Emotional Intelligence, ITES, Stress

1. INTRODUCTION

In the era of globalization where there is high cultural, scientific, economic and social exchange the success of a person depends on many personal factors. This includes attitudes, parental support, good education, social network, financial support and so on. Even with all of these, there can be failure in success when the root cause for this was searched it points towards EI. The present world demands higher level of interrelationships, mutual understanding and greater productivity at workplace. A good knowledge of one’s own and others emotions and ability to manage them can also help a person to cope up with job stress in a work environment. IT Enabled services (ITES) are the outsourcing services that use information technology in the processing and delivery of the service. Services are typically delivered through a telecommunications or data network, or other electronic media. Often the business processes are information technology-based, and are referred to as ITES. Knowledge process outsourcing (KPO) and legal process outsourcing (LPO) are some of the sub-segments of business process outsourcing industry.

Act East Policy and Economy of the North East India

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ABSTRACT

The look east policy launched in 1992 was an inevitable offshoot of the closing stages of the cold war following the collapse of the Soviet Union. The policy was kick started when the then prime minister Naramsimha Rao visited China, Japan, South Korea, Vietnam and Singapore. This initiative culminated in India becoming a sectoral dialogue partner with ASEAN in 1992. The Act East Policy is an attempt to integrate India with her neighboring eastern economies. Even when India's approach to development was inward looking and state controlled some smaller countries to its east has emerged as strong economies and came to be known as the Asian Tigers. The performance of these economies finally compelled policy makers in India to look eastward for inspiration for rapid economic development. The look east policy is one of the important strategies of India's development. Look East Policy was launched when India had a very fragile economy due to Economic Crisis.

Keywords: ASEAN, Act east policy, Economic crisis

1. INTRODUCTION

After independence India was attracted to the tremendous development achieved by western countries. It had been recognized that the noteworthy factor behind the rapid economic development of these countries was the process of industrialization. India was inspired by the concept of economic planning which particularly prevailed in the economy of the erstwhile Union of Soviet Socialist Republics (hereafter USSR). Accordingly India initiated five year plans from 1951 onwards, the prime aim of which was rapid economic growth of the country through industrialization. One of the main objectives of planning was to attain self reliance which is possible only when a country is able to produce everything domestically. Two types of trade strategies were sought to be promoted towards this end strategy: import substitution and export promotion. Strategies of import substitution were generally designed to produce those commodities, which were previously imported from foreign countries, domestically. This trade strategy had two major objectives: (a) To save valuable foreign exchange due to import of desired commodities. (b) To achieve self-sufficiency in the production of as many imported items as possible. On the other hand export promotion strategies were conceived to expedite the export sector.

Causal Relationship among the Emerging Asian Economies: An Exploration

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ABSTRACT

The present paper explores the extent of causality among four emerging Asian economies. It aims at finding the causal linkages between the National Stock Exchange (NIFTY), Singapore Stock Exchange (SGX), Taiwan stock Exchange (TWII) and South Korea Stock Exchange (KS11). The data set span for a period of eleven years from April 2007 to March 2018. Using daily data for the sample, time series properties have been diagnosed using ADF Unit Root test. Moving forward with the analysis, the presence of any causal linkages among the markets have been investigated using the Granger Causality Test. The results of the pair-wise Granger causality test assert bi-directional linkage between ‘National Stock Exchange (NIFTY) & Singapore Stock Exchange (SGX)’, ‘National Stock Exchange (NIFTY) & South Korea Stock Exchange (KS11)’ and between ‘Taiwan Stock Exchange (TWII) & South Korea Stock Exchange (KS11)’. A strong uni-directional relationship between ‘National Stock Exchange (CNX NIFTY) & Taiwan Stock Exchange (TWII)’ and a weak uni-directional relationship between ‘Singapore Stock Exchange (SGX) & South Korea Stock Exchange (KS11)’ as well as between ‘Singapore Stock Exchange (SGX) & Taiwan Stock Exchange (TWII)’ is also found.

Keywords: Causal Relationship among the Emerging Asian Economies: An Exploration

1. INTRODUCTION

Market integration and market linkages have gained a considerable significance in the past decades as more and more economies liberated and deregulated their markets. Further, economic and financial turbulences across the globe also contributed to such importance. Once the multi-dimensional benefits of market integration were known, more and more markets made policy measures to gain from such integration. With the passage of time, more and more markets are integrated with each other which consequently made the financial markets globally more correlated and interdependent. [Bose & Mukherjee (2005), Joshi, Phylkites & Ravazallo (2004)]. Study of interdependence between markets is of utmost importance and use as policy makers and investors learn about the implications on the portfolio diversification. Previous studies documented the increased co integration among markets.

Co-operative Sugar Factories in Maharashtra: The Growth Centers for Rural Development

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ABSTRACT

The Co-operative Sugar Factories were established as the growth centers for rural development. With the establishment of the Tatyasaheb Kore Warana Co-operative Sugar Factory, rural development, growth of irrigation mainly through schemes sponsored by the factory, led to agricultural development and growth of sugarcane cultivation. In addition, the Warana Sugar Factory, also undertook medical facilities, educational facilities etc. as a part of area development. Diversification of the sugar co-operative factory led to growth of ancillary units, like paper plant, distillery unit etc. The success of sugar co-operative led to growth of their agro-based processing units like dairy co-operative, co-operative fruit processing units and such agro-based industrialization helped in the development of agriculture. Such process of rural transformation achieved in Kolhapur district, where the Warana Co-operative Sugar Factory has indeed become the Growth Centre for rural development.

Keywords: Rural Development, Growth Centres, Supplementary income, Co-operative Commonwealth

1. INTRODUCTION

Sugar industry is an important organized industry in Maharashtra, dependent in a major way on unorganized sector. Since the industry has been organized on the principles of co-operation, its responsibility is to transform the rural life. The socio-economic life of agriculturists has undergone a complete change since the installation of sugar co-operatives in rural areas. Pandit Jawaharlal Nehru, Dr. D.R.Gadgil, Vaikunthbhai Mehta, Yashvantrao Chavan, Vitthalrao Vikhe Patil, Dr.Vasantdada Patil were the pioneers in bringing the ideology of Agro Industrial Co-operative Commonwealth into practice. The rural employment – both in agriculture and in industrial sector, has risen phenomenally since the inception of sugar factories in Maharashtra. Maharashtra state has 173 co-operative and 23 private sugar factories, but out of total co-operative factories only 141 are working in year 2007.

Relationship between second language English writing self-efficacy and achievement: A meta-regression analysis

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ABSTRACT

The study aimed (a) to estimate the overall average effect size of the relationship between jotting tone- efficacy and jotting achievement for first language(L1) and alternate language(L2) pens in English; and(b) to examine how jotting in English as a L1/ L2 centrists the connections grounded on a meta- analysis of published journal papers and compositions theses. Data included 565 effect sizes from 76 studies through a rigorous process of literature quests, webbing, and data rendering. A two- position meta- retrogression model was constructed to estimate the average effect size and to examine the moderating goods of the covariates. Results revealed a medium effect size($r = .29$) with both L1 and L2 pens, which indicated roughly 9 of the variability in English jotting achievement was associated with variability in scholars ' tone- efficacy. likewise, writing in English as a L1/ L2 was set up to moderate the relationship between jotting tone- efficacy and jotting achievement, with the effect size estimated with L2 learners($r = .441$) being statistically significantly larger than that yielded with L1 learners($r = .233$), after controlling for the covariates of sample size, gender, grade, statistical procedures, and publication type. Results also revealed that statistical procedure moderated effect size estimates.

1. INTRODUCTION

English jotting is a critical and protean skill(Graham, 2006), which plays a vital part in academic success in nearly all countries(Asmari, 2013) and serves as a threshold standard for council admission, job operation, and career creation(National Commission on Writing, 2004). In countries where English is spoken as a alternate language(L2), English jotting is also essential since it's an indicator of language learners ' overall verbal proficiency(Archibald, 2016). English jotting doesn't only give professional openings for individualities, but also is a skill requires in business, politics, and education in the globalized world(National Commission on Writing, 2004). Writing is a study- demanding and challenging undertaking(Anastasiou & Michail, 2013). According to the National Center for Education Statistics(2012), 20 of eighth graders and 21 of twelfth graders in the United States were below the introductory position in English jotting and only 3 of scholars at both grades performed at the advanced position.

Exploring engagement of users of Global English in A Community of inquiry

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ABSTRACT

The Community of Inquiry (CoI) frame has been considerably studied. While previous exploration has delved the development and validity of the CoI theoretical construct, many studies have concentrated on the interdependent Cognitive, Social and tutoring aspects of the frame and none have been conducted grounded on a positive architecture of Global Englishes (GE) which directly challenges a monolingual testament. This mixed styles study considers how GE druggies in a Alternate Language Acquisition postgraduate course at a exploration university in Malaysia endured these three aspects in their course, and how knowledge was collaboratively constructed in relation to their experience with these aspects. Data sources comported of the CoI checks and discussion board posts. Analysis of these posts concentrated on the relationship between CoI aspects, GE stoner participation and knowledge construction. Findings suggest that the GE druggies laboriously constructed knowledge collaboratively in the CoI, and that they took on varied places which demonstrated the three aspects. This study makes an empirical donation to the body of exploration on GE druggies and a performing CoI in asynchronous discussion boards.

1. INTRODUCTION

In recent times, a burgeoning literature has illuminated our understanding of the Community of Inquiry (CoI). This work has concentrated on the development and conservation of the CoI, the validity of the cooperative construct, and how the CoI frame supports critical and creative thinking, and provides an educational terrain which enables scholars to learn how to learn (see, e.g., Akyol, Garrison, & Ozden, 2009; Anderson, Rourke, Garrison, & Archer, 2001; Foo & Quek, 2019). Yet while exploration has explored the demographic moderating goods of age, position, gender and discipline (e.g., Horzum, 2015; Khodabandelou, Ab Jalil, Wan Ali, & Mohd Daud, 2014), interest in online and amalgamated literacy grounded on CoI has tended to concentrate on study surrounds in the United States and Canada (see, e.g., Stenbom, 2018) where utmost actors were using English as their home language, or in English as a alternate or foreign language (ESL/ EFL) where the emphasis was on the part of CoI in perfecting foreign speakers language proficiency (e.g., Herrera Díaz & González Miy, 2017; Wu, Hsieh, & Yang, 2017).

Design of a nonlinear model for the propagation of COVID-19 and its efficient nonstandard computational implementation

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ABSTRACT

In this handwriting, we develop a fine model to describe the spreading of an epidemic complaint in a mortal population. The emphasis in this work will be on the study of the propagation of the corona virus complaint (COVID- 19). Colorful epidemiologically applicable hypotheticals will be assessed upon the problem, and a coupled system of first- order or denary discrimination equations will be attained. The model adopts the form of a nonlinear susceptible-exposed- infected- quarantined- recovered system, and we probe it both an lyrically and numerically. Analytically, we gain the equilibrium points in the presence and absence of the coronavirus. We also calculate the reduplication number and give conditions that guarantee the original and global asymptotic stability of the equilibria. To that end, colorful tools from analysis will be employed, including Volterra- type Lyapunov functions, LaSalle's invariance principle and the Routh – Hurwitz criterion. To pretend com putationally the dynamics of propagation of the complaint, we propose a nonstandard finite difference scheme to compare the results of the fine model.

1. INTRODUCTION

Coronavirus complaint 2019(COVID- 19) is a viral complaint that was linked toward the end of the time 2019 in China, and which came a epidemic in the first quarter of the time 2020(1). After its identification in 2019, COVID- 19 has been a source of active exploration from colorful scientific points of view, substantially due to the mortality rate deduced from this complaint and the essential health complications. Indeed, to this day, the COVID- 19 dashboard by the Center for Systems Science and Engineering at Johns Hopkins University reports a aggregate of cases in 188 countries around the World, along with , 185,696 recovered individualities and 345,589 deaths worldwide(2). On the other hand, the usual symptoms of this complaint include fever, cough, fatigue and briefness of breath (3), but it may develop to acute respiratory torture pattern, multi organ failure, septic shock and blood clots, among other conditions(4,5). In some cases, these symptoms evolve fleetly performing eventually in a painful death.

Valuation of electricity storage contracts using the COS method

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ABSTRACT

Storage of electricity has come increasingly important, due to the gradual relief of fossil energies by further variable and uncertain renewable energy sources. In this paper, we give details on how to mathematically formalize a corresponding electricity storehouse contract, taking into account the physical limitations of a storehouse installation and the piecemeal constraints of the electricity grid. We give details of a valuation method to price these contracts, where the electricity prices follow a structural model grounded on a stochastic polynomial process. In particular, we show that the Fourier-grounded COS system can be used to price the contracts directly and efficiently.

1. INTRODUCTION

One of the main options for the reduction of greenhouse gases is the use of renewable energy (28), like wind and solar energy. The current, largely variable, nature of these energy sources still creates a great challenge in maintaining a balance between demand and forcing a dependable and stable electricity network (34). Among all results for the largely variable nature (22), electricity storehouse is considered as a result with promising eventuality (7). There are numerous different technologies for large-scale electricity storehouse systems and each technology has its own specialized characteristics (see()). In addition, new ways and generalities are being developed that can be used for electricity storehouse (e.g. Auto as Power Plant (31,37)). The rapid-fire technological advancements of electricity storehouse are also increasingly intriguing from a fiscal point of view, i.e., storing electricity when there's a lot of force (and thus a low price) and selling when the demand is high (and thus a high price). The business-profitable consequences, profitability analyses, technological developments and operations of electricity warehouses have been completely delved, Chen et al.(). In this paper, quantitative exploration is conducted into the valuation of contracts for storing electrical energy by trading on the electricity request.

Interpreting the relationship between emotions and understanding in mathematics: An operational approach applied to measurement with preservice elementary teachers

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ABSTRACT

This exploration explores the relationship between feelings and understanding in mathematics. In concrete, an illuminative model is proposed allowing to relate, operationally, the pupil's emotional experience with a functional view of their understanding, grounded on their uses of fine knowledge. The model includes a specific system for detecting the connections between scholars' feelings and their understanding during fine practices in the classroom. This system is applied in an empirical qualitative study with preservice abecedarian preceptors involved in dimension problem working in dyads. The study provides positive results on the influence of scholars' understanding on the generation of their different feelings during the fine exertion performed. In the same way, the feelings give presumptive reasons that help to explain the scholars' fine understanding.

1. INTRODUCTION

The complex world of mortal feelings is a major focus of interest in mathematics education(Evans, 2006; Hannula, 2012a; Martínez- Sierra et al., 2019; Pepin & Roesken-Winter, 2015; Zan et al., 2006). In recent decades, there has been an adding number of studies on how mortal feelings are related to cognition in mathematics. The perspective put forward moment is that emotion and cognition aren't separate but rather conceived as related realities(Chen & Leung, 2015; Marmur, 2019). They develop together within subjectivation processes linked to participation in social and artistic conditioning(Evans, 2006; Radford, 2015). According to this paradigm shift in the sphere of the mind, cognition is basically of an emotional nature; feelings are conceded as necessary for rational geste , forming part of a participated vision of the world(Hannula, 2006, 2012a; Radford, 2015; Schloglmann, " 2010). In this contemporary vision, the challenges that remain are, among others, to integrate the cerebral, suggestive and physiological aspects linked to feelings within the same process; to relate the binary, conscious and unconscious origin of the feelings themselves; and to attune their inheritable, ingrain and universal nature with their contingent character dependent on literal, artistic and social conditions(Hannula, 2012b; Sumpter, 2020).

Three cases that demonstrate how students connect the domains of mathematics and computing

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ABSTRACT

This study uses actor- acquainted transfer perspective to probe different ways in which scholars make connections across the disciplines of mathematics and computing. We solicit first- time scholars at the University of Oslo as they work with a set of tutorials that we designed to integrate knowledge from both disciplines. The cases we present then demonstrate four different types of cross-domain connections (a) mathematically reproducing the work of a computer program, (b) cyclically perfecting a program to produce better affair, (c) coupling calculation to affair to justify program advancements and (d) coupling calculation to law to justify program design. We give rich exemplifications of the ways in which scholars make these connections and bandy affordances for fine literacy in this environment.

1. INTRODUCTION

The last several decades has seen computers take over more and more tasks that used to be the sphere of the mortal mind alone. formerly, there's a concern that while mathematics is at the core of what computers can do, “ the universal mathematics is substantially hidden in all feathers of outfit, which serve as black boxes for its druggies ”(Gravemeijer et al., 2017, p. 53); see also (Williams & Wake, 2007). In mathematics classrooms, the solicitude is that scholars will come dependent on computational tools to do mathematics without understanding the underpinning principles of either. nonetheless, computers and programming are getting ever more important in the practice and tutoring of mathematics (e.g., (Broley et al., 2018; Passey, 2017)). The reasons for this movement are multifarious and include allowing for the disquisition of further and different motifs, giving scholars more hands- on experience, and the envisaged implicit “ to have mathematics come to feel more natural, applicable, and less intimidating ”(diSessa, 2018, p. 25). still, we as a field are just beginning to understand how the integration of calculating into calculation affects pupil thinking and literacy. How does bone sphere connect to the other from the scholars ’ point of view, and what do these connections go? Our focus in this paper is to study the ways in which undergraduate scholars connect mathematics and computing.

Impact of self-interaction of gravitational fields on the creation of massive structures

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ABSTRACT

We check whether Common Relativity's field self-interaction eases the require for dim matter to clarify the universe's huge structure arrangement. We found that self-interaction quickens sufficiently the development of structures so that they can reach their by and by watched thickness. No free parameters, dull components or alterations of the known laws of nature were required. This result includes to the other common clarifications given by the same approach to the, connect alia, level revolution bends of worlds, super novae perceptions suggestive of dim vitality, and flow of world clusters, in this manner fortifying its validity as an elective to the dim universe show.

1. INTRODUCTION

The basic part of dull matter within the development of universes and other huge structures constitutes an critical prove for the reality of that dull component of the universe. Enormous microwave foundation (CMB) anisotropy information appear [1] that at recombination time ($t \approx 3.7 \times 10^{-4}$ Gyr, or redshift $z \approx 1100$), the fragmentary thickness vacillations δ that will advance to create the huge structures have ordinary sizes of $\approx 10^{-5}$. Modeling their vancement by means of the Pants collapse component and expecting exclusively baryonic matter yield, for the show times, $\delta \approx 10^{-2}$. Typically 2 orders of greatness lower compared to perceptions. Dull matter fathoms this issue since its need of electromagnetic interaction permits it to begin to coalesce without obstruction from electromagnetic weight, and so essentially prior than unmistakable matter whose development is at that point quickened by the generally denser dull matter halos. In spite of the fact that this demonstrate is by and large fruitful in depicting the dispersion of the universe's matter thickness, it predicts as well numerous overshadow worlds and globular clusters [2].

The universe's energy conditions and entropy density

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ABSTRACT

Within the standard Friedmann-Lemaître-Robertson-Walker (FLRW) cosmological demonstrate, the vitality conditions gives model-independent bounds on the behavior of the separate modulus. Be that as it may, this strategy can not give us the point by point data almost the infringement between the vitality conditions and the perception. In this paper, we show an expanded investigation of the vitality conditions based upon the entropy thickness of the universe. On the one hand, we discover that these conditions infer that entropy thickness s depends on Hubble parameter $H(z)$. On the other hand, we compare the hypothetical entropy thickness from the preservation law of energy–momentum tensor with that from the vitality conditions utilizing the observational Hubble parameter.

1. INTRODUCTION

Over the past decade numerous pieces of prove for an quickened development of the universe have been found with a few autonomous cosmological tests, such as the supernova(SN)Ia observations[1–6], enormous microwave foundation (CMB) [7–9], baryon acoustic motions (BAO) [10–12], coordinates Sachs–Wolfe impact [13–15], world clusters [16–19] and solid gravitational lensing [20]. There are different endeavors to clarify the speeding up, from dull vitality to adjusted gravity. Combined investigation of the over cosmological perceptions support that an approximately 26% of cold dark matter(CDM)and the other portion 74% ruled by an obscure extraordinary component with negative pressure-driving the current speeding up. To ponder the phys- ical properties that hold for a assortment of matter sources, Selling and Ellis found the so-called vitality condition [21–24], which are conjured in Common Relativity to confine common energy–momentum tensors. Since these conditions don't require a particular condition of state of the matter within the universe, they give exceptionally basic and demonstrate- autonomous bounds on the behaviour of the vitality thickness, weight, and see back time. Subsequently, the vitality conditions are one of numerous approaches to get it the advancement of the universe.

A Comparative Study of Met kaolin/Slag-Based Geopolymer Mortars Incorporating Natural and Recycled Sands

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ABSTRACT

Significant efforts are being made to reduce the damaging effects of the Portland cement industry on the environment by substituting some of the cement used in the production of concrete with industrial byproducts from the clinker manufacturing process. Nevertheless, in addition to the substantial use of natural resources like sand and other aggregates, the carbon footprint is still quite significant. To address these issues, a novel class of mineral binders with characteristics akin to Portland cement—known as geopolymers—should be used in place of Portland cement. Silica or aluminosilicate materials can be alkali-activated to produce these binders. Various activators were used, such as liquid ($\text{Na}_2\text{SiO}_3 \cdot n\text{H}_2\text{O}$) and solid (NaOH). The best combinations were employed to create mortars using recycled concrete sand (CRS) and natural sand (NS). The physical, mechanical, and microstructural properties of the two types of mortars were compared experimentally. The best physico-mechanical qualities were produced by cement mixtures that contained a high percentage of slag and a combination of sodium hydroxide and sodium silicate.

Keywords: Geopolymer; Metakaolin; Slag; Alkali-activation; Recycled Sand; Mortar; Strength.

1. INTRODUCTION

Concrete is the most widely consumed manmade material in the world, with over six billion cubic meters produced annually, or almost one cubic meter utilized by every resident. It is important to note that the cement industry releases an estimated one billion tons of carbon dioxide (CO_2) annually, half of which comes from fuel and the other half from the calcination of CaCO_3 . In addition, cement pollutes more globally than all trucks combined, according to a report by the International Energy Agency and World Energy Outlook [1]. In reality, the production of it accounts for 7% of carbon dioxide emissions worldwide.

Characteristics of Foamed Concrete Containing Ultra-fine Drift Sand of the Yangtze River

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ABSTRACT

This study's main objective was to assess the use of ultra-fine drift sand from the Yangtze River in China in place of regular sand when making foamed concrete. There were four different levels of Ultra-fine Drift Sand proportion in the experimental design: 0%, 30%, 60%, and 100%. The mass of the material was replaced proportionately with ultra-fine Drift Sand. The impact of each factor on water absorption, air voids, dry and saturated density, and compressive strength was evaluated. The results showed that every factor had important discoveries. Concrete's compressive strength rose as a result of longer curing times, flyash contents as high as 30%, a higher percentage of Yangzi River sand, and a decrease in slag. In comparison to previous findings, the combination of 10% SF (silica fume), 24% FA (flyash), and 100% YS (yangzi soil) results in improved concrete strength, reaching approximately 7 MPa. The residual fractions of mixing benefit compression strength outcomes.

Keywords: Foamed Concrete; Ultra-Fine Sand; Compressive Strength; Drift Sand.

1. INTRODUCTION

The world has moved in a new direction in recent years, looking for materials that are more practical, affordable, lightweight, long-lasting, and ecologically friendly in order to keep up with the changing needs of construction. Because of its high weight and thermal conductivity, normal concrete has an alternative production sector due to the increase in global warming. It can be applied in various ways and weighs between 300 and 1800 kg/m³. Periodically, the Yangtze River Canal's natural activities are accessed by sweeping away ultra-fine sand. Channel managers find it difficult to come up with fresh ideas for managing sand drift. As a lightweight concrete composed of a foaming agent without coarse aggregate added as an admixture, foam concrete—also known as air slurry due to the presence of air voids—defines the nature of concrete itself. The foaming agent is added separately and mixes with the diluted cement paste when it is sprayed outside the pump.

Daily Maximum Rainfall Forecast Affected by Tropical Cyclones using Grey Theory

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ABSTRACT

The purpose of this study is to create a model that will predict the daily maximum rainfall in Northeastern Thailand in August and September of 2022 and 2023 due to tropical cyclones. Research has historically employed the ARIMA or ARIMAX technique to forecast rainfall. It is a rainfall forecast for the near future. The Grey Theory was used in this study because it is a method for managing discrete, limited data for long-term forecasting. In Northeastern Thailand, rainfall impacted by tropical cyclones has never been predicted using the Grey Theory. Using the highest daily cumulative rainfall data from 17 provinces in Northeastern Thailand during the August and September tropical cyclones of 2018–2021—the Grey model GM(1,1) was examined. According to the findings, only Nong Bua Lamphu province had a daily rainfall forecast of more than 100 mm in August 2022 and 2023; the other provinces' forecasts were for less than 70 mm. There were five provinces with the highest predicted daily rainfall totals of more than 100 mm for September 2022 and 2023.

Keywords: Grey Theory; Tropical Cyclones; Daily Maximum Rainfall.

1. INTRODUCTION

A tropical cyclone is a storm that can harm houses and crops in addition to causing powerful winds and flash floods. The South China Sea, the Bay of Bengal, and the western portion of the North Pacific Ocean are the primary locations where tropical cyclones that impact Thailand form. Climate change is also influenced by global warming, which happens when the Earth is unable to regularly radiate the heat it receives from solar radiation back into space. The average temperature of the Earth rises when its climate changes, which increases the amount of water that flows into the rivers and seas and melts more glaciers at the poles, affecting life as we know it. In general, Thailand experiences three to four storms annually. Every year, from August to September, they primarily affect Northeastern Thailand, where strong storms and thunderstorms destroy and damage homes and farms. Both landslides and floods can result from heavy rains.

Effect of Stirrups on the Behavior of Semi-Precast Concrete Slabs

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ABSTRACT

Precast concrete semi-slabs, also known as half-slabs, are structural systems made up of concrete placed in situ at the top and concrete at the bottom of the slab. This section can serve as formwork to minimize the bottom half of the slab and avoid the need for traditional formwork. Precast slabs can be made thinner, which facilitates easier transportation. The performance of the slab system benefits from the interface between overtopping concrete and precast concrete. A shear connector, also known as stirrups, is required to enhance the half-slab floor system. Consequently, six full-scale slab specimens (2 x 7.5 m) with various stirrup shapes and spacing between them were built for this study in order to better understand the behavior of this slab system. Stirrups were used to join slab units in one specimen, which was produced without any connections and used as a reference. The distribution and kind of stirrups have an impact on the semi-precast concrete slab's structural performance, according to the test results. Slabs with rectangular or triangular connections had maximum load capacities of 136.11 and 86.11%, respectively, almost twice as high as reference slabs.

Keywords: Semi-Slabs; Precast Concrete; Site-in-place Concrete; Stirrups; Spacing.

1. INTRODUCTION

In semi-precast or hybrid concrete construction, precast and cast-in-place concrete are utilized (overtopped concrete). Precast concrete is used for the slab's bottom, and conventional concrete is used as the topping to seal it. The economy and flexibility of cast in-site concrete units can be combined with the precision, speed, and superior finish of precast components. This method has several advantages, including lessening the amount of wood used for formwork, making transportation easier, and enabling quicker and safer construction. Because the production process is carried out in a controlled factory environment, semi-precast concrete's structural performance exhibits high cracks and deflection control.

Maintenance and Management of Computer Network Security In the Big Data Era

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ABSTRACT

T. The big data network was first created as a result of information technology advancements. But in this setting, the issue with network security is getting worse and worse. China has made network security a key component of national security. In order to improve China's network security governance policy system and serve as a guide for the formulation of new policies, this paper examines the text of China's network security governance policy from the perspective of big data, develops an analysis framework based on big data, examines pertinent sections of the policy, examines current issues, and makes optimization recommendations. This study uses data analysis from Google to gather information on network security events and policies in 2020. A total of 195 pertinent network security governance policies are acquired. Every policy is examined to guarantee the materials' correctness and applicability. The study's findings indicate that the application level, devoid of particular guidelines and procedures for execution. Out of these, 183 policies pertaining to regulatory oversight, making up 31.6%. Consequently, the nationwide networkThe legislative and information departments should work together to Create policies to address issues inside the network ecosystem.

1. INTRODUCTION

The actual civilization is expanding into cyberspace as network technology and equipment continue to advance and become more widely used. As a result, the Internet is becoming increasingly integrated into daily life. Networks are becoming more and more essential to people's ordinary existence. Nonetheless, given the quick advancement of network technology and networkThe issue of network security has grown more pressing in the industrial economy. With the Internet transitioning from a time of steady development to one of dense accumulation, "network governance" is receiving more and more attention from all sides.

Reduction of Attributes using Genetic Algorithm on K-Nearest Neighbor (KNN)

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ABSTRACT

Worldwide and in Indonesia, diabetes mellitus (DM) is a major health issue. Diabetes has been diagnosed with the use of data mining tools. The process of selecting characteristics involves locating and eliminating those with excessive or unnecessary values. In this work, a genetic algorithm was used to pick attributes. Used at K-Nearest neighbour (KNN) for classification purposes. The goal of the genetic algorithm is to sort characteristics according to rank, where a feature's bigger value indicates its importance for the categorization task. 768 data points from the Indians dataset were used to run the test. We found that combination one worked well in the test. selection of attributes: three and four attributes derived from K-Nearest Neighbour (KNN) accuracy prior to 76.96% after being cut by 76.52%. As the two traits that have been chosen are reduced, so are attributes 1 and 4. The K-Nearest neighbour (KNN) accuracy scores are compared at 76,52% and 79,57% before and after attribute reduction. These outcomes demonstrate that comparing the acquired findings attribute reduction while preserving the findings' optimization both before and after the elimination of characteristics.

1. INTRODUCTION

Hyperglycemia is a symptom of diabetes mellitus, a metabolic disorder caused by abnormalities in insulin production, insulin function, or each. If you've come into contact with long-term diabetes, then there will be dysfunction, long-term harm, or failure of a few human organs, including the heart, blood vessels, kidneys, eyes, and nerves. Diabetes mellitus (DM) is a dangerous medical condition both globally and in Indonesia. As said by a Indonesia was identified as a lower-income country in the WHO report from 2005. nation comes in fourth place with the most the world's population with diabetes mellitus after India, United States and China. The KNN Method uses this selection procedure as its implementation. One of the most popular algorithms for classifying or predicting new data is KNN.

Face recognition using neuro-fuzzy inference system With feature extraction

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ABSTRACT

The field of wireless sensor networks is relatively young. It can be used to gather, analyse, and send signals in certain unique situations. Zigbee is a novel wireless sensor network technology that has poor speed and short range. The Wi-Fi network is brand-new. Stack of IEEE 802.15.4 protocols. Recently, the conventional method of gathering characteristics forIn agriculture, greenhouses are commonly employed. The conventional setup utilizes wired wiring.It adds to the system's complexity and cost. Modern greenhouses typically have hundreds ofthousand square meters, and according on the various seasons, they may grow a range of plants. Thus, weneed to move the sensors that gather data for the greenhouse to a more suitable locationmore productive.It is affordable and convenient to switch to wireless wiring.

1. INTRODUCTION

In this study, a wireless sensor network system for greenhouses based on ZigBee technology was built. It provides mobility and flexibility to save wiring costs and energy consumption. This article also covers relevant programming, hardware, and software architecture. A comparison between the ZigBee system and a conventional wired network systemIts benefits include low cost, low power, and broader coverage for greenhouses. Beyond that, itadheres to the IEEE802.15.4 standard, making communication with otheritems that also follow the protocol.A new technology called ZigBee is now being used for wireless sensor networks. An administrator can instrument, watch, and respond to events and phenomena in a designated area using a sensor network, which is an infrastructure made up of sensing, computation, and communications components.Common uses comprise, but are not restricted to, information gathering, observation, tracking, andtherapeutic telemetry. Usually, a civil, governmental, business, or industrial body serves as the administrator.The following are the key areas where ZigBee technology excels: (a) Trustworthy and selfarrangement. (b) Offers a lot of node support. (c) Simple to use. (d)Excellent battery longevity.(e) Safe. (f) Cheap. (g) Usable anywhere.

An Internet of Things-based Biogas Electrical Generator Condition Monitoring System for Performance Assessment

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ABSTRACT

Biogas could be a promising renewable vitality source having awesome potential, particularly in animals ranches. In any case, as biogas electric generators are as a rule conveyed in provincial areas, it would take more time and exertion to repair in case any blame occurs. Remote observing of the framework condition is basic to analyze or indeed foresee the issues in progress and subsequently plan the upkeep plan in time. This paper presents a checking framework of biogas-based control era framework using Internet-of-Things (IoT) gadgets. Data of the generator operation is procured by field gadgets and sent to a remote server. Information collection and administration are facilitated by Lambda engineering and Apache Kafka program platform for their interoperability and solid bolster of enormous information management. The framework appears that close real-time supervision of the question conditions can be gotten. Authentic information analyses of a couple of operation scenarios are moreover given to assess the generation framework execution as well as to examine its blame conclusion.

File Terms: Internet of Thing, Biogas generator, Lambda Design, Condition Observing.

1. INTRODUCTION

Increase in vitality request raises a genuine concern around the world, particularly in creating nations. Whereas fossil fuel assets don't give maintainable implies for maintainable advancement, other ordinary vitality source such as hydroelectricity or atomic control have unfavorable environmental impacts and imperatives. Looking for elective vitality sources, agrarian nations are taking advantage of the vitality created by agricultural wastes such as biogas to supplant gasoline and oil in a few cases. Biogas extricated from creature excrement through anaerobic assimilation may be a renewable vitality source for animals ranches, and it can be utilized to create warm or power. In addition, this handle too makes a difference to diminish totally methane outflows and stabilizes the fertilizer some time recently its agronomic utilize [1]. The electrical generators using biogas are regularly adjusted from gasoline and diesel motors or based on dual-fuel motor [2, 3].

Versatile robots collaboration with impediments control based on counterfeit insights

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ABSTRACT

In this paper, investigate on the applications of artificial intelligence in actualizing Profound Deterministic Approach Angle (DDPG) on Gazebo demonstrate and the reality of portable robot has been examined and connected. The objective of the exploratory ponders is to explore the versatile robot to memorize the finest conceivable activity to move in real-world situations when confronting settled and versatile deterrents. When the robot moves in an environment with deterrents, the robot will naturally control to dodge these deterrents. At that point, the more time that can be maintained within a particular restrain, the more rewards are accumulated And subsequently superior comes about will be accomplished. The author performed different tests with numerous change parameters and demonstrated that the DDPG calculation is more effective than calculations like Q-learning, Machine learning, profound Q-network, etc. At that point execute Pummel to recognize the robot positions, and virtual maps are absolutely built and shown in Rviz.

List Terms: Mobile robots, manufactured insights, DDPG calculation, independent route, support learning.

1. INTRODUCTION

Presently A DAYS Fake Insights (AI), Web of Things (IoT), and robot controls are receiving a part of consideration. Robot innovation has changed since the primary introduction of robots in 1917. Nowadays, machines are display in our lives, supporting us in standard of, living [1] - [5]. One of these unused innovations is counterfeit insights that has come to life as well as mechanical technology and machine apparatuses innovation, so robots can presently legitimately prepare and oversee data, and automatically perform certain tasks without human help, supplanting people in mechanical industrial facilities. In any case, the capacity to see the environment (feel) and make choices (to require activity) could be a exceptionally troublesome assignment for the computerized machines. Hence, the field of Counterfeit Insights (AI) is required for portable robots to unravel such issues, [3, 4, 5, 6].

Applications of LORA-Based Sensor and Actuator Networks in Smart Livestock Farming

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ABSTRACT

Fast development of cultivating exercises in Vietnam requires work of modern advances in information securing, control, and communication to form them work more productively. In animals cultivating applications, natural condition monitoring and control are basic to preserve great consolation for the creature, decrease the farmworker's workload, and minimize the chance of illness spread. In this work, a remote sensor and actuator framework based on LoRa convention is developed to send in hoard ranches. The surrounding temperature and airquality data is obtained and prepared. The information is at that point utilized for automated control of the cooling fans to consolation the animal within the horse shelters. Other than, long term information collection can be also utilized to get it the framework comprehensively and thus facilitate the cultivate proprietor to upgrade the cultivating operation subsequently. A graphical client interface is additionally given for the operator to oversee the framework and mediate on the off chance that essential. Experimental results are given to illustrate the performance of the complete framework.

Record Terms: LoRa, Remote Sensor and Actuator Systems, Shrewd Cultivating

1. INTRODUCTION

Mechanical computerization in creating nations such as Vietnam is quickening quickly. Its agriculture, once the most donor to the economy, still plays a vital role. However, the characteristic assets have gotten to be costly, and the forceful urbanization comes about within the decrement of farmland. Modernization of the farming may be a must in arrange to optimize the restricted assets and maximize the benefit. Later progressed innovations in communication and computation empower unused slant of shrewd cultivating applications. A number of Remote Sensor and Actuator Systems (WSANs) have been created for the final decade and appeared a incredible potential in farming as expressed in [1-3]. Remote Sensor Networks (WSNs) comprises of a number of hubs which can be sent effectively in different sorts of environment and coordinate well with each other to see required data [2, 4].

Bayesian Stackelberg Ludoj por Cyber Security Decision Support

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ABSTRACT

A cyber security decision support system is introduced here. The system tries to select an optimal portfolio of security controls to combat multi-stage attacks. The system has several parts: predictive optimization to select controllers for an initial defense portfolio, a learning mechanism to evaluate possible persistent attacks, and network optimization to select an optimal portfolio to counter persistent attacks. The system relies on effective two-level optimization solutions, especially the network optimization is a proven Bayesian Stackelberg game solution. The proposed solution has been shown to be more efficient than traditional solutions such as the Harsanyi transform, as well as newer efficient solutions.

Keywords: Attackgraphs Bayesian Stackelberg games Cyber-security Security games Security investment

1. INTRODUCTION

Cyber security is a critical challenge for any organization that uses IT equipment in its daily business and operations. Digital assets such as customer data and confidential product information are high-profile targets for these financially motivated cyber attackers. Recent studies [1-4] address the question of how to choose the optimal security control package to counter potential cyber attacks. Other studies, such as [5-7], focus on a learning mechanism to detect and evaluate ongoing attacks against an organization. In this work, we present an organizational decision support system that determines optimal security portfolios to counter multi-stage (possible and sustained) attacks.

The system consists of predictive optimization to select the optimal proactive security portfolio to counter potential attacks, a learning mechanism to evaluate potential ongoing attacks, and network-based optimization to determine the optimal remedial security portfolio in response to detected ongoing attacks.

Romanian Lexical Resources Interconnection

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ABSTRACT

The goal is to strongly increase the usefulness of language resources in language processing applications by combining them with each other. This study focuses on Romanian, which is a young language in the field and has to make great strides until its resources are considered good, both qualitatively and quantitatively. The CoRoLa corpus has been in development for 4 years and has been researchable since 2017. It contains about a billion words, annotated (tagged, lemmatized, morphologically and syntactically processed). Two other resources used in this study are eDTLR (electronic version of Romanian Thesaurus Dictionary) and Romanian WordNet. This study describes a technology that aggregates these resources and brings them to a common standard, resulting in an effective integration of these resources. With this newly acquired standardized resource, a series of tests and case studies were conducted, benefiting from a much more diverse use of the Romanian language.

Keywords: Lexical resources; corpus; electronic dictionary; WordNet; interconnection of lexical resources

1. INTRODUCTION

Today, linguists around the world are deeply concerned about the existence and formation of new lexical resources, which shows the importance of language technology. The acquisition and development of the basic tools necessary to create, use and maintain language resources depends on language-specific data sets, from simple collections such as scanned documents, such as virtual libraries, to collections of texts organized as language models, annotated corpora, and dictionaries, thesaurus, ontologies etc. The heterogeneity of language resources requires integration and interoperability [3] to be reusable across many applications and accessible to the NLP community. Each language resource was considered to satisfy certain specific needs, but quite recently the advantages of their combined use became clear [6], [7]. This article proposes a method to combine different language databases and presents an example of this approach with several existing Romanian language resources.

Cyber security Research Communities: A Comprehensive Literature Review

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ABSTRACT

To obtain a coherent overview of cybersecurity research, a citation graph of 98,373 authors in the field from 1949 to the beginning of 2020 was mined from the Scopus academic abstract and citation database, and the Louvain community detection algorithm was applied to the graph. identify existing research communities. The analysis identified twelve high-level communities: access control, authentication, biometrics, cryptography (I and II), cyber-physical systems, information hiding, intrusion detection, malware, quantum cryptography, sensor networks, and operational security. These advanced communities in turn consisted of a total of 80 sub-communities. The analysis results are presented for each community as descriptive text, sub-community diagrams and tables with, for example, the most cited articles and authors. A comparison between the observed communities and current fields defined by other related works is also presented, showing the increased emphasis of the researcher on cryptography, quantum encryption, information hiding and biometrics at the expense of law and regulation, risk management, and management and security. software life cycle.

Keywords: Security Clustering Community System at literature review

1. INTRODUCTION

The cybersecurity research community is an eclectic group that addresses different research questions, uses different theories, and uses different methodologies, making it difficult to gain a comprehensive understanding of this connection. In this work, we try to constantly summarize the activities of this group of researchers using quantitative methods. In a reference graph of 98,373 authors working in cybersecurity between 1949 and 2020, we identify twelve distinct communities focused on topics as diverse as malware, exploitable security, intrusion detection, and access control. Each community is described e.g. regarding research priorities, publication forums and the development of sub-communities. Since Thomas Kuhn's pioneering work *The Structure of Scientific Revolutions* [1], philosophers of science have been aware of the influence of social organization on scientific endeavors.

DUPM: A Data Duplication Strategy for Distributed Mining

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ABSTRACT

A bulk data mining algorithm is usually sensitive to computer resources, the extent of which (such as the amount of memory and processors available for mining algorithms) determines the mining results. In this paper, data replicas have been added as resources in a distributed data mining resource planning strategy to provide a replica-aware resource planning strategy DupM. For data copies as a type of data resource, DupM's strategy is to design data copies using dynamic programming so that the cloud environment can allocate copies based on distributed mining requirements. A simulation test on the KDD CUP transaction test datasets and IBM Synthesizer datasets showed that the DupM resource scheduling strategy has more advantages than the Hadoop built-in resource scheduling strategy.

Keywords: replicascheduling; replicascheduling; distributedmining; dynamicprogramming; Hadoop

1. INTRODUCTION

Traditional data mining techniques process massive big data inefficiently. The uncontrolled, continuous and explosive growth of big data also reinforces the trend of data explosion and weak knowledge. In this situation, cloud computing platform as an effective solution has become a hot research area. As an emerging computing service model, the cloud computing platform evolves from parallel computing, distributed computing and network computing. Since the platform's resources are shared among users, users can access the data center via the Internet from anywhere and request any computing resource from the platform according to their needs [1]. With the research of distributed data mining, various distributed data mining algorithms have gradually emerged. Many researchers are mining massive data using a decentralized framework. This mode, which combines a distributed computing framework with bulk data, currently constitutes the main "5th generation data mining" as well as cloud computing platform-based distributed data mining [2].

A 32 KW Power-Dense Six-Phase Dual-Interleaved DC–DC Buck-Boost Converter with Three Inter phase Transformer

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ABSTRACT

This article presents a power-dense, six-phase dual-interleaved DC-DC Buck-Boost converter for electric/hybrid vehicle applications. This converter employs six hard-switched arms at 75 kHz, three dual interleaved inter phase transformers along side three common inductors and two channel capacitors at the input and yield. The steady-state current swell recurrence of the common inductors is twice the exchanging recurrence due to the double interleaving within the inter phase transformers. The resultant swell current recurrence of the input and yield channels is six times the exchanging recurrence; estimate and weight lessening of the detached components are gotten due to this recurrence increment.

Keywords: Buck-boost converter, dual-interleaved, high-power thickness, inter phase transformer

1. INTRODUCTION

The drift of utilizing more electric innovation in portability applications has expanded the control rating of electron icvitality stages, disabling the weight and measure of the control converters on board vehicles and influencing their independence[1], [2]. These issues constitute these days a innovative bottleneck. High-power-density DC-DC converters have opened afield of advancement and inquire about that right now help diminishing measure and weight in medium control applications [3], [4], [5],either with or without bidirectional capability. This innovation methodology consolidates interleaves exchanging arms together The relate editor planning the survey of this composition and endorsing it for distribution was Sheldon S. Williamson. with coordinates magnetics such that the control dealing with capacity is separated into two or more cells be that as it may, the complexity of these circuits may increment due to the tall number of exchanging gadgets. For case, displayed DC-DC converter that employments this slant for a 20 kW application, whose thickness is made strides essentially expanding the number of exchanging factors.

A Fault Tolerant Inverter with SCADA Communication Functionality for Photovoltaic Programs

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ABSTRACT

In maximum latest sensitive commercial software of inverters, reliability is a important difficulty to care. due to improvement of SCADA device and variety of renewable energy in electrical grids which can be on the whole scattered in distance, it is vital to have capability to talk within industrial manipulate systems and be allowable to be aware of a system circumstance each second. Inverters are the middle part of the grid-tied PV device. In traditional inverters, simply nearby monitoring of electrical parameters or inverter's situation become to be had however in recent times operation circumstance of inverters and more information like status, quantity of input, output, and electric parameters like voltage, present day, energy or passed off faults, are available the use of evolved industrial communiqué protocols.

1. INTRODUCTION

Solar energy is transformed from sunlight into both directly the usage of photovoltaic's (PV), in a roundabout way the usage of focused sun strength, or a combination. Inverters are one of the power electronic components that their most important application in strength structures are to convert direct present day (DC) to opportunity current (AC). Fault troubles is one of the most troubles that experts ought to care about in operation, repair and hold of inverters. Supervisory manage and facts acquisition (SCADA) is a manage machine structure this is evolved for transmission of statistics inside a manage middle and a faraway system. In advised fault tolerated inverter of this paper, if a fault befell in switches the broken detail may be recognized remotely through manipulate center the usage of IEC60870-five-one hundred and one and put together an excellent circumstance for restore or keeping of that validation of verbal exchange between inverter and manage server is lasted the use of Fink-WinPP101 software the usage of IEC 60870-5-one hundred and one protocol. on this segment, solar electricity, faults in inverters, SCADA, communication proptocols is mentioned.

Advanced High-Frequency Fiber Bragg Grating Acceleration Sensors for Monitoring Transmission Line Galloping

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ABSTRACT

Conventional fiber Bragg grating (FBG) acceleration sensors are limited by their low operational frequencies, restricting their efficacy in monitoring transmission line galloping. In this study, we introduce a novel slotting optimization technique designed to precisely track transmission line galloping. This technique is integral to the development of a high-frequency FBG acceleration sensor. Through optimization of slot width, position, and length, we aim to minimize the slot's impact on the FBG acceleration sensor. Our work includes vibration experiments to assess the frequency response and sensing capabilities of this FBG acceleration sensor. The experimental findings demonstrate that our high-frequency FBG acceleration sensor exhibits not only heightened sensitivity but also delivers accurate monitoring outcomes.

Index Terms: Acceleration sensor, high-frequency, fiber Bragg grating, transmission line galloping.

1. INTRODUCTION

Amid the global energy scarcity and heightened environmental concerns, multi-energy optimization strategies have gained considerable traction in recent years. Electrical energy, recognized as a clean power source, has garnered increased attention globally. The operational condition of transmission lines plays a pivotal role in ensuring the reliable transmission of electrical energy. Instances of transmission line galloping occur frequently and pose a significant challenge. When wind excites the transmission line, it induces a self-sustained vibration characterized by low frequency and substantial amplitude, thereby threatening the secure and dependable operation of the transmission line. The realization of a smart and dependable power grid necessitates real-time monitoring and early detection of transmission line galloping. Extensive global research efforts have made substantial progress in monitoring transmission line galloping.

Capacity Allocation of Heat Accumulator in Combined Heat and Power Plant

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ABSTRACT

The hooked up potential of wind strength generation is developing hastily in China, but at the identical time wind power accommodation is nonetheless a serious problem. The combined heat and power (CHP) units working below the precept of ‘electric power determined through warmth load’ is the foremost reason for wind curtailment at some stage in heating season in Northern China. Allocating heat accumulator to CHP unit can partly decouple strength output from heat output and decorate the flexibility and peak regulation ability of the unit in order to promote wind power accommodation. Based on the relationship between strength and heat output of extraction unit, which is the most important type of CHP units in Northern China, the operation method of extraction unit with warmth accumulator to maximize top legislation capacity is analyzed. A calculation model for the increment in peak regulation capability is proposed, and the method for optimal capacity allocation of warmth accumulator is proposed below the objective of maximizing wind electricity accommodation.

Keywords: Combined heat and power (CHP), heat accumulator, peak regulation, wind power accommodation

1. INTRODUCTION

The installed capacity of wind power generation has developed rapidly in the past decade in China, and until the end of 2019, it has reached 210GW. However, at the same time, wind power accommodation is still a serious problem especially in Northern China. At present, the main reason for wind curtailment during heating season in Northern China is that the combined heat and power (CHP) units, which account for a large proportion of installed capacity, operate under the principle of ‘electric power determined by heat load. The peak regulation ability of CHP units is greatly restricted and reduced by the constraint between its power and heat output during heating season because of large heat load demand. Therefore, enhancing the peak regulation ability of the units under the condition of satisfying the heat demand is an effective way to promote wind accommodation. Heat accumulator can cooperate with CHP unit to decouple its power output from heat output to a certain extent, enhancing the flexibility and peak regulation ability of the unit for wind accommodation.

Creating an Experimental Scale Model of Frequency-Dependent Transmission Lines

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ABSTRACT

The surge of power electronic-based devices within the power grid has intensified the co-occurrence of electromechanical and electromagnetic transients, prompting considerable research focus on understanding these interactions in recent years. Frequency-dependent transmission line models serve as essential tools to comprehend such complex interactions. This paper delineates a methodical approach for crafting an experimental scaled-down 220 V frequency-dependent transmission line model, emulating a 230 kV transmission line. Leveraging modal transformation, a reduced-order lumped parameter frequency-dependent transmission line model for the 230 kV line is developed and downscaled to 220 V. Clarke and inverse Clarke transformations are implemented utilizing specially designed 1- ϕ transformers, while amorphous cores are employed to actualize the inductances in the scaled-down model. The experimental line undergoes comprehensive studies encompassing line energization, balanced and unbalanced fault scenarios. Comparative analysis is conducted between the experimental results and simulation outcomes derived from both a universal line model and a constant parameter π -model, using EMTP-RV.

Index Terms: Amorphous core inductors, frequency-dependent transmission line models, lumped parameter models, modal transformation matrix, switching transients, unbalanced faults, universal line model.

1. INTRODUCTION

The evolution from synchronous generator-centric power systems to converter-dominated grids, characterized by substantial integration of renewable energy sources, HVDC transmission, and FACTS devices, has intensified the presence of electromechanical and electromagnetic transients. The increased prominence of power electronic converters has notably blurred the distinction between these transient types, demanding intricate modeling of individual power system components. The accessibility of comprehensive models and the advancements in real-time simulators have entirely supplanted experimental models of electric power systems worldwide.

Decentralized Estimation Techniques for Power Transmission Line Two-Port Equivalent

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ABSTRACT

The utilization of a two-port equivalent model around a transmission line is customary for a range of line protection analyses. This paper focuses on introducing decentralized methods applicable at the substation level to estimate such an equivalent model. Initially, it presents techniques for estimating straightforward two-source equivalents triggered by events like line faults or switching of shunt elements at its terminals. It also explores the limitations of these models when a transfer path exists across the line terminals and proposes extended estimation techniques to address this issue. Additionally, it outlines methods for updating the two-port equivalent model following changes in the network topology surrounding the line in question. Unlike previous efforts that aimed to estimate the equivalent model without assuming an initial solution, this contribution specifically aims to update the existing two-port equivalent model. The update methods utilize parameters of the equivalent model in a base network scenario and measurements obtained from a topology event, relying solely on limited measurements of bus voltages, line currents, and model parameters of the concerned line and neighboring apparatus.

INDEX TERMS: Network equivalent, protection relaying, source impedances, transmission line, two-port Thevenin equivalent, transmission line fault.

1. INTRODUCTION

Several analyses crucial for power transmission line protection rely on an equivalent representation of the system viewed from the line terminals. This diagram illustrates a transmission line linking terminal buses M and N. In interconnected high-voltage transmission systems, these lines typically interconnect with the broader network via other transmission lines. Shunt elements, such as reactors or capacitors, might be connected to the buses based on operational needs. The load element could represent downstream lower voltage level networks or direct high-tension load connections. This equivalent model serves various analytical purposes. For instance, it aids in analyzing the reach of distance relays to set their operational characteristics and determines the source-to-line impedance ratio (SIR) for the relay.

Energy Storage Configuration Method Based on Wind and Solar Volatility

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ABSTRACT

Vigorously creating the new electricity has become an essential measure for our country's power strategy adjustment and transformation of the electricity improvement mode. However, it presents good sized challenges to the grid for their large-scale integration because of their random and volatile characteristics, such as wind power and photovoltaics. The introduction of strength storage devices can improve this situation effectively, to promote the large-scale application of new energy. Based on the historic wind and photo voltaic records of the National Wind and Solar Storage and Transportation Demonstration Project, this paper analyzes the 15-minute and 10-minute fluctuation characteristics of wind and solar strength generation.

Keywords: Energy storage, wind and solar Volatility, Configuration Method

1. INTRODUCTION

Wind and solar power generation is characterized by volatility, and its large-scale access will have a large impact on the safe and stable operation of the power grid. By adding an energy storage system to wind and solar power generation, we can take advantage of its charging and discharging characteristics to keep the total output active power of the wind and solar combined power generation system relatively stable, reduce power fluctuations, improve power quality, and reduce the impact on the grid. Located at the junction of Zhangbei and Shangyi counties in Zhangjiakou City, Hebei Province, the National Wind and Solar Storage and Transmission Demonstration Project is currently the largest comprehensive new energy utilization platform demonstration project of the world, integrating wind power, photovoltaic power generation, energy storage, and smart power transmission. The demonstration project has completed 450MW of wind power generation, 100MW of photovoltaic power generation and 33MW of chemical energy storage equipment.

Examining Electromagnetic Interactions in Periodically Corrugated Transmission Lines via Mutual Capacitance and Mutual Inductance Analysis

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ABSTRACT

This research introduces an original equivalent circuit model for interconnected sub wavelength periodic micro strip lines (CSPMLs) spanning a broad frequency spectrum. The circuit, comprising two parallel and identical CSPMLs, manifests two primary modes—odd and even. Leveraging these modes, the finite element method (FEM) is employed to extract critical circuit parameters, notably emphasizing the frequency-dependent nature of mutual capacitance and mutual inductance within the CSPMLs. Comparative analysis between S-parameters derived from full-wave simulations and those from the circuit model reveals high consistency, with a maximum deviation of merely 0.249 dB observed for transmission coefficients below 15 GHz. By optimizing the sub wavelength periodic structure and thereby reducing mutual capacitance and mutual inductance, this study demonstrates effective suppression of crosstalk between adjacent micro strip lines.

INDEX TERMS: Corrugated transmission lines, crosstalk, differential signal.

1. INTRODUCTION

With the escalating operational speeds of chips, the integrated circuits (ICs) grapple with an upsurge in data volume for processing. Within high-speed or high-frequency circuit systems, circuit designers encounter formidable challenges such as augmenting signal working frequencies, enhancing digital signal transmission rates, and accommodating more loops and devices within a circuit board's unit area. The presence of mutual capacitance and mutual inductance between transmission lines necessitates addressing crosstalk, an inevitable concern in high-speed circuit design. Additionally, as digital signal rise times decrease, the length of coupling between lines intensifies crosstalk. Numerous researchers have employed electromagnetic numerical methods like finite difference time domain (FDTD) and circuit modeling to quantitatively analyze electromagnetic interference (EMI) between two microstrip lines.

Exploring Edge Computing for Monitoring Transmission Line Galloping

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ABSTRACT

As the scale of construction for Ultra-High Voltage Direct Current (UHVDC) systems expands, accompanied by longer project distances, the operational demands and maintenance requirements for transmission lines have significantly increased. Ensuring the safe and stable operation of UHVDC lines necessitates intelligent, real-time monitoring and analysis of galloping states. Presently, existing monitoring methods encounter limitations such as high power consumption, elevated costs, and reduced accuracy, which hinder meeting the substantial demand for comprehensive perception. Low-cost, low-power IoT sensors are pivotal in transmission line applications. In this paper, we propose a cost-effective monitoring scheme for transmission line galloping based on acceleration sensors. Our work involves a thorough analysis encompassing Fourier transformation algorithm comparison, precision enhancement via coordinate conversion, and device development. Leveraging this algorithm, our sensor achieves high accuracy in characterizing galloping parameters.

Keywords: galloping monitoring, edge computing, transmission line, Fourier transform, coordinate conversion

1. INTRODUCTION

Monitoring transmission line galloping is pivotal in averting galloping-related disasters. This phenomenon commonly occurs when power lines, particularly those eccentrically coated with ice during cold winters, undergo galloping. Prolonged galloping induces alternating loads on the line, leading to interphase flashovers, damage to metal fittings, tower bolt loosening, and alterations in the tower's stress state. Galloping significantly impacts the overall reliability of transmission towers and compromises the safe operation of the line, thus ranking among the primary disasters for overhead transmission lines. For instance, in central and eastern China between January 24 and 31, 2018, two consecutive large-scale cold rain and snow freezing episodes triggered galloping in 88 lines in Hubei province and 23 lines in Anhui province.

Fault Localization in Overhead Transmission Lines Using Magnetic Signatures and the Extended Kalman Filter

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ABSTRACT

This study introduces a contactless technique for pinpointing faults in transmission lines by leveraging magnetic fields generated by current signals. It utilizes magnetoresistive sensors positioned solely at the terminals or substations, specifically beneath the phase conductors of the first transmission tower at both ends. Employing the Extended Kalman filter, this method processes these signal measurements and adopts a traveling wave strategy to achieve fault localization. The paper outlines the method's implementation and testing, commencing with an overview and an analysis of magnetic fields resulting from current signals, discussing their measurement considerations. It then delves into the Extended Kalman filter and the traveling wave strategy. Finally, it presents results from simulations using EMTP/ATP, assessing the method's resilience across diverse conditions, including varying fault resistance, inception angle, involved phases, and fault locations.

Keywords: Electrical fault detection, fault localization, Kalman filters, magnetic field measurement, power systems, electromagnetic propagation, signal processing algorithms.

1. INTRODUCTION

An efficient electric power transmission network plays a pivotal role in meeting the energy demands arising from population growth and industrial expansion. It achieves this by linking numerous power generation stations to both densely populated urban centers and sparsely inhabited rural regions, forming extensive interconnected systems. However, these systems are susceptible to various abnormalities affecting their equipment. Among these components, transmission lines are particularly vulnerable due to their extensive coverage, making them more prone to adverse atmospheric conditions, accidents, and similar events, as referenced in. Maintaining a consistent and high-quality power supply requires minimizing interruption times and swiftly locating faults. This ensures reliability, security, and sustained operation, allowing maintenance crews to expedite fault detection and restoration, thereby enhancing overall system performance.

Frequency Control and Energy balancing in a hybrid Renewable Energy Device

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ABSTRACT

With advent of the contemporary Hybrid Renewable power system (HRES), the software of various electricity storage structures has more and more increased. when the sun radiation or wind speed has low values, the electricity garage device (ESS) injects the desired power to deliver the load demand, continuously. due to big numbers of device and unique manage loops in the HRES, effective contribution of ESS desires an efficient manage method to coordinate the ESS with other system inside HRES. To fulfil this gap, a Proportional imperative (PI)- based manipulate synthesis approach is offered for the tuning of the PI controllers. within the proposed technique, all PI controllers for exclusive varieties of ESS are designed based on root-locus trajectory, damping coefficient of dominant poles, and coordination among extraordinary gadget. finally, assessment among one of a kind styles of ESS based on provided manage method is performed. outcomes display that the presented manipulate method has ok capability to damp the frequency deviations in opposition to a couple of disturbances and parameter versions.

1. INTRODUCTION

With a discount inside the wind pace or solar radiation, strength production of PV and WT severely reduces [1]. Consequently, the MG energy balancing between production and consumption is disrupted and the MG frequency can trade out of its nominal range [2]. to enhance the MG stability, an ac MG consists of different ranges of control loops inclusive of nearby, secondary, and worldwide controls [3]. The local control manages primary manage which include modern and voltage control loops within the MS [4]. The secondary control ensures that the frequency and voltage deviations of the MG are inside the authorized range after every trade in load or deliver [5]. the worldwide manipulate, beside monetary energy management, can perform technical roles like; connect/disconnect of the MG, load-shedding in emergency mode, optimal strength glide among unique MGs and grid, monitoring and presenting of the voltage and frequency set points for the MGs to synchronize with the principle grid [5].

False Target Alarm Transmission by linear Frequency Modulation Radars & Quot

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ABSTRACT

This article describes a method for fraudulently blocking frequency shifting in linear frequency modulated pulse-compression probes. The method examines various interference of two types of jamming signals, the only false target harassment and multiple false targets. Frequency-variable decoy jammer, linear a frequency-modulated (LFM) signal is transmitted, which produces a bias induced by the false target enemy radar. A block frequency is added to the LFM signal and transmitted the original target creating a false target. All the previous methods have false goals fall behind the real target, so it is possible to detect the real target, so in this article a a forward jamming signal is used which transmits the frequency interference signal a mismatch that creates a false target earlier than the original target. It describes mathematical expressions related to alarm signals before and after matching by filtering and gives a relationship between the magnitude of the frequency change and the relative distance from real and fake targets.

Keywords: Radar interference; Time-frequency distribution; convolutional neural network; Fault detection.

1. INTRODUCTION

With the development of radar jamming technology, especially with the advent of digital radio frequency Recording (DRFM) [1], allows a jammer to capture, modulate and emits interference signals that are highly correlated with radar transmission signals, which seriously threatens the normal operation of the radar [2]. The implementation of proper anti-jamming measures in the complex electromagnetic environment is crucial for modern electronic warfare and the correct detection of various radar-active decoy interferences. signals are a prerequisite for radar jamming. Until now, radar alarm signal classification methods have mainly been probability-based methods, feature-based methods, and deep learning model-based methods. Probabilistic based on previous information methods detect the type of the jamming signal by fitting the jamming signal to a probability function a a certain threshold.

Fusion of SAR and optical Imaging for Remote sensing Applications

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ABSTRACT

The task of enhancing the perception of a scene by combining information captured from different image sensors is usually known as multisensor image fusion. This paper presents an area-based image fusion algorithm to merge SAR (Synthetic Aperture Radar) and optical images. The co-registration of the two images is first conducted using the proposed registration method prior to image fusion. Segmentation into active and inactive areas is then performed on the SAR texture image for selective injection of the SAR image into the panchromatic (PAN) image. An integrated image based on these two images is generated by the novel area-based fusion scheme, which imposes different fusion rules for each segmented area. Finally, this image is fused into a multispectral (MS) image through the hybrid pansharpening method proposed in previous research. Experimental results demonstrate that the proposed method shows better performance than other fusion algorithms and has the potential to be applied to the multisensor fusion of SAR and optical images.

Keywords: Synthetic aperture radar, Image fusion, Feature extraction, Optical imaging, Approximation methods, Optical sensors, Wavelet transforms.

1. INTRODUCTION

With the recent, rapid developments in the field of sensing technologies, multisensor imaging systems are being used in a growing number of fields, such as in remote sensing and military applications. Multisensor image fusion, which is defined as the process of combining relevant information from two or more images into a single image, has been receiving increasing attention in the remote sensing research community due to the increasing availability of spaceborne imaging sensors [1], [2]. The objective of multisensor image fusion is to combine complementary information from multisensor images of the same scene into a single image to obtain data that is more useful than the data from any of the individual source images by reducing imprecision and uncertainty in the spatial properties and maintaining completeness of the spectral information [2].

A Real- Time in- Vehicle AIR Quality Monitoring System Using A Machine Learning Prediction Algorithm

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ABSTRACT

This paper presents the development of a real-time cloud-based in-vehicle air quality monitoring system that can predict current and future air quality in the passenger compartment. The proposed system provides predictive analytics using machine learning algorithms that can measure driver sleepiness and fatigue based on the air quality of the passenger car. It consists of five sensors that measure CO₂ levels, particulate matter, vehicle speed, temperature and humidity. Data from these sensors was collected in real time from the cabin of the vehicle and stored in a cloud database. A predictive model using multilayer perceptron, support vector regression and linear regression was developed to analyze the data and predict the future state of vehicle air quality. The performance of these models was evaluated using Root Mean Square Error, Mean Mean Square Error, Mean Absolute Error and Coefficient of Determination (R²).

Keywords: Internet of Things (IOT); machine learning prediction; vehicle air quality; smart mobility; smart city.

1. INTRODUCTION

One of the main goals of smart cities is to reduce the number of deaths and injuries in traffic accidents. According to Malaysian traffic statistics, the total number of vehicles involved in traffic accidents increased every year from 2008 to 2017. In 2017, a total of 533,875 traffic accidents and a total of 16,589 cases of victims and damages in traffic accidents were reported [1]. The Royal Malaysian Police reported that fatigued conditions and distracted drivers are the main causes of traffic accidents [2]. According to the American Automobile Association (AAA), one in six fatal traffic accidents and one in eight accidents requiring hospitalization are caused by tired drivers [3]. In fact, the air in the vehicle cabin significantly affects the cognitive abilities of the occupants without any noticeable discomfort to wake them up [4]. Most indoor air quality studies focus on the inside of a building. The main components of indoor air pollution are carbon monoxide (CO), formaldehyde, ozone (O₃), volatile organic compounds (TVOC) and particulate matter (PM), which can significantly affect human health [5].

Health Monitoring System with GSM Modem

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ABSTRACT

The new corona virus outbreak is a big one threat and has been declared a global public health emergency. The whole world is trying to stop the virus, but there is no effective remedy and there is a strategy to manage it. Monitoring the patient's health from afar is really important, especially for patients who are suffering long-term illness. Vital signs such as pulse, body temperature etc. must be checked regularly main indicators of human health. Even old people can benefit from a reduction in the number of regular visits to hospitals. That is why we are planning to introduce GSM based healthcare secure patient monitoring system the health of a patient. Health monitoring is the technology that makes this possible monitoring the patient's health outside the clinical setting. System measure the patient's heart rate and body temperature and then urgent information is sent to the registered number.

Keywords: body temperature, heart rate, Arduino, GSM, Registered mobile number, other. Me.

1. INTRODUCTION

The most well-known WSNs (Wireless Sensor Networks) come into play. important role in the technology community and research leading to the improvement of various high-performance intelligent detection systems. Mainly innovative research focuses on better quality of life health. This can be achieved through design and manufacturing sensors that are contact penetrating or non-invasive [1]–[2]. To improve health diagnosis, monitoring and treatment this was made possible by the development of biomedicine. planning of delivery and reception measured values of temperature and heart rate. The most important things detected, measured and processed by sensors and sensors microcontroller and then the calculated values sent to the mobile phone via the GSM network as shown in the image picture. The function of the control system is to keep an eye on a sure action and make sure it sticks as desired. This can be achieved using different electronic sensors. Irregularities of the pulse and uneven or high temperatures can cause serious problems which can eventually lead to the death of the patient. Smart The health monitoring system focuses on patient safety monitoring and control of various influencing parameters The human body. This project document is explained as follows.

Circularly Polarized MIMO Antenna for Wireless use

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ABSTRACT

The performance of a MIMO system using circularly polarized (CP) antennas is discussed for indoor propagation. In particular, the comparison of a MIMO system using CP antennas with linearly polarized (LP) antennas has been carefully studied. For this purpose, a series of CP or LP antennas operating at 2.45 GHz were designed and their most important parameters were analyzed in advance.

Keywords: MIMO, Channel Capacity, Receiving antennas, Wireless LAN, Wireless communication, Correlation.

1. INTRODUCTION

The demand for high data traffic and channel capacity, as well as the increase in the number of users of modern wireless communication systems, has increased the widespread interest in MIMO systems [1]. Relying on the MIMO system makes it possible to improve the efficiency of the spectrum, which at the same time ensures greater reliability of the entire radio communication system. Basically, it consists of using multiple antennas on both the receiver and transmitter front end, but it does not require additional transmission power or bandwidth as in SISO communication [2], [3]. A very low correlation between the signals received by the MIMO antenna ports is necessary to ensure good performance in terms of higher channel throughput and higher diversity gain. The use of electromagnetic burst gap (EBG) materials or defective ground planes (DGP) has been proposed to reduce the correlation, but a more promising strategy is the implementation of a polarization diversity antenna system [4].

Water Quality Monitoring System

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ABSTRACT

Water pollution is one of the biggest threats in recent times as drinking water is becoming more and more polluted. Polluted water can cause various diseases to humans and animals, which in turn affects the life cycle of the ecosystem. If water contamination is detected at an early stage, appropriate measures can be implemented and critical situations can be avoided. To ensure a clean water supply, water quality must be studied in real time. Smart solutions for water pollution monitoring are increasingly important today thanks to innovations in sensors, communications and Internet of Things (IoT) technology. This paper presents a detailed review of recent work in the field of intelligent water pollution monitoring systems. The paper proposes a cost-effective and efficient IoT-based intelligent water quality monitoring system that monitors quality parameters without interruption. The developed model is tested with three water samples, and the parameters are transferred to the cloud server for further processing.

Keywords: Arduino, Cloud server, Conduction, Controller, pH sensors, Turbid Water Quality.

1. INTRODUCTION

Water pollution occurs when deadly substances enter water sources such as ponds, rivers, lakes, seas and oceans, dissolve and float in the water, or settle to the bottom. Pollution reduces water quality and purity. Ensuring clean and safer water is really difficult because of unnecessary chemicals and sources of pollutants. Water pollution can be started in several ways; one of the most important causes of pollution is industrial waste emission and urban sewage. Secondary sources of pollution are pollutants that enter water from the soil or atmosphere through rain or groundwater systems. In general, soil and groundwater consist of residues from modern agricultural practices as well as crudely disposed waste from industry. The biggest pollutants in water are viruses, bacteria, fertilizers, parasites, pharmaceuticals, pesticides, nitrates, fecal waste, phosphates, radioactive substances and plastics. These materials do not always change the color of the water, but they can be invisible impurities. Therefore, a small amount of water from such water resources and marine organisms is tested to determine water quality.

Diabetic Retinopathy using a convolutional Neural network (CNN)

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ABSTRACT

The diagnosis of diabetic retinopathy (DR) through colour fundus images requires experienced clinicians to identify the presence and significance of many small features which, along with a complex grading system, makes this a difficult and time consuming task. In this paper, we propose a CNN approach to diagnosing DR from digital fundus images and accurately classifying its severity. We develop a network with CNN architecture and data augmentation which can identify the intricate features involved in the classification task such as micro-aneurysms, exudate and haemorrhages on the retina and consequently provide a diagnosis automatically and without user input. We train this network using a high-end graphics processor unit (GPU) on the publicly available Kaggle dataset and demonstrate impressive results, particularly for a high-level classification task. On the data set of 80,000 images used our proposed CNN achieves a sensitivity of 95% and an accuracy of 75% on 5,000 validation images.

Keywords: Deep Learning, Convolutional Neural Networks, Diabetic Retinopathy, Image Classification, Diabetes.

1. INTRODUCTION

Diabetic Retinopathy (DR) is one of the major causes of blindness in the western world¹
2. Increasing life expectancy, indulgent lifestyles and other contributing factors mean the number of people with diabetes is projected to continue rising³ . Regular screening of diabetic patients for DR has been shown to be a cost-effective and important aspect of their care⁴ . The accuracy and timing of this care is of significant importance to both the cost and effectiveness of treatment. If detected early enough, effective treatment of DR is available; making this a vital process⁵ . Classification of DR involves the weighting of numerous features and the location of such features⁶ . This is highly time consuming for clinicians. Computers are able to obtain much quicker classifications once trained, giving the ability to aid clinicians in real-time classification.

Toll Collection System Using Image Processing

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ABSTRACT

In India, from manual collection to electronic collection, drastic changes had been made at toll gates. The risks due to cash are high compared to digital money. The introduction of a digital payment system laid a foundation for the present toll collection system. In FASTAG, RFID technology is used for toll collection at national highways. RFID tag plays a key role in the automated deduction of toll charges. FASTAG main objectives are traffic control and time-saving. But there are few disadvantages, as FASTAG uses an RFID tag, which can be cloned, so there is a chance for misusing it and it is also somewhat inconvenient to the user as they have to renew the tag every 3 years for which they have to pay for it. In case of loss of FASTAG user has to wait for a whole day for new tag and they have to pay for it. In this paper, we implemented toll collection using image processing technology which doesn't require RFID scanning devices, RFID tags. The account details of the user are stored in the database using the user's vehicle number plate as a key. When a vehicle is passed through the tollgate, license plate details are retrieved using image processing..

Keywords: Electronic payment, image processing, toll collection, open CV, OCR.

1. INTRODUCTION

Due to the increasing number of vehicles, the traffic is increasing at the toll plazas. There are long queues on busy highways. Nowadays people prefer to use their personal vehicles instead of public transports which results in increase of traffic. Increasing number of vehicles on the roads, result into many problems such as congestion, air pollution and fuel wastage etc. Most of the toll plazas are operated manually, where there is an operator on each lane for collecting the toll amount i.e. for every lane there are two operators one for operating the system and the other for interacting with the driver. So huge manpower is required. One more thing which results in congestion is the drivers sometimes start chitchatting with the toll operator, hence the vehicles waiting in the queue gets irritated and may result in chaos. Conventional Toll Collection Systems includes manual as well as automatic collection which is based on reliable technologies like LCD monitor, touch screen monitor, industrial computers, fast toll barriers, different sensors etc.

Implementation of IRIS Scanning- Using Color Detection and Scale Invariant Feature Transform (SIFT)

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ABSTRACT

Colour recognition is the process of perceiving the name of any color. Human eyes and brain work together turns light into color. The light receptors in our eyes transmit the signal to the brain. U.S the brain then recognizes the color. But one of the limits of the human brain is that it cannot recognize everything color shades But this process allows us to perceive even the shades of most colors (about 1500) specifying the target object whose color should be recognized a camera We are developing a process/algorithm that will allow us to get faster results at Iris detection by first considering the color of the iris and then scanning the user data with the reduced data by SIFT (scale invariant function transform). Iris is one of the unique features that can be separates two different people. Since the iris function is unique, it can be used Biometric applications. Fingerprint biometrics is effective, but you need to switch to iris scanning biometric data, because this method is more hygienic and accurate.

Keywords: Iris, Euclidean distance, color recognition, SIFT.

1. INTRODUCTION

First, the plan is to develop a process to find the color of the sample. Color detection is the process of perceiving the name of any color. The human eyes and brain work together to transform light color The light receptors in our eyes transmit the signal to the brain. Then our brain recognizes color But one of the limitations of the human brain is that it cannot recognize all shades of color. Colors consist of three primary colors; red, green and blue. In computers, we define the value of each color between 0 and 255. So we can define color in $256 * 256 * 256 = 16,581,375$ ways. It is about 16.5 million different ways to represent a color. Through this process we strove recognizes most colors (about 1500) and can print the color name and can be stored in the database by providing the sample (Iris) through the camera as input. Using this technique, we focus mainly on iris color detection, which is the main step of iris scanning. Iris is one of them unique characteristics that differ from person to person.

Double-ball motor control valve-based cooling system

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ABSTRACT

To realize eco-models based on (where 3R represents decreasing, reusing, and recycling), both analysts and car improvement divisions utilize controllable components to diminish vehicle fuel utilization and outflows. In this setting, this paper presents the plan of a double-ball engine control valve (DB-MCV). When compared with utilize of a conventional indoor regulator, utilize of the proposed valve in an Around the world Harmonized Light Vehicles Test Cycle (WLTC) permits the coolant temperature to be controlled precisely as per the vehicle working conditions, with control precision of $\pm 1^\circ\text{C}$. Utilizing this approach, the motor pre-heating time is diminished by 61 s, the full hydrocarbon (THC) emanation is decreased by 6.79%, the CO emanation is diminished by 7.18%, and NOX emanation is decreased by 4.84%. Beneath the same vehicle and working conditions, the motor fuel utilization is decreased by 2.31% on normal. Beneath the cabin warming condition, the cabin temperature can be expanded by 4.3°C , which progresses the warm consolation of the driver. When the vehicle is halted after running at tall speed and the engine is sitting, the coolant temperature within the motor decreases rapidly, which decreases the hazard of a hot plunge happening within the motor.

1. INTRODUCTION

The car motor industry can not one or the other be extended for financial benefits as it were, nor restricted for biological benefits alone. On the opposite, financial improvement and biological benefits ought to be facilitated together in an imaginative way. Past ponders have illustrated that making strides the engine's warm proficiency has both financial and biological benefits. Upgraded warm effectiveness cannot as it were make strides motor fuel economy but too can diminish the emanation of CO, NOx and other poisons. A few ponders have proposed diverse strategies to move forward motor warm effectiveness, counting the utilize of imaginative warm administration methods.

Vibration reduction approach of the solar array driving system with many degrees of freedom

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ABSTRACT

The operation unsettling influence actuated by the sun oriented cluster drive framework (SADS) and the leftover vibration of sun powered cluster taking after the demeanor alteration of the shuttle clearly influence the flow environment, fast stabilization, and demeanor steadiness of the high-precision shuttle. Be that as it may, these two sorts of vibration unsettling influence are characterized by particular vibration categories, course of vibration, and modular shapes. A multi-degree-of-freedom vibration decrease procedure (VRS) was displayed to move forward the energetic characteristics of SADS and after that to debilitate these unsettling influences artificially in this paper. SADS applying this VRS was modeled based on the virtual work rule, and the impact of the firmness and damping parameters of this VRS on the SADS energetic characteristics was analyzed. At that point a model of vibration decrease gadget (VRD) was outlined and confirmed by unsettling influence characteristic and modular tests. The comes about show that the identical firmness of VRD is basic to the normal recurrence of SADS and hence ought to be carefully thought to dodge reverberation. The proportionate damping of VRD continuously has positive relationship with modular damping.

1. INTRODUCTION

The different-configurations overhang solar arrays on the modern spacecraft may cause two kinds of vibration disturbance. The first, the residual vibration of solar arrays cannot be attenuated for a long time due to the characteristics of low frequency and low damping after the attitude adjustment of the spacecraft and instantaneous thermal load, which greatly affects the attitude stability time and quick response ability of the spacecraft. The second, these solar arrays rotate continuously to orientate the sun for collecting solar energy as much as possible. However, the motion of solar array induces unremitting disturbance to the body of the spacecraft, affecting the pointing accuracy of the high-precision spacecraft and the dynamic environment of the sensitive equipment. On the one hand, the residual vibration belongs to free-vibration problem, occurring in the out-of-plane direction, and is mainly related to the bending modes.

The design and study of a new parallel micromanipulator that complies with 3-DOF over a vast range

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ABSTRACT

Compared with the conventional inflexible instrument, the adaptable instrument has more preferences, which play an imperative part in basic circumstances such as microsurgery, IC (coordinates circuit) fabrication/detection, and a few exactness working environment. Particularly, there's an expanding require for 3-DOF (degrees-of-freedom) compliant translational micro-platform (CTMP) giving great execution characteristics with expansive movement extend, moo cross coupling, and tall spatial thickness. Decoupled topology plan of the CTMP can effectively realize these merits without expanding the trouble of controlling. This paper proposes a unused three DOF compliant half breed micromanipulator which have huge extend of movement up to $100\ \mu\text{m} \times 100\ \mu\text{m} \times 100\ \mu\text{m}$ within the course within the measurement of $90\ \text{mm} \times 90\ \text{mm} \times 50\ \text{mm}$, littler cross-axis coupling (the max coupling as it were 2.5%) than the introductory XY compliant stage in XY pivotal.

1. INTRODUCTION

The conventional inflexible 3-DOF stage is as a rule gathered by a single-DOF stage with stepper engine driven, which composed of a settled base and a movement arrange interpreting along X-, Y-, and Z-axes in a plane. Compared with conventional unbending stage, compliant small scale stage has ended up one of the most branches of the components and automated frameworks due to their characteristic merits, such as decreased number of parts, no contact, and so on which make a CTMP more exact to have an assortment of needs: cell control, checking test nano-lithography, nuclear drive microscopy, IC or targets fabrication, and information capacity. So a wanted tall exactness CTMP ought to have the expansive movement extend, negligible cross-axis coupling, without expanding the complexity of controlling. With respect to a number of 3-DOF compliant micromanipulators, analysts pay a parcel of endeavors from hypothesis to application. In any case, most of them based on the conventional unbending body show such as 3-RRR, 3-PRR, 3-PSS, or 3-PUU (P: Kaleidoscopic match; R: Revolute combine; S: round pivot; U: Hooke bad habit), and seldom includes three translational micromanipulations.

In the event of a slide, stability and control of the nonlinear system for a tractor and N trailer

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ABSTRACT

In numerous building frameworks, it isn't sufficient to consolidate the framework ways to zero at boundless time, but the speed of moving these ways to zero is exceptionally critical. Assessing this speed can be done utilizing exponential capacities. This concept is utilized in exponential solidness definition. The reason of this paper is to plan a controller for issue inputs and actualize a framework of a car with N to a trailer associated to it. This approach is based on the investigation of the Lyapunov stability strategy. Within the given issue, the reason of conducting and merging the framework considering the slip wonder as a primitive uncertainty within the framework is toward the specified point. Since the trailer tractor framework has restriction imperatives within the modeling structure, it is troublesome to ensure the steadiness of a non-homonymic framework. Since no controller outlined by the control criticism method can persistently and steady guarantee the joining of the framework.

1. INTRODUCTION

Steadiness is the primary and most imperative address around the diverse properties of a control framework. On the opposite, untrustworthy frameworks are unprotected or have unfavorable impacts amid the operations indicated for them. The suggestion of supportability is that in the event that a framework begins working close an ideal point of work, at that point it remains at the same point, making the framework steady. Each control framework, whether straight or nonlinear, will be included with the supportability issue, which should be carefully considered. The foremost common and valuable strategy for considering the soundness of the hypothesis of nonlinear control frameworks, which is depicted by the title of the Lyapunov steadiness work in different shapes, is known in terms of the kinematics of the issue and the framework. This thinks about included two strategies, called "linearization method" and "direct method." In linearization strategy, utilizing the linearization of the near-system nonlinear framework of harmony focuses, and utilizing the strategies of checking the steadiness of direct frameworks, it investigates the soundness of the point of balance.

A two-phase level-set technique numerical investigation of droplet splitting in branching T-shaped micro channel

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ABSTRACT

Bead splitting as a significant include of droplet-based microfluidic frameworks has been broadly utilized in biotechnology, biomedical designing, tissue designing, and it has been favored over persistent stream frameworks. Within the display paper, two-dimensional numerical recreations have been done to look at the topsy-turvy bead part handle. The two-phase level set strategy (LSM) has been anticipated to analyze the instrument of bead arrangement and bead part in immiscible liquid/liquid two-phase stream within the branched T-junction microchannel. Overseeing conditions on stream field have been discretized and illuminated utilizing limited element-based COMSOL Multiphysics program (adaptation 5.3a). Gotten numerical results were approved by exploratory information detailed within the writing which appear satisfactory assention. The demonstration was created to reenact the component of bead part at the branched T-junction small scale channel. This consider gives a detached procedure to unevenly part up miniaturized scale beads at the downstream T-junctions. The results about appear that outlet branches' weight slope influences the bead part.

1. INTRODUCTION

Amid the final three decades, quickly created micro-total examination frameworks (μ TAS) have been encouraged a wide extend of microfluidic applications within the areas of lab-on-a-chip (LOC), nano materials amalgamation, science, chemistry, medicate conveyance, emulsions, and related businesses. The control of beads in limited microfluidic devices has been inquisitive about highlighted logical areas since of the having advantage within the blending prepare and transporting. In droplet-based microfluidic (DBMF), an awesome number of investigates can be found which centered on bead arrangement and part. T-junction miniaturized scale channels are one of the foremost ordinary gadgets to control bead arrangement. In these small scale channels, there are more often than not two immiscible liquids such as water and oil, in which the scattered stage streams into the most channel from the horizontal channel and meets the ceaseless stage at the opposite intersection.

Analyses on the closed-loop systems grouting Robot's trajectory planning

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ABSTRACT

In arrange to advance building insights and unravel the impediments of conventional grouting innovation, the direction planning of closed-loop grouting robot was planned. The minimumsnap optimization work was utilized to optimize the A* calculation to realize the 2D direction arranging, which might get a smooth, ceaseless course, and arranging chart of time dispersion, speed, speeding up, and snap. Advance, the weight work of the moved forward A* calculation was balanced to perform 3D direction arranging to decrease repetitive hubs within the course. A modern drawing closer law versatile sliding mode control method was utilized to attain exact direction following of the mechanical arm and decrease the issue of chattering in sliding mode control. Through the plan of closed-loop grouting robot and the inquiry about of direction planning, the two-dimensional and three-dimensional ways of grouting robot might be optimized. The system may realize programmed grouting operation. It might advance the improvement of tall productivity and security within the development grouting industry.

1. INTRODUCTION

With the fast improvement of building insights, the presentation of development robots is the as it were way for the advancement of the development industry. The conventional grouting innovation is for the most part developed by hand-held or low-automation hardware, the grouting effectiveness is moo and the grouting quality cannot be ensured. Particularly when working at tall height, the chance coefficient is tall and the laborers are required to have tall encounter. At display, in see of the complex building environment, there's no efficient grouting robot on the advertise. Hence, it is fundamental to ponder the plan and direction arranging of closed-loop grouting robot. Through the plan of closed circle structure, the inquiry about of two-dimensional direction arranging and three-dimensional direction arranging, the independent movement arranging of grouting robot can be realized. The grouting assignment can be completed. The grouting victory rate and grouting quality can be moved forward. It is of awesome centrality to the advancement of the development industry.

An unstable squeezing flow of heat and mass transfer behavior between parallel plates using a Levenberg-Marquardt back propagation technique

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ABSTRACT

In this consider, a unused computing show by creating the quality of feed-forward neural systems with Levenberg-Marquardt Strategy (NN-BLMM) based backpropagation is utilized to discover the arrangement of nonlinear framework gotten from the overseeing conditions of shaky crushing stream of Warm and Mass exchange conduct between parallel plates. The administering fractional differential conditions (PDEs) for insecure pressing stream of Warm and Mass exchange of gooey liquid are changing over into standard differential conditions (Tributes) with the assistance of a likeness change. A dataset for the proposed NN-BLMM is produced for diverse scenarios of the proposed show by variety of different inserting parameters crush Sq, Prandtl number Pr, Eckert number Ec, Schmidt number Sc and chemical-reaction-parameter (γ). Physical translation to different inserting parameters is allotted through charts for press Sq, Prandtl Pr, Eckert Ec, Schmidt Sc and chemical-reaction-parameter (γ). The handling of NN-BLMM preparing (T.R), Testing (T.S) and approval (V.L) is utilized for different scenarios to compare the arrangements with the reference comes about.

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.

Impact of clearance on 2D piston pumps' Volumetric efficiency

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ABSTRACT

In order to illuminate the impediments of the grinding sets in pivotal cylinder pumps on rotational speed and mechanical proficiency, a 2D cylinder pump whose 2D cylinder has two-degree-of-freedom movements of turn and responding movement was proposed by the creator group. The volumetric proficiency of 2D pumps anticipated by the initial volumetric proficiency show is higher than the test comes about. A modern numerical demonstrate of the volumetric productivity is inquired about by considering impact of clearance between the cone roller and the directing rail. In past considers, the volumetric misfortunes of the 2D pump were considered to be composed of spillage and compressibility misfortune. Be that as it may, it is found that the impact of the clearance on the volumetric effectiveness in 2D pumps is more noteworthy than that of spillage and compressibility misfortune. The test comes about appear that the contrast between the expectation of the modern show and the volumetric proficiency of the tried pump with 0.19 mm clearance is diminished from 8% to 1.5% comparing with the first show. The volumetric proficiency of the tried pump without the clearance is 96.5% at 5000 rpm rotational speed and 8 MPa stack weight.

1. INTRODUCTION

Water powered systems are broadly used in air transportation and astronautics since of its high power-to-weight proportion. As the prerequisite for the power-to-weight proportion has expanded in flight, the pressure driven system that its power-to-weight proportion is decided by hydraulic components' has been persistently overhauled, such as electro-hydrostatic actuator (EHA)-installed pivotal cylinder pumps as the oil source is used to supplant the centrifugal hydraulic system which employments centrifugal pumps as the oil source. In later a long time, due to the improvement of materials science, such as rubidium magnets, the power-to-weight proportion of engines has started to extend quickly, which makes the power-to-weight proportion of water powered components, particularly for hub cylinder pumps, have higher challenges.

Industrial robot with elastic joints under feed-forward control using a hybrid inverse dynamic model

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ABSTRACT

A novel feed forward control strategy of elastic-joint robot based on cross breed reverse energetic demonstrate is proposed in this paper. The cross breed converse energetic show comprises of explanatory demonstrate and data-driven show. Firstly, the converse energetic expository demonstrate of elastic-joint robot is built up based on Lie bunch and Lie variable based math, which makes strides the productivity of modeling and calculation. At that point, by coupling the data-driven demonstrate with the explanatory demonstrate, a feed-forward control strategy based on half breed converse flow show is proposed. This strategy can overcome the impact of the mistake of the explanatory converse energetic show on the control execution, and successfully progress the control precision of the robot. The data-driven show is utilized to compensate for the parameter instabilities and non-parameter vulnerabilities of the explanatory energetic demonstrate. At last, the proposed control strategy is demonstrated to be steady and the multi-domain coordinates framework demonstrate of mechanical robot is created to confirm the execution of the control plot by recreation. The recreation comes about appear that the proposed control strategy has higher control exactness than the conventional torque feed-forward control strategy.

1. INTRODUCTION

Industrial robots are broadly used in present day mechanical fabricate, such as paint splashing, welding, grinding¹ milling,² drilling,³ and so on. In later a long time, with the rise of brilliantly fabricating innovation and the near combination of the manufactured insights innovation and mechanical robots, the application of robots has been growing to all strolls of life. Since the quick improvement of cutting edge undertakings requires higher generation effectiveness, item quality and speedier item emphasis speed, the mechanical robots have entered the advancement organize of tall speed, tall exactness, overwhelming stack, lightweight, and cleverly.

Effect of Increasing Imitation Skill On Identification of Forged Signatures

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ABSTRACT

Signature is one of the popular hallmarks of person identification. In contrast to its popularity, the signature is often forged by a forger without giving much effort. The present study is aimed to explore the effect of increasing imitation skills on the identification of forged signatures. The signature is forged at three levels of imitation skills defined based on varying times of practicing imitation. The conventional handwriting features are compared at the three forgery levels in comparison to the genuine signature. It has been observed that the slant has the minimum effect on imitation; however, other features are changing significantly.

Keywords: Signature, imitation, forgery, and handwriting features

1. INTRODUCTION

Signature is widely considered one of the most convenient ways of personal identification. It is the way one can prove himself or herself as what he/she claims to be. The signature of an individual can be any kind of combination of letters, numerals, or symbols of any language system. It may comprise all or a few handwriting characteristics or sometimes none of them hence it is as unique as an individual's handwriting. In an immature state of signature individual changes its form, shape, and style many times and finally when an individual feels ease of signing, he/ she follows that pattern style. As time passes with regular use of a particular signature by an individual that signature becomes highly individualized and may consist of some of the inimitable features. Some people are not frequent writers but they sign regularly, in such cases layman is not able to find any similarities between handwriting and signatures produced by them. The signature can be made in one of three styles, namely, text-based, stylized, and mixed. Text based signatures are those in which an individual may use letters of a particular language system in upper or lower case and these letters are legible. Stylized signatures are those signatures that comprise embellished letters numerals or symbols. Most often stylized signatures are non-legible because of the decorative appearance of letters. When the signature consists of features of both text-based signatures as well as stylized signatures, then the signature is known as a mixed signature.

Human Resource Information System: A Case Study of Polyhedron Group Company

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ABSTRACT

Human Resource Information Systems can have a huge impact on an organization's HR capability. Human resource management (HRM) must be comprehensive, high-quality, quick and adaptable. HRIS is a human resource information system that allows access to workers' data. In the age of information, we live, work, and play; HR can rely on an efficient and effective HRIS to remain at the forefront of its efforts to provide more efficient and smooth services. The main take away from this paper is that using a computerized HRIS is better than using a manual one because it allows for faster, more accurate data maintenance. As a crucial part of the organization, HRIS efforts will provide important information about HR needs and capabilities, which will help the management team establish the organization's mission and set goals and objectives. HRIS isn't confined to the PC equipment and programming applications that include the specialized piece of the framework; It also includes the personnel, procedures, data, and policies necessary to manage the HR function.

Keywords: Human Resource Information Systems, HR Functions, ERP, SWOT

1. INTRODUCTION

"A human resource information system (HRIS) is programming containing an information base that permits the entering, stockpiling and control of information with respect to representatives of an organization. It takes into account worldwide perception and access of significant workers' data". Some notable instances of the utilization of data innovation for upper hand include frameworks that connect an association to providers, appropriation channels, or clients. As a general rule, these frameworks use data or handling capacities in a single association to work on the presentation of another or to further develop connections among associations. Many new ways to use information to create value have emerged as a result of rising competition and falling information capture and use costs. The concepts do not constitute a method that will invariably result in a competitive advantage.