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Accepted Papers

An Architecture Forreliable Cyber Attack Detection in Iot Networks to Increase the Trustworthiness Between Nodes

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ABSTRACT

The security qualities of IoT trustworthiness are combined with information technology (IT) that are safety, safety, consistency, flexibility, and privacy. Traditional security tools and procedures are insufficient to protect IoT platforms because of the differences in protocols, restricted update options, protocol mismatch, and outdated operating system utilized in the Industrial system. In this paper, a scalable and reliable cyber-attack identification method to enhance the credibility of an IoT network (i.e. a supervisory control and data acquisition (SCADA) network). In particular, an ensemble-learning model that is a combination of a random subspace (RS) learning approach and a random tree (RT) learning method for identifying cyber-attacks utilizing network traffic from SCADA-based IoT platforms. The proposed model is unique and it employs industrial protocol-based network traffic where random subspace (RS) resolves the susceptibility of unnecessary characteristics, and ensemble random tree (RT) to minimize the overfitting issue, resulting in a detection engine based on industrial protocols with better detection rates.

KEYWORDS

Cyber-attack, traffic, protocol, random subspace, random tree, SCADA, and ensemble approach.

Iot Enabled Human Health Monitoring System

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ABSTRACT

The goal of this paper is to develop a human health monitoring system (HHMS) that aids in earlier diagnosis of a human being and monitoring following recovery. The concept uses a combination of two subsystems which monitors the human health parameters such as temperature, SpO2, Heart Rate, ECG, and also the environment parameters such as temperature and humidity. The human characteristics are extracted using a variety of sensors, and the data is then analysed on a mobile application subsystem through an Internet of Things (IoT) subsystem. Findings have successfully proven using the HHMS prototype to constantly measure body temperature, heart rate, SpO2, ECG, and surrounding temperature and humidity. Our mobile application evaluates how reliable the method is for tracking these metrics.

KEYWORDS

IoT, Health Monitoring, ESP-32.

Exploring Sentiment Analysis Research: a Social Media Data Perspective

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ABSTRACT

Businesses use sentiment analysis in different ways for generating decision support insights. Existing sentiment analysis studies related to social media data have been significantly grown but, its insights and trends were not fully revealed for new researchers in the data mining field. Therefore, it is of paramount task to delineate the trend holistically for knowledge growth in the field of the data mining and text analytics research. The study addresses the research gap through a comprehensive bibliometric review of 523 research articles published in the Scopus database (between 2018 and 2022) to discern the content and thematic analysis. We adopt an automated bibliometric study approach using the R-tool- biblioshiny for generating and presenting outcomes. Finding points on the vital usages of sentiment analysis such as innovation, transparency, and improved efficiency. It also highlights the uniqueness of sentiment analysis for synthesizing social media content to examine various aspects such as the knowledge-domain map that detects author collaboration networks.

KEYWORDS

Social Media, Sentiment Analysis, Bibliometric Analysis, Systematic literature review .

Teaching and Learning With Ict Tools: Issues and Challenges

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ABSTRACT

The students nowadays are more friendly with tech devices. So, to make it less boring need to start innovative ways that involve technology. Teaching via ICT tools have the potential to make a change in the academic sector. It is a dynamic learning method. It provides more benefits as compared to the traditional blackboard and chalks learning. Due to the rapid progress in technology, there are many new ways of learning that have started. These methods attract the mind of most students. It is interesting and better than the traditional methods in many ways. These methods spark curiosity in the mind of the students. The whole process of education can sometimes feel tedious for students. In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. Hence studying the issues and challenges related to ICT use in teaching and learning can assist teachers in overcoming the obstacles and become successful technology users. With the advent of Information and Communications Technologies (ICT) in education, teachers form their own

beliefs about the role of ICT as a teaching tool, the value of ICT for student learning outcomes and their own personal confidence and competency. Barriers exist in integrating ICT in teaching and learning. The barriers are extrinsic to the teacher and include lack of resources, time, access and technical support.

KEYWORDS

ICT Tools, Teaching and Learning Technology , Issues and Challenges.

Text Generation With Gan Networks Using Feedback Score

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ABSTRACT

Text generation using GAN networks is becoming more effective but still requires new approaches to achieve high-quality output. The usage of a discriminator model in GAN solves this task partially but it can be extended using more natural ways such as feedback scoring. Feedback or response is a natural part of conversations and not only consists of words, but also can take other shapes such as emotions, or other reactions. In dialogue processes feedback is a factor influencing the next phrase or reaction. Depending on this feedback or response we correct our possible answers by trying to change the tone, context, or even structure of the sentences. Applying feedback as part of the GAN model structure will give us new ways to apply feedback and generate well-controlled outputs with defined scores which is very important in real-world applications and systems. With GAN networks and their instability in training and unique architecture, it becomes trickier and requires new ways of solving this problem. The matter of feedback usages GAN network we will review in this paper and experiment with 2 different approaches to applying feedback such as using its score in the GAN discriminator's loss function or integrating score values into generator model layers.

KEYWORDS

Neural Networks, Text generation, GAN networks, Autoencoders, Controlled text generation .

An Illumination Invariant Convolution Module for Zero-shot Object Detection in the Night

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ABSTRACT

Intelligent detection is an important part of the research of military intelligent technology. When only daytime training data is available, it is difficult to train a consistent model for object detection at night. How to eliminate the inconsistent performance resulting from different illumination conditions is a critical work under resolution. The illumination invariant convolution module (IIC) based on dynamic learning is proposed, which realizes a cross-domain detection model that can be trained only in the daytime scene and directly used for target detection in the low-light scene. It models the conversion relationship between the visible light image and the target constant illumination feature map. Experiments show that compared with the model based

on data augmentation and style transformation, the proposed method has a more stable detection performance and higher average precision (AP) in the self-built dataset. Furthermore, it gains consistent performance in the small sub-dataset, as well.

KEYWORDS

Cross-Domain; Illumination Invariant; Object Detection; YOLO.

An Ensemble Approach to Improve Homomorphic Encrypted Data Classification Performance

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ABSTRACT

Homomorphic encryption (HE) permits users to perform computations on encrypted data without first decrypting it. HE can be used for privacy-preserving outsourced computation and analysis, allowing data to be encrypted and outsourced to commercial cloud environments for processing while encrypted or sensitive data. HE enables new services by removing privacy barriers inhibiting data sharing or increasing the security of existing services. A convolution neural network (CNN) can be homomorphically evaluated using addition and multiplication by replacing the activation function, such as Rectified Linear Units (ReLU), with a low polynomial degree. To achieve the same performance as the ReLU activation function, we study the impact of applying the ensemble techniques to solve the accuracy problem. Our experimental results empirically show that the ensemble approach can reduce bias, and variance, increasing accuracy to achieve the same ReLU performance with parallel and sequential techniques. We demonstrate the effectiveness and robustness of our method using three datasets: MNIST, FMNIST, and CIFAR-10.

KEYWORDS

Homomorphic encryption, activation function, ensemble approach.

Segmentation of Corpus Callosum Using Magnetic Resonance Image and Deep Learning

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ABSTRACT

The automatic detection of specific areas in medical images using mathematical techniques has been growing significantly, due to the applications this allows. This article presents the results in the automatic segmentation of the cerebral corpus callosum in cerebral magnetic resonance imaging using Deep learning. 1450 images were used for training, each image with a resolution of 512*512. A conditioning stage was developed to modify the contrast of the image, remove irrelevant information and perform a pattern extraction process using wavelet transformation. The results show the segmentation of the corpus callosum and the percentage of accuracy was 99.514%. The system was validated with 415 images.

KEYWORDS

Resonance image, cerebral corpus callosum, image segmentation and Deep learning.

Improved Speech Enhancement by Using Both Clean Speech and ‘clean’ Noise

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ABSTRACT

Generally, speech enhancement (SE) models based on supervised deep learning technology, use input features from both noisy and clean speech but not from the noise itself. We suggest here that this ‘clean’ background noise, before mixing it with speech, can also help SE and that is to our knowledge not described yet. In our proposed model, not only the speech, but also the noise is enhanced initially and later combined for improved intelligibility and quality. We also present a second innovation to capture better contextual information that traditional networks are often poor in. To leverage both speech and background noise information and long-term context information, this paper describes a sequence-to-sequence (S2S) mapping structure using a novel two-path speech enhancement system, consisting of two parallel paths: a Noise Enhancement Path (NEP) and a Speech Enhancement Path (SEP). In the NEP, the encoder-decoder structure is used for enhancing only the ‘clean’ noise, while the SEP is used to suppress the background noise in the clean speech. In the SEP, a Hierarchical Attention (HA) mechanism is adopted to leverage long-range sequence capture. In the NEP, we use traditional gated controlled mechanism from ConvTasnet [2] but improve it by adding dilated convolution to increase receptive fields. Experiments are conducted on the Librispeech dataset and results show that the proposed model obtains better performance than recent models in terms of various measures, including ESTOI and PESQ scores. We conclude that the simple speech plus noise paradigm that is often adopted for training such models is not optimal.

KEYWORDS

Supervise speech enhancement, separate paths, hierarchical attention mechanism, gated control, magnitude.

Gpt-4: a Review on Advancements and Opportunities in Natural Language Processing

Jawid Ahmad Baktash, Mursal Dawodi, and Chat GPT

ABSTRACT

Generative Pre-trained Transformer 4 (GPT-4) is the fourth-generation language model in the GPT series, developed by OpenAI, which promises significant advancements in the field of natural language processing (NLP). In this research article, we have discussed the features of GPT-4, its potential applications, and the challenges that it might face. We have also compared GPT-4 with its predecessor, GPT-3. GPT-4 has a larger model size (more than one trillion), better multilingual capabilities, improved contextual understanding, and reasoning capabilities than GPT-3. Some of the potential applications of GPT-4 include chatbots, personal assistants,

language translation, text summarization, and question-answering. However, GPT-4 poses several challenges and limitations such as computational requirements, data requirements, and ethical concerns.

KEYWORDS

Large language models, Unsupervised learning, GPT-4, GPT -3 .

Applying Chatgtp to Tackle the Side Effects of Personal Learning Environments in Higher Education: a Teacher and Teaching Perspective

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ABSTRACT

This paper explores the potential of using ChatGTP, a large language model, to address the side effects of Personal Learning Environments (PLEs) in higher education from the perspective of teachers and teaching. The study employed an interview method with six professors and two ICT experts in higher education to gather data on the challenges faced by learners in PLEs and the potential of ChatGPT to tackle these challenges. Thematic analysis was used to analyze the data, and the results revealed that teachers face several challenges in PLEs, including educational philosophy (e.g., pedagogy) and skills (e.g., assessment and evaluation, pedagogical design, learner engagement, and digital literacy). The lack of clear evaluation methods and the difficulty in assessing student learning due to the personalized nature of PLEs pose significant challenges. Additionally, designing effective PLEs requires scaffolding and alignment with learning outcomes. Digital literacy is also a critical factor in the adoption of PLEs, as teachers need to develop the necessary skills to keep up with the rapid pace of technological change. The paper argues that ChatGTP can assist teachers in tackling these challenges. The paper is of value to educators, researchers, and policymakers and the field of education technology by addressing the challenges and opportunities of PLEs in higher education.

KEYWORDS

Personal Learning Environment, ChatGPT, higher education, teacher and teaching, side effects.

Research and Practice of a Blended Teaching Mode Based on Small Private Online Courses Under an Informatization Background

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ABSTRACT

With the continuous development of information technologies, the pace of education informatization is accelerating increasingly. The traditional classroom-teaching mode cannot fully meet students' learning demands. Due to the emergence of new teaching forms in the post-pandemic era, rapid development of IT applications, national education-informatization policies

and deployment, and the plight of the traditional teaching mode, there is a need to explore new ideas and patterns of integrating information technologies and teaching approaches. With the course of Heat Transfer as an example, this study expounds a blended teaching mode based on small private online courses (SPOC) on course aims, teaching contents, teaching methods, and evaluation approaches under the background of informatization. The results show that this teaching model can enhance students' learning effect and comprehensive ability effectively. The rules of blended teaching were explored to guide teaching improvement.

KEYWORDS

SPOC, Blended Teaching, Informatization.

Significance of Special Education to the Educational Growth of a Nation

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ABSTRACT

This paper examined “fundamental tips for understanding special education” an education that is structured to meet the needs of children living with disability. The paper employed an interview technique to gather information on the issues in special education and relevance of special education from ten (10) teachers in special schools. Content analysis was used to report the findings of this paper, and the findings revealed that issues in education include disability classification, classroom environment and fund issues. In addition, the paper revealed that the significance of special education include it helps teachers to understand individual differences, improves motor skills, the child’s self-esteem and help children living with disability to maintain a healthy and balanced lifestyle. This paper is of significance to educators, researchers, and curriculum developers and educational sectors as it addresses the significance of special education on the educational growth of a nation.

KEYWORDS

Significance, Special education, Educational growth.

Subtypes of Developmental Dyslexia

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ABSTRACT

In light of teaching students with dyslexia and other learning difficulties (LD), neuroscientists claim that such deficiencies happen due to a neural base, depending on biological and environmental factors, and experience developing properties and improving reading skills. The research claims two types of dyslexia: developmental (or innate) and deep (or acquired due to brain traumas or diseases). This article researches developmental dyslexia (DD), which may be primary and secondary. DD is divided into two main subtypes: surface and phonological While reading; our brains must "rewire" neural circuits initially used for other tasks, such as visual and speech processing and attention and cognition. Psycholinguistics investigates the cognitive process of perception, production, and general use of language. This article revises teaching

English in light of neuroscience, psycholinguistics, and appropriate methods to train working memory and other ways to overcome DD and its subtypes.

KEYWORDS

developmental dyslexia, neurodiversity, special education, working memory, neuroscience.

Breaking Barriers: Fostering Teacher's Empathy and Attitude Towards Inclusion in Indonesian Kindergartens

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ABSTRACT

In early childhood education settings in Indonesia, there is a lack of research on teachers' attitudes toward inclusion and the relationship between that attitude and their empathy in the context of including children who have emotional and behavioral disabilities in their classrooms. Using the Multidimensional Attitudes toward inclusive educational scale (MATIES), which has three sub-dimensions: cognitive, affective, and behavior, and Empathy Quotient (EQ) to measure the empathy level. The purpose of this paper was to identify the connection between empathy and attitude among teachers of childhood education. In addition, this study also identified some specific variables, namely level of education, teachers' training in inclusion, and teaching period in relation to their attitude toward the inclusion of children with disabilities in regular classes. A survey was given to 161 Indonesian teachers, and five participants were also asked to take part in a semi-structured interview. The findings indicate that there was a significant correlation between the level of empathy and the three dimensions of teacher attitude towards inclusive education including.

KEYWORDS

teachers' attitudes, empathy, Indonesian inclusive education.

Social Media Implementation as a Pedagogical Tool

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ABSTRACT

Technological innovations have impacted how we teach, learn, and communicate in the educational setting. Educational institutions must integrate various technologies, including images, music, video, and an infinite number of online platforms, to continuously adapt to new technologies. Early childhood programs, which have been offered at primary education institutions and which are being taught at universities, are specifically urged to use digital media as a way to clearly and effectively convey a range of subject matter (Cardinal, 2017; Casey et al., 2017; Tiernan, 2015). The study argues for the educational value of social media while also cautioning readers about the risks associated with unsupervised and unguided use by students of social networking sites. Social media cannot be disregarded because it is a part of young students'

daily lives in over 90% of cases. In addition to having a large capacity for data uploading and sharing, these websites also offer some distinctive qualities including being speedy, affordable, secure, creative, pleasant, and multimedia. No teacher can afford to ignore the influence; it would be wiser to take it into account while planning lessons. The author cites numerous sources to show how some SNSs, like Facebook, Twitter, LinkedIn, YouTube, etc., can be integrated. The author does, however, offer some warnings regarding issues like privacy, time loss, distractions, and the mechanical nature of these SNSs. In the concluding lines, the author discusses various SNS-related consequences for teachers and students and education in general.

KEYWORDS

Social networking sites, pedagogical tool, educational value, social media, teaching.

Women and Rape Culture in India: a Re-viewing of the Multifaceted ‘aahhh’ Voice and Blood-cases!

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ABSTRACT

Rape and Sex are terms highly ambiguous and complexly ‘republicized’ within its domain of pure cultural representation. Focusing on the concept of Women as the rape victims here, it is crucial to comprehend what we even understand by the definition of women. Is it what Women identify and relate with their experience or are trying to uplift and mold themselves with certain featured definitions that are patriarchally encoded to fit themselves into the definition of woman as an identity? Remembering the definition put forward by Judith Butler in Gender Trouble regarding the concept and definition of Women, where she said- “Women are the sex which is not “one”. Within...a phallogocentric language, women constitute the unrepresentable...women represent the sex that cannot be thought, a linguistic absence and opacity”. Following the queer-post-structuralist-feminist theory, this essay would re-read the cultural-politics around the discourse of rape on women by focusing on few Rape reports, under an empirical and observational methodology followed by an intersectional perspective.

KEYWORDS

Rape, Women, India, Culture, Society.

A Profound Look Into Teachers’ Reflective Spiral Leading to Professional Learning

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ABSTRACT

This study digs deeper into the reflective process trying to understand what happens through it, and how teachers learn from considering their own experiences. Seven teachers participated in the study going through reflective tasks, then data was collected through a focus group discussion with all participants, and three in-depth interviews. The study resulted in identifying the facets that the reflective spiral goes through. By introducing reflective tasks, reflective thinking on-

action is promoted where teachers reflect on the practice, getting the unconscious to conscious, to expression, to put in focus. When analysing the experience, teachers go into critical reflection resulting in awareness of the teacher as what needs to change and why. This is followed by reflective action; taking the decision to take an action, and the actual change of practice. Through teachers' action in the class another type of reflection appears; reflective thinking-in-action, considering their actions while they are teaching based on students' reactions, starting another cycle of reflective thinking-on-action, or reflective thinking-in-action, and so on.

KEYWORDS

The Reflective Spiral, Professional Learning, Reflective Thinking in-action, Reflective Thinking on-action, Critical Reflection, Reflective Action.

The Analysis of Sampling Techniques and Related Approaches - A Review

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ABSTRACT

Various research fields require different sampling techniques for conducting the research efficiently. It is very essential to choose the adequate technique of sampling. This paper gives an idea on different sampling techniques and their importance in different fields. In this paper, we discuss sampling and various types of sampling techniques. We go through two types of sampling techniques i.e., probability and non-probability sampling techniques. We study their subcategories. Further, we discuss the pros and cons of these techniques. Discussing different sampling techniques and their pros and cons will give the reader better understanding of the sampling techniques. It will help the reader to choose the right sampling technique for particular research. Choosing the correct sampling technique is very important for research. If a researcher knows well about different sampling techniques, he can choose adequate sampling technique for his research work. The aim of the study is fulfilled when a researcher understands which sampling technique is good for his research.

KEYWORDS

Population, Sampling, Sampling Techniques, Probability Sampling, Non-Probability Sampling.

A Possible Resolution to Hilbert's First Problem

Rajah Iyer, Microsoft, Redmond, Seattle, USA, R&D

ABSTRACT

We present herein a new approach to the Continuum hypothesis CH. We will establish a technique for forming a subset K of \mathbb{R} , further to this, we will extend the logical premise of Cantor's Diagonal Argument to devise a means by which the cardinality of K is established between (\mathbb{N}, \mathbb{R}) respectively.

KEYWORDS

Diagonal Argument, Continuum Hypothesis CH, Resolution to CH

Optimizing Similarity Threshold for Abstract Similarity Metric in Speech Diarization Systems: A Mathematical Formulation

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ABSTRACT

In this research, we propose a novel approach for speaker diarization, which is the process of determining who spoke when in an audio or video recording that contains unknown amount of speech from unknown speakers and unknown number of speakers. Speaker diarization has several applications in the field of speech processing and is often used as a pre-processing step. However, traditional supervised and unsupervised algorithms for speaker diarization have limitations, such as the high cost of providing exhaustive labeling for training datasets in the case of supervised learning and compromised accuracy when using unsupervised approaches.

To address these limitations, we propose a method that utilizes x-vector embedding, abstract similarity metrics, and a combination of graph theory, matrix algebra, and genetic algorithm. We also introduce the concept of loosely labeled data and demonstrate how our approach effectively clusters temporal segments into unique user segments for speaker diarization.

We evaluate the performance of our proposed algorithm on audio recordings in English, Spanish, and Chinese and compare it with well-known similarity metrics. Our results demonstrate that our approach effectively optimizes the speaker diarization process and outperforms traditional methods. This research has significant implications for various applications in speech processing and has the potential to improve the performance of other related tasks.

KEYWORDS

signal processing, speaker diarization, discrete optimization, neural networks

Hybrid System Approach to Math and Science

Bradford Hansen-Smith, USA

ABSTRACT

To introduce folding circles at the same time we are drawing pictures and making symbols of them is one thing we can do to enlarge our approach to math and science. It brings 2-D and 3-D together through the movement of folding the circle that is not predictable by either one of them. If it were so, we would already be doing it.

KEYWORDS

Geometry, folding circles, symmetry, unity

M.E.M.S. Which Allow the Extraction of Vacuum Energy Conform to Emmy Noether Theorem

Dr SANGOUARD Patrick, France

ABSTRACT

This theoretical work corresponds to the hope of extracting, without contradicting EMMY NOETHER's theorem, an energy present throughout the universe: that of the spatial quantum vacuum! This article shows that it should be theoretically possible to maintain a continuous periodic vibration of a piezoelectric structure, which generates current peaks during a fraction of the vibration period. Electronics without any power supply, then transform these alternating current signals into a usable direct voltage. To manufacture these different structures, we also present an original microtechnology to realize elec-tronics, and for controlling the very weak interfaces between the Casimir electrodes and of the return electrodes! These vibrations are obtained by controlling automatically and at appropriate instants the action of the attractive Casimir force by a repulsive Coulomb force applied to return electrodes. The Casimir force deforms a piezoelectric bridge, his internal field attracts opposing moving charges used to generate an opposing Coulomb force.

KEYWORDS

Casimir, Coulomb, Vacuum Quantum Energy Extraction, Piezoelectric, MEMS

Moving Target Detection Using Ca, So and Go-cfar Detectors in Nonhomogeneous Environment

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ABSTRACT

Modernization of radar technology and improved signal processing techniques are necessary to improve detection systems in complex situations. A fundamental problem in radar systems is to automatically detect targets while maintaining a desired constant false alarm probability. This work studies two detection approaches, the first with a fixed threshold and the other with an adaptive one. In the latter, we have learned the three types of detectors CA, SO, and GO-CFAR. This research aims to apply intelligent techniques to improve detection performance in a nonhomogeneous environment using standard CFAR detectors. The objective is to maintain the false alarm probability and enhance target detection by combining intelligent techniques. With these objectives in mind, implementing standard CFAR detectors is applied to nonhomogeneous environment data. The primary focus is understanding the reason for the false detection when applying standard CFAR detectors in a nonhomogeneous environment and how to avoid it using intelligent approaches.

KEYWORDS

CFAR detector, detection, adaptive threshold, non-homogeneous, false alarm probability.

Venus Electric: Phenomenology of the Venus Cycle as Evidence of Emf Ontology

L.P. Streitfeld, Independent Scholar

ABSTRACT

This paper presents an ontology of the synodic Venus cycle in the context of a third theory of physics (IJRAP 11). With the purpose of grounding Pauli's prophecy of the Aquarian icon arising under the collapsed quantum wave (IJRAP 10), a phenomenological experiment changed the quality of the field to facilitate manifestation. The Hieros Gamos Project released quanta in the form of alchemical art stored for Pauli's timing mechanism. Triggering the EMF in the human body via live interactive performance, the quanta/qualia marriage of pioneering an invented "co-creation with intention" art/physics techne produced iconography synchronized with a visible EMF trajectory of inner/outer embodiment. This ontological leap "beyond Uncertainty" utilizes the holistic brain to prove "Electric Venus" accessed by inventors was that of ancient Sumerian mythology. The result is an evolutionary template for restoring the holistic face of the bipolar feminine in science — along with the Pauli origin of her magnetic attraction.

KEYWORDS

electromagnetics, quantum physics, phenomenology, ontology, hierosgamos.

Some Theoretical Aspects of Hydrogen Diffusion in Bcc Metals at Low Temperatures

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ABSTRACT

Diffusion of H in Fe and other metals is very important as it leads to engineering problems associated with hydrogen. The modern ab initio modeling will provide a good description of the geometry, energy, and potential energy surface in Me-H systems. However, there is no systematic derivation of the diffusion coefficients in which quantum-statistical effects are considered in a wide temperature range.

KEYWORDS

hydrogen diffusion; bcc metals; migration of atoms; statistical model; pre-exponential factor; low temperature; quantum-statistical effects.

On the Limits of Pendulums: an Analysis of Horizontal Deviations and Amplitudes of Pendulums in the Detection of Gravitational Waves

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ABSTRACT

In the detection of the very first gravitational waves, certain pieces of sensitive equipment were needed. This was mainly because of the small effects of gravitational waves coming from distant sources. In order to accurately detect these waves, pendulums were used, and the principles governing pendulum motions were utilized in studying the deviations in measurement caused by external disruptions. This study focuses on finding the relationship of these deviations to the ratio of the amplitudes of the mass of a pendulum and its pivot point or shaft. In order to accomplish this, calculations were performed involving different cases of simple pendulum motion. The mechanism of the pendulum is needed in order to accurately stabilize a mirror used in detecting gravitational waves. Better detection of gravitational waves is achieved using pendulums for detectable vibrations as these waves have minimal observable effects brought by the long distances of their source to Earth. Horizontal deviations for the pendulum shaft and mass were deduced. Calculations reveal that the ratio of the amplitudes of the mass and shaft is within a range that depends on the horizontal deviation of the pivot.

KEYWORDS

Pendulum, Amplitude, Gravitational Waves.

Massive Photon Hypothesis Opens Doors to New Fields of Research

Henri Corniere, Canada.

ABSTRACT

Mass, an inherent property of matter, is calculated directly for the photon particle from the very classical principles of the kinetic theory of gases. That concept of photon mass is nearly as old as physics itself and in fact nothing prevents this approach to be carried out for a so-called quantum particle, not even its minute size. It is not an end result with no perspective nor other outcome. Quite the opposite, a single ponderable tiny photon frees the mind of old ways of thinking and opens up new paths to a broad field of investigation where the very large can then be described and explained by the very small. This reality of a non-zero mass suddenly shows up in the interpretation of many experiments which become clear and simple to comprehend. Besides, that same key particle has the potential to unlock and solve some long lasting major observational issues or enigmas. All this converges upon its acknowledgement and acceptance.

KEYWORDS

photon gas, photon mass, CMB radiation, speed of light, photon drag, viscosity.

Room Service Drone Using Feature Detection

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ABSTRACT

In this current world, hospitality industries are growing at a large scale for tourists. Introducing drone services can add an extra feature of interest to the customers and these hospitality industries can improve customer service and can open a new scope of business. For this reason, many hospitality industries are implementing drone services for surveying their places, taking photography and make a 3D map of area. This project deals with a room service system in an internal environment of a building where it will deliver foods, necessary items from room to room. In our self-assembled and manually controlled drone, real time feature detection method using KNN method has been implemented to detect the room number during flight and deliver the products to the customers in their rooms.

KEYWORDS

Room Service, Number Detection, Feature Detection, KNN, Pixhawk.

Chatbots using Machine Language: Mood Analyzer and a Political Commentator

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ABSTRACT

The use of chatbots is rapidly increasing in various fields such as customer service, healthcare, education, and e commerce. The advancement in Natural Language Processing (NLP) and Machine Learning (ML) techniques has led to the development of more sophisticated chatbots that can understand and respond to human language in a more effective manner. OpenAI is a world-renowned artificial intelligence research organization dedicated to advancing the capabilities of AI and making it more accessible to individuals and businesses alike. One of their latest offerings is a powerful AI language model called GPT-3, which is used to develop a Mood Analyzer and a Political Commentator chatbot. This research paper aims to explore the features and functionality of the Mood Analyzer and Political Commentator chatbot in OpenAI's GPT-3 model, and how they can be used to analyze and interpret human emotions and political discourse. By leveraging machine learning algorithms, a comprehensive analysis of text data could be performed, enabling users to gain insights, and understanding into the sentiment and topics discussed in the text input.

KEYWORDS

Chatbot, Natural Language Processing, OpenAi, Mood, Bias, Analysis.