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International Interdisciplinary Conference on Science for Society

(IICSS 2022)

11th & 12th January 2022

Organised by:

Faculty of Science

Kalinga University, Naya Raipur, Chhattisgarh, INDIA

In Association with

Chhattisgarh Council of Science and Technology,

Chhattisgarh, INDIA

&

SHODH SAMAGAM

Double - Blind, Peer-Reviewed, Quarterly,
Multidisciplinary and Bilingual Research Journal

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(IICSS 2022)

11th and 12th January 2022

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Raipur, 06 January, 2022

Message

I am delighted to know that Kalinga University, Faculty of Science is organizingInternational Interdisciplinary Conference on Science for Society (IICSS2022),scheduled on January 11th-12th, 2022.

In the present era, the applications of recent advancements in the field of science areenormous. The conference aims to bring together the experts and beginners from academia and industryat a common platform so that they are updated about the latest trends in the vast field of Sciences. I hope that the conference offers immense exposure to the delegates, in particular,the younger ones to the latest developments in the field of Sciences and relatedareas.

Once again, I on behalf of the organizing committee extend a warm welcome to all the participantsof IICSS2022. I wish the conference a grand success and I am confident that all of us, especially theyounger generation would be benefited immensely from the deliberations.

Dr. Rajeev Kumar
Chairman
Kalinga University

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Raipur, 06 January, 2022

Message

It is a matter of great pride and honor to organize and host the International Interdisciplinary Conference on Science for Society (IICSS2022), scheduled on January 11th-12th, 2022.It is my privilege to convey affectionate greetings to all the participants. The University is marchingahead to be a distinguished center of excellence for scientific, technical, and job-oriented education andinnovative research. I am very much happy to note that the conference keeps in its ambit all branches ofScience. I am pretty sure that it will provide the eminent scientists/young

scientists from India and abroad with a wonderful platform for the exchange of innovative ideas and

research issues. The subject of Science has assumed great importance in recenttimes and has spread its wings to many spheres of human endeavor.

I wish the Faculty of Sciencegrand success for the International Interdisciplinary Conference on Science for Society (IICSS2022) to be held on January 11th-12th, 2022. I believe that our University will rise to the occasion and make theconference a cherished academic event.

Dr. Sandeep Arora
Chancellor
Kalinga University

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Raipur, 06 January, 2022

Message

I am delighted to know that Faculty of Science, Kalinga University, Atal Nagar,Raipur (C.G.) is going to organize an International Interdisciplinary Conference on Science for Society (IICSS2022), scheduled on January 11th-12th, 2022. Recentadvancement in science research plays an important and relevant role in thedevelopment of society. The research in this field has important application and the conclusions ofscientific research get culminated in useful products for society.

I am highly elated that the entire proceedings in the conference would be published in the formof Souvenir to conserve the records.

I further, believe that all those conclusive and applicable outcomes of the conference would be properly communicated to the fields of application including industry, as to get implemented and furthersteps to contribute to overall development.

I take the opportunity to congratulate the organizers of the conference and wish them great success.

Dr. R. Shridhar
Vice-Chancellor
Kalinga University

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Raipur, 06 January, 2022

Message

The foundation stones of Kalinga University are laid on the essence of academic pursuit and excellence. Research and development form the backbone of our curriculum at Kalinga University.Thestaff and students are engaged in various innovative research activities all throughout the year. Everydepartment of our University organizes conferences and seminars frequently oncontemporary andrelevant topics in order to facilitate research in those areas which will lead to necessary metamorphosisin the academia as well. I am extremely happy to note that of the Faculty of Science ofKalinga University is organizing an International Interdisciplinary Conference on Science for Society (IICSS2022), scheduled on January 11th-12th, 2022.

I am surethat the conference of this type will inculcate the much-needed research culture among the students andteachers and trigger interactions among researchers to exchange the ideas of recent advances in this area.

I hope that this conference would certainly induce innovative ideas among the participants paving way for new inventions and technologies. I congratulate to the organizers for conducting suchconference in our esteemed University.

I wish the conference a grand success.

Professor Byju John
Director General
Kalinga University

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Raipur, 06 January, 2022

Message

I am happy that an International Interdisciplinary Conference on Science for Society (IICSS2022), scheduled on January 11th-12th, 2022 is being Organizedby Faculty of Science, Kalinga University, Atal Nagar, Raipur (C.G.). I hope that theconference provides an interdisciplinary forum to present the most recent advancement in Science. On this occasion, I am happy to extend my greetings and best wishes to all theparticipants of this important international conference and also to the organizers. Expecting to have asynergetic discussion and meaningful meeting of the participants with the Researchers, Scientists,Professor and Students of varied interests. I wish the conference a grand success.

Dr. Sandeep Gandhi
Registrar
Kalinga University

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Raipur, 06 January 2022

Message

I am extremely happy to note that the Faculty of Science, Kalinga University Naya Raipur is organizing an International Interdisciplinary Conference on Science for Society (IICSS2022), scheduled on January 11th-12th, 2022. I am also happy toknow that the University is bringing out a souvenir on this occasion.

I hope this conference will provide an opportunity for all participants to interact with each other and discuss the issues related to the future of Science. The deliberation at thisconference willenable the participants to play an important role in strengthening thedepartment and academics.

I wish the conference a great success.

Rahul Mishra
Dean of Academic Affairs
Kalinga University

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Message from the Organizers

Convener
Dr. Vara Prasad Kolla
Dean of Science

Co-convener
Dr. GVVJagannadha Rao
Asst. Professor, Mathematics

It is well known that workshops, conferences, and seminars are very important tokeep one aware of the latest happenings in the concerned research field globally.

The "IICSS2022" aims to provide a common platform to young researchersto interact and share their valuable views with famous names in their respectivefields. We are confident that the scientific and technical deliberations made inthis mega event will be thought-provoking, stimulating and inspiring to ouryoung generation, scientists and researchers. It would have a long impact instrengthening the research in the field of sciences.

It gives us immense pleasure to welcome the participants of "IICSS2022" atRaipur, who have come all the way from different parts of India. Indeed, it is amatter of pride that eminent scientists are among the renowned invited speakers.

The Conference consists of a number of technical sessions on a wide range oftopics on sciences. We thank the speakersand presenters for their sincere efforts for quality abstracts.

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Co-convener
Dr. Preeti Pandey
Asst. Professor, Chemistry

The organizing committee of IICSS2022 has put its best efforts to make it agrand success. However, we request you to kindly bear with us in case of anyinconvenience. We wish all the participants IICSS2022 a comfortable and enjoyable stay in Raipur, an academically satisfying experience and a bouquet of memories of IICSS2022.

Co-convener
Dr. Aloke Verma
Asst. Professor, Physics

It has really been a wonderful experience to host such a prestigious event werepioneers from all branches sciences and related areas have gathered toreview the advancements in the promising field of sciences.

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Co-convener
Ms. NiraliBudhbhatti
Asst. Professor, Biotechnology

I would like to thank all Researchers, Scientists, Industry Professionals and Studentsfor their participation and making thisinternational conference a grand Success.
Ihope all participants had a knowledgeable experience and made best use of thisopportunity to connect with experts in these emerging fields.

Co-convener
Mr. Shoukilal Chouhan
Asst. Professor, Zoology

The organizing committee of "IICSS2022" would like to thank all the participants for contributing in exchange of knowledge during the international conference. All the abstracts were interesting and talks about the interdisciplinary aspect of science.

Co-convener
Mr. Abhishek Pandey
Asst. Professor, Botany

Best wishes to the participants as a part of the organizing team that this conference will be a great platform to learn and explore new technology in science. It will not only provide great platform for learning and exchange of ideas but will also explore different areas of science which can be used for the betterment of the society.

SHODH SAMAGAM ISSN : 2581-6918 (Online)

Dear Scholars,

We are Pleased to inform you that we are publishing 'A multidisciplinary and multilingual research journal called SHODH SAMAGAM. The aim of SHODH SAMAGAM is to acquaint the scholars with the current national and international scenario. I would like to welcome you most warmly to SHODH SAMAGAM website. Through SHODH SAMAGAM we expect to offer solutions to the various education related problems by inviting the opinions of thinkers and scholars. SHODH SAMAGAM is an open access journal available for viewers, contributors, and readers discusses the academic, scientific issues related to diverse stream of Education across the world. I would also like to begin by extending my particular thanks to Scholars, Academicians, and from the deep of my heart I especially thank to contributors for making the effort fruitful.

SHODH SAMAGAM Research Journal`s really want to take up Academicians, Readers, Contributors visions to generate the research related skills and qualities and this is the ultimate and concrete aim of the SHODH SAMAGAM Research Journal`s. With this same aim, SHODH SAMAGAM has taken leading step in the publication. I wish all to stimulate your discussions, innovations and educational practices through this Journal.

SHODH SAMAGAM is the National double - blind, peer-reviewed, refered and Indexed journal published in English, Hindi for scholars, practitioners, and students. The Journal is welcoming original Research Articles, Book Reviews, Commentaries, Reviewed Articles, Technical Notes, Snippets, Case Studies, Books, Thesis and Dissertations relevant to the fields of Science, Social Science, Commerce, Military science, Technology, Education, Computer Science, Arts and Cultural etc Research. All types of articles submitted to the journal are double - blind peer reviewed and subject to be referred at the discretion of the Members of the Editorial Board for publication.

Thank you for visiting to SHODH SAMAGAM and being with us.

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CONTENTS

Applications of Metabolomics in Understanding Health and Disease

Dr. Manjunath B Joshi,
Associate Professor, Manipal School of Life Sciences,
Manipal Academy of Higher Education, Manipal

Abstract

Metabolomics is the systematic identification and quantitation of all biologically relevant smallmolecules in a given compartment, cell, tissue or body fluid. Conventionally, metabolomics analysisis performed using either nuclear magnetic resonance or gas/liquid chromatography-massspectrometry or both technologies together. This high end and high throughput technology hasvariety of applications in disease biology and facilitates in understanding mechanisms, identifyingdrug response, predicting diagnosis/prognosis markers and finding therapeutic targets. In this talk,we discuss a) metabolomics work flow and b) various questions in life sciences research that can beaddressed using metabolomics approach.

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Biologics Drug

Dr. Navaratna Vajpayee

Abstract

Biologics drugs are becoming more and more popular since the last two decades. With many of the first generation innovator biologics are near expiry, there is a growing interest amongst the 'biosimilar manufacturers. However, complex nature of these molecules has restricted it to a few. My presentation will discuss about basics of Biologics/Biosimilars, there complexities, stringent regulatory requirements and advance characterization tools which help in achieving the desired target.

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Imaging and Sniffing Human Diseases

Dr. Divya Vats,
Chief Scientific Officer, SmellCells AG,
Zurich, Switzerland

Abstract

Molecular analysis, utilizing various molecular diagnostic techniques has now becomecommonplace in most clinical laboratories for 1) disease diagnosis, 2) optimizing therapeuticchoices, and 3) monitoring response, leading to individualized treatment, andpersonalized/ precision medicine. Molecular diagnostics are increasingly used to guide patientmanagement, from diagnosis to treatment, particularly in the fields of cancer, infectiousdisease, and congenital abnormalities. The increased demand for genetic and genomicinformation has led to the rapid expansion of molecular techniques, and furthered ourunderstanding of human diseases.Molecular imaging and breath based volatile organic compound analyses are more commonlybecoming the pillars of molecular diagnostics,supporting precision medicine and point of care in human diseases and therapy.

Imaging human diseases

Molecular imaging is revolutionizing the way we study the inner workings of the human body,diagnose diseases, approach drug design, and assess therapies. The field as a whole is makingpossible the visualization of complex biochemical processes involved in normal physiologyand disease states, in real time, in living cells, tissues, and intact subjects. Molecular imaginginvolves specialized instrumentation, used alone or in combination with targeted imagingagents, to visualize tissue characteristics and/or bio chemical markers. The data generatedfrom molecular imaging studies can be used to help understand biological phenomena,therapy monitoring, drug discovery and development, understanding nanoscale reactionssuch as protein-protein interactions and enzymatic conversion, identify regions of pathology,and provide insight regarding the mechanisms of disease and the right tools for itsassessment. There exist a range of different imaging modalities a researcher or clinician mayuse for a particular study. The selection of an appropriate imaging modality is dependent onthe biochemical process(es) one wishes to visualize and the type of imaging data one wantsto obtain. There are numerous factors and questions a researcher or clinician must considerto select an appropriate modality (or modalities (hybrid imaging or simultaneous imaging,according to relevant) including the following:

- MRI
- Nuclear (PET/SPECT)
- Optical (FRI, Opto-acoustic)
- CT
- Ultrasound

Overall, imaging modalities have advanced both clinical practice and research by providing asystematic method for differentiating phenotypes of human body composition that divergefrom what is considered normal, thereby immensely assisting disease diagnosis andprognosis. These diagnostic imaging methods provide information about the spatialdistribution of tissues and organs, and in turn abnormalities or malignancies, based ondifferences in their tissue and molecular properties. These properties or signal characteristicsprovide contrast in images that distinguish type of tissue and allow comparison andquantification in health and disease.

Sniffing (Breath analysis) human diseases

The entire set of VOCs generated by an organism is called “volatilome” or “volatome” and thestudy of volatilome is known as “volatilomics”. VOCs generated through the metabolism ofcells release into the blood and are excreted through the exhaled breath or body fluids. Thevolatilomic profile of different biological matrices can be efficiently identified by analyticalmethods.

The analysis of volatile organic compounds (VOCs) within breath (Breath analysis/Biopsy) fornoninvasive disease detection and monitoring is an emergent research field that has thepotential to reshape current clinical practice. Human breath is composed mainly of nitrogenalong with carbon dioxide produced by respiration, oxygen that was not consumed, and watervapor. In addition, it contains more than 100 additional types of gas components in differentconcentrations, which provide information that may be useful to monitor health conditionssuch as stress, metabolism, and diseases (including cancer). VOCs are in general the endproducts of carbohydrate metabolism and lipid metabolism as well as oxidative stress andcytochrome p450 liver enzymes in the human cells, as well as aerobic and anaerobicfermentation processes of bacteria living in the gut microbiomes. Some VOCs in exhaledbreath are expected to be useful as biomarkers for diseases, i.e., for cancer(in particular somealdehydes, ketones, alcohols, hydrocarbons and some aromatic compounds).

Breath analysis/biopsy is a noninvasive technique which allows easy sample collection, andprovides quick results; thus, it is gaining attention as a new diagnostic technology in healthanddiseases. The most common chemical detection method for VOC analysis is the gaschromatography (GC) associated with massspectrometry (MS). Some others, in development,are listed below:

- Thermal desorption, gas chromatography and triple and quadrupole massspectrometry (TD-CG-MS)
- Two-dimensional gas chromatography-mass spectrometry-time of flight(GCxGC-MS-TOF)
- Proton transfer reaction with mass spectrometry (PTR-MS, PTR-TOF-MS)
- Ionic molecule reaction with mass spectrometry (IMR-MS)
- Ion mobility spectrometry (IMS)/field asymmetric ion mobility spectrometry(FAIMS)

Different chemical classes of VOCs and their role and impact on disease pathology are beingtabulated employing some of the bench marked techniques listed above, for generating validreference libraries. The VOC curated databases and instrumentations have been developedthrough statistically robust research in large patient populations, providing an opportunity tofind potential biomarkers for diagnosis of a particular human disease. A large amount of workis being done to find a relationship between VOCs’ signature of body and cancer. Cancer-related VOCs can be used to detect several types of cancers at the earlier stages, which inturn provide a significantly higher chance of survival. Surveying these VOCs can be used todiscriminate cancer patients from healthy individuals and also monitor progress in therapy.

****

Urban air pollution: Why we should care!

Dr. Harish C. Phuleria
IIT Bombay, Powai, Mumbai (MH) India 400076

Abstract

All over the world, and particularly in low- and middle-income countries, urban air pollution may contribute significantly to the overall population attributable exposure risks, causing some severe health impacts. Several Indian cities have been consistently in the top most polluted cities around the world. However, such a public health relevant issue is usually discussed during post-monsoon/ winter months only and mostly centered around New Delhi. However, the problem is faced almost all over the country and throughout the year. Through this talk, the conference participants will be sensitized about urban air pollution and its consequences. The history of air pollution research, its impact on human health, climate and visibility and the current status of urban air quality in Indian cities will be discussed with a specific focus on the impact of COVID-19 (due to governmental measures) on urban air quality across India.

****

Swissnex and Science for society

Dr. Lena Robra
Head of University Partnerships, Web Swissnex in India, Consulate General of Switzerland, 26 Rest House Crescent Rd, Bangalore 560001

Abstract

Swissnex in India connects the dots between Swiss Science and Innovation with India. We are part of a global network that builds bridges across borders, disciplines, societies and generations. We connect Science with Society through our academic team and Science with real world problems and solutions through our innovations team. We are part of transforming tomorrow by connecting the brightest and most talented researchers and students of India and Switzerland. We strongly believe in working outside of silos, in joining hands across disciplines and generations to tackle pressing questions for not only a liveable but also a enjoyable future for life on this planet.

In this talk I will run you through past and future activities of Swissnex in India and highlight opportunities of contribution and participation. I will talk about our areas of interest and the creative approaches we are taking to tackle and solve problems together.

****

The Relevance of Mathematics Education to The Development of Critical, Analytical Thinking and Problem-Solving Skills

Amon Pengeyo*
Kalinga University, Naya Raipur (C.G), India
**Corresponding author email: apengeyo@gmail.com*

Abstract

Mathematics occupies the most important position in the education system because of the crucial role it plays in the development of human intellect, critical thinking, analytical and problem-solving skills. The relevance of mathematics education cannot be recognized only on view of its application to human everyday life activities, but it also plays a greater role on facilitating the learning process of other subject area. Mathematics knowledge influences education and it is application to the nature, technology, industry, banking etc. It is the basis for research methods and expand individuals' capacity to deal with challenges such as conflicts, unemployment and poverty. Mathematics is widely regarded as the tool that foster national development, as it uncovers innovation skills; intensify thinking capacity; enhances reasoning; problem-solving skills and critical thinking.

Mathematics is an essential discipline recognized for training and producing productive individuals who can function effectively and independently as they face every day challenges. Hence Mathematics education is essential for national development and transformation. The teaching of mathematics entails accuracy and systematics arrangements, that literally means it help in shaping and organizing human mind. Therefore, Mathematics knowledge serve as a great foundation to self-reliance and self-independence, it's part of our daily routine and influences the quality of our life and professional orientation. Sometimes Mathematics knowledge is used to measure the quality, relevance and functionality of the education system. Hence it is more than just the science of numbers, its knowledge is crucial for almost all careers, it develop reasoning power and countries depend on mathematics as one of the significant subjects that plays a role in producing individuals that will help them meet their developmental objectives.

I will carry out this research with the help of questionnaires, online questionnaire for students and teachers consisting of both open and close-ended questions will be developed to find out about how stakeholder in the educational institutions value the roles of mathematics in general and in their respective field of studies. Questionnaire will be sent to sampled school and institution of high learning.

In my research I will focus on the role of mathematics to the development of critical, analytical thinking and problems solving skills with the aim to increase and influence the interest of learning mathematics.

****

Analysis of Customer Behavior, Emotions and Interest Using Automatic Survey & Data Analytics

Bireshwar Ganguly* and Asha Ambhaika
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Abstract

With the increase in globalization there is no longer an organization that does not use the Information Technology (IT). Along with this online transaction in banking, shopping and ecommerce application is reached at next level. Organizations now trust data analytics and other tools to know their customers better. Companies are focusing on targeted audiences to save cost on marketing and reachability to right customer. Every customer is having different views, point of angle and choice. It is proved with analytics that maximum percentage of sale is depending on the right suggestions, reviews or the offers. Finding out the targeted audiences are bit easier with the help of social media and marketing trends but it is more challenging to understand the customer choices or interest and serve them customized shopping experiences every time. On other hand user's reviews, start rating and like or dislike selection has contradictions this need to be corrected automatically using natural language processing algorithms. Analyzing and understanding user's online behavior and surfing patterns may help researchers to know their customers in better way in order to serve them a customized interface with better surfing experiences. Proposed system is aimed at understanding customers' behavior, emotions and interest using data analytics and on field physical survey. System will employee custom built web browser or the re-distributable web packages which can be embedded into existing ecommerce application to trace the customers' movements and browsing patterns. This will enable companies to understand customer in better way and keep the system updating on the basis of inputs and data analysis.

Keywords

Event-driven, profile-based, analysis, Scripting, globalization.

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Design and Development of High-Performance Face Anti-Spoofing Based on Sharpnessand Contrast Profiles

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Abstract

The growing use of control access systems based on face recognition shed light over the need for even more accurate systems to detect face spoofing attacks. Face recognition-based authentication techniques can be easily spoofed using various types of attack. Consistent counter-measures need to meet certain requirements, mainly regarding reliable robustness and low complexity. Also, there is a need to provide more generalized algorithms for detection of unpredictable spoofing attacks in order to make the system more secure and reliable. Although several face anti spoofing or liveliness detection methods have been proposed, the issue is still unresolved due to difficulty in finding the features and methods for spoof attacks. Fairly good results have been reported on the publicly available databases but it is reasonable to assume that there exists no superior anti-spoofing technique due to the varying nature of attack scenarios and acquisition conditions. The aim of this work is to find the best compromise between two criteria (robustness and low complexity) to distinguish between genuine and fake face appearances. The solution will be tested on a publicly available database to outperform state-of-the-art approaches. This work will extract and use significant descriptors and suitable classifier for a dataset or aggregated dataset for obtaining improved performance over the existing state of art approaches. The performance of this work with respect to various performance metrics will be compared with the benchmark work carried by other researchers for validation. It is clear that face recognition systems based on 2D and 3D images can be exposed to spoofing attacks. Researchers have proved that they are analysing these attacks in terms of descriptors and classifiers. Descriptors were categorized as texture, motion, frequency, color, shape or reflectance and classifiers are organized as a discriminate, regression, distance metric or heuristic Basically, the works will cover: To learn intrinsic material features via disentangling them with material-unrelated features and to establish a more suitable cross-material based benchmark. It was confirmed that the many of the proposed method are effectively used in edge environments. An extension to recent work, this work will verify the performance against another well-known face spoof dataset. In addition, plan is to conduct performance tests between different databases

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MODBUS Protocol Implementation for Energy Monitoring Smart Meter Array

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Abstract

Industrial automation is the most demanding and emerging field for many years. Every industry is energy-intensive and energy-intensive at multiple levels of production. The Government of India has issued new energy audit compliance for large industries with multiple levels of energy meters and energy distribution. With the help of conventional power meters, users cannot obtain other parameters such as amps, voltage, watts, or PF. These parameters can be obtained using special industrial meters. With the help of serial communication with the power meter, the user can get the details, but this is easy if there are few meters. If a user wants to communicate multiple meters through a single communication host and through a single communication line, it becomes a big problem. MODBUS protocols are specifically designed and for the same purpose, they have the means to communicate with multiple devices that support this protocol through a single communication line, giving each node or device an identification number. The proposed system consists of designing and developing a communication tool based on the MODBUS protocol to analyse the performance of industrial energy meters.

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Production of Tidal Energy Using Tidal Stream Turbine and Its Technological Development

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Abstract

Tides are the rise and fall of ocean water caused by the gravitational pull of the moon. Tidal energy is the energy obtained via the use of tides. They are a renewable source of energy that does not emit greenhouse gases, making them unaccountable for global warming, acid rain, and other forms of dangerous pollution. The supply of tidal energy is very dependable, and its energy density is far higher than that of wind energy. There is currently a worldwide hunt for this type of renewable energy for power generation. This paper provides an overview of past and current breakthroughs in hydrodynamics3-related technologies for tidal energy utilization. Several technological challenges in the design, analysis, testing, and optimizations of several types of tidal stream turbines4 are addressed in particular. This is followed by a discussion of the present problems in large-scale commercialization tidal energy commercialization and technological innovation.

Keywords

Tidal energy, Renewable energy, Hydrodynamics., Tidal stream turbines.

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Synthesis of diverse Benzo-fused Aza-Heterocycles via Benzotriazole Ring Cleavage Strategy (BtRC)

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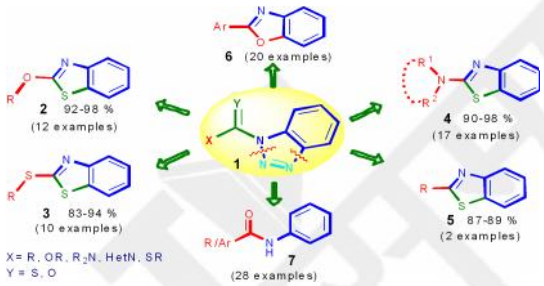
Abstract

Benzotriazole Ring Cleavage (BtRC) methodology for the synthesis of diverse benzo-fused aza-heterocycle has drawn special attention in recent years due to its efficient, fast and inexpensive approach. The advantages associated with utilizing benzotriazole as a synthetic auxiliarylies in enabling rather common transformations to be formed efficiently, quickly, and inexpensively.Its benign bio-physical properties, and ready availability,have placed benzotriazole methodology among some of versatile, useful and among the most successful synthetic protocols investigated so far.[1-4] Thebenzotriazolemethanethione conjugates (1), on treatment with silanes or stannane under heating or microwave irradiation undergoes free radical *â*-scission of *N*-*N* bond and affords diverse range of 2-substituted aza-heterocycles (2-6) *via* cyclative-elimination of molecular nitrogen (Scheme 1).[5,6,7] The analysis and characterization of the synthesized compounds is based on spectral *viz,*IR, MS, HRMS, ^{1}H, ^{13}C NMR and single crystal X-ray studies.



Scheme 1. Synthetic scope of benzotriazole ring cleavage strategy

The synthesis of 2-*O*-aryl/alkylbenzothiazoles (2), 2-(aryl/alkylthio)benzothiazoles(3), 2-(*N*,*N*-dialkyl)benzothiazoles (4), 2-aryl/alkylbenzothiazoles(5), 2-arylbenzoxazoles (6) and N-phenylamides(7) *via*benzotriazole ring cleavage using $(TMS)_3SiH$ as radical reducing agent is not realized so far, thus, this approach should be of further interest to synthetic and medicinal chemists. The short reaction period, simple workup, high yield, and mild condition of this methodology express significant tolerance towards a number of functional groups such benzylethers, acetals, thioethers, esters, arylhalogens (Ar-F and Ar-Cl), and alkenes.

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Study of Single Walled Carbon Nano Tubes (SWCNTs) as an Adsorbent for Efficient Removal of Anti-inflammatory Drug Balsalazide(BSZ) from Aqueous Solutions: Equilibrium, Thermodynamic and Kinetic Studies

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Abstract

Adsorption is one of the most widely used techniques for environmental remediation. In the present investigation adsorptive study of anti-inflammatory drug Balsalazide (BSZ) has been done using Single Walled Carbon Nano Tubes (SWCNTs). For this purpose, effect of different type of parameters such as effect of SWCNTs dose, pH, initial BSZ concentration, temperature and contact time were studied using a batch kinetic method. It was found that maximum adsorptive efficiency was achieved with the minimum dose of SWCNTs (0.2 g/L) in the alkaline medium (10.5) in 10 minutes. Various equilibrium adsorption isotherms such as Langmuir, Freundlich, Tempkin, Dubinin-Radushkevich, Haurkins-Jura, Jovanovic and Redlich-Peterson models were applied to describe the isotherm equilibrium and to analyse the experimental data. Langmuir isotherm model describes maximum efficiency of BSZ in case of SWCNTs (0.028 L mol^{-1}). The values of mean free energy, 5Ø8Ü, were obtained within the range of 4.066-6.895 kJ mol^{-1} by Dubinin-Radushkevich isotherm model and it was found that the nature of the present process was likely physisorption. For the kinetic studies, the Lagergren pseudo-first order model suitably described and gave a better fit for the removal of BSZ onto SWCNTs. The negative value of Gibbs free energy Ä*G*° (-14.328×10^3kJ mol^{-1}) indicated that the adsorption process was spontaneous and the positive value of ÄH° (14.499×10^3kJ mol^{-1})revealed the adsorption process was endothermic. The all finding indicate that SWCNTs are very useful and reproducible for the removal of BSZ and can be used for the successful removal of balsalazide from wastewater and any other effluents.

Keywords

Adsorption; Balsalazide (BSZ); Singe walled carbon nanotubes (SWCNTs); Kinetics; Isotherms; Diffusion; Thermodynamics.

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Review On Rare-Earth Elements Doped Phosphors Material

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Abstract

The luminescence phenomenon has captivated human beings for modernization. Luminescent materials doped with activated Rare Earth Elements (REE) have more significance in Optics due to their unique and novel characteristics for diverse applications in the optoelectronic field. Many review papers have been well discussed. Nitridosilicate phosphors doped with rare-earth nitrides in the sequence of M-Si-Al-O-N are very useful for white LEDs. The thermo-chemical property, high conversion efficiency, red-shifted excitation, and emission enable the phosphors applicable in white LEDs. In white LEDs, $BaSO_4$: Bi^{2+} and YAG: Ce^{3+} phosphors are combining used with a blue LED chip. Pr^{3+} doped $CaTiO_3$ phosphors exhibit different luminescence properties. Ln_2O_3 or Lu_2O_3 are added with phosphors to reduce the high temperature originated during the solid-state method and the use of tetra-n-butyl titanates and calcium nitrates in the modified solid-state method helps in optimizing the luminescence properties of the sample at a lower temperature in a small duration. Eu^{2+} doped $SrSiA_{12}O_3N_2$ phosphors were synthesized by the solid-state route method. These phosphors exhibit better photoluminescence property, thermal stability like Ba_2SiO_4: Eu^{2+} phosphor, better resistance, high current saturation, which make the phosphor able to apply in white LEDs and FEDs. $Ca_2Al_2SiO_7$: Dy^{3+} phosphors emit long-lasting white light. $Bi_4Si_3O_{12}$ has been prepared by microwave irradiation method and $Bi_4Si_3O_{12}$: Eu^{3+} has been investigated. Temperature plays an important role in luminescence. $NaAlSi_3O_8$: Eu^{3+}, Tb^{3+} has been prepared by solid-state route method which has potential application value. Nowadays, phosphor-converted light-emitting diodes are serving a lot to modern society. PC- LEDs have been used in solid-state lighting, backlit display, and near-infrared detection light source. Eu^{2+} doped earth-abundant silicates phosphors are very popular for their extraordinary luminescence properties like multicolor emission and also have adjustable bandwidth and high thermal stability. The color of different rare-earth ions doped luminescent materials is examined by Colour Rendering Index (CRI). Different techniques like sol-gel, solid-state, combustion methods are used for sample preparation. Other methods for example X-ray diffraction, Transmission Electron Microscopy, Scanning Electron Microscopy, Thermo-gravimetric analysis, Field-emission Scanning Electron Microscopy, Atomic Force Microscopy have been preferred to characterize the sample or analyze the band structure, phase structure, particle size, morphology, other dominant properties, spectral lines, etc. After Rare Earth Element (REE) doping, different transitions are detected.

Keywords

Rare Earth Elements, Phosphors Material, Barium Orthosilicate, Divalent Europium, Luminescence.

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Molar Volume and Viscosities of Stannous Chloride in Methanol-water (50:50 v/v) at 303.15 K.

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Abstract

Densities and viscosities of stannous chloride were measured as a function of their concentration in methanol-water (40:60 v/v) at 303.15 K. This data is used to determine value of apparent molar volume (öv), limiting apparent molar volume (ö*v), experimental slope (S*v), molar volume (V). The viscosity of electrolyte systems in mixed solvent was also studied. Viscosity data was used to determine B-coefficient (B) and constant characteristic of ion-ion interactions (A). The parameter are analyzed to evaluate to understand solute-solvent interaction.

Keywords

Viscosity. density, temperature etc.

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Machine Learning Algorithms in Wireless Sensor Networks

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Abstract

The Wireless sensor networks (WSNs) monitor the dynamic environments that change rapidly over time. This dynamic behavior is initiated by the system designers or either due to external factors. Such conditions are adapted by sensor networks to eliminate the need for unnecessary redesign. Machine learning also inspires many practical solutions that maximize resource utilization and prolong the lifespan of the network. This paper, presents an extensive literature review over the period of machine learning methods that were used to address common issues in WSNs. The advantages and disadvantages of each proposed algorithm are evaluated against the corresponding problem. Also provide a comparative guide to aid WSN designers in developing suitable machine learning solutions for their specific application challenges. The proposed framework exploits the fact that the readings of multiple sensors are highly correlated. This will minimize the communication overhead for detecting the structure of the sensor data.

Keywords

WSN; Designer; Machine Learning.

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Application on Graph Theory Properties of on-Line Social Networks

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Abstract

This report attempts to provide a descriptive analysis of online social media networks of Twitter, Facebook and telegram based on graph theory concept. These nodes in asocial media are interdependent on each other via common interests, relations, common friends, knowledge, common dislike etc. The first part of the study focuses on recognizing various activities of the above network s and constructing a suitable graph model for each social media to represent respective activities. The next part of this study addresses the appraisal of the constructed models of each social media distinctly in order to identify the applicability of them to investigate behavioral patterns and characteristics of the users. Final part of this study focuses on proposing a method to provide relevant information on online social networks to outsiders, which will be helpful for competent decision making without violating the user privacy.

Keywords

Graph theory, nodes, scatterplots, and social media network behavioral patterns.

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Equilibrium, Kinetic and Thermodynamic Studies of Adsorption Behaviour of3D Porous $NiFe_2O_4$ Nanoparticles for The Removal of Antacid Drug Ranitidine from Waste Water

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Abstract

The adsorption of the ranitidine on 3D porous $NiFe_2O_4$ nanoparticles was studied under different experimental conditions. Adsorbent used in this study, characterized by SEM, XRD, EDX and BET. The prepared highly pure 3D porous $NiFe_2O_4$ nanoparticles displays a high specific surface area of 65.179 m^2/g with a total pore volume of 8.495 nm. The effect of ranitidine concentration, mass of 3D porous $NiFe_2O_4$ nanoparticles as adsorbent, contact time (5-30 min.), temperature (30–50 ^0C), and pH (2-10) on adsorption process were investigated. The adsorption of ranitidine reached equilibrium within 15 min, indicating that 3D porous $NiFe_2O_4$ is a promising adsorbent for removing pharmaceuticals from aqueous media. Equilibrium isotherms for the adsorption viz, Freundlich, Langmuir and DR equation were applied and determined characteristic parameters for each adsorption isotherm. Thermodynamic analysis of the adsorption data showed negative ΔG^0 and positive ΔH^0 suggesting that the adsorption was a spontaneous and endothermic process, associated with mainly physical adsorption. Furthermore, the adsorption rate of the ranitidine on the 3D porous $NiFe_2O_4$ was kinetically evaluated using a pseudo first order model, and a high adsorption rate was observed.

Keywords

Adsorption; Ranitidine; Kinetic; Thermodynamic; 3D porous $NiFe_2O_4$.

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Future of Software Testing Using Multi-Dimensional Approach

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Abstract

In project of IT, software is exceptionally complex, rapidly developed by highly skilled people across the world through teamwork and must run in many ecosystems and on many devices, continuously. In the earlier period, software might be released a couple of times per year, but now, new releases may go out once each minute, seamlessly using automation of testing. Software remains inevitable in fast growth of technologies in various fields like education, drug, media, security, agriculture, robotics, gaming, aviation, national defense etc. In the New Age, software testing is a multi-dimensional approach, and a quality/test engineer always evaluates the validation, evaluation, speed of delivery full coverage of Functional, Performance, Security, Usability, etc. This paper has covered advanced multi-dimensional testing techniques and challenges in software testing arena. The benefits of automation are varied. The time saved is a clear advantage when executing tests automatically rather than testing them manually. Another is that test automation can lead to more exhaustive testing. Because with automation, nothing stops testers from executing the same test several times with more various test data and maybe even test different environments. However, the main benefit of multi-dimensional test automation is that confidence in the system and its quality are increased when more comprehensive tests are performed.

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ARKos: Authentication Framework for Android's Apps Permissions Abuse

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Abstract

Android is the most widely used mobile operating system today. As the world is growing, dependency on data is increasing. Hence, people are storing more and more sensitive information on their mobile devices; security has become more important than ever. Market is filled with ever-evolving viruses and malicious third-party applications intended to exploit the current Android security scenario. The proposed system focuses on the possible security issues with Android devices and its countermeasures. It also involves a market survey of security exploiting applications and real-world examples of past attacks. The aim is to provide users with an enhanced, secured and customized Android ROM.

Index Terms

Android Operating System, App permissions, App manifest, Customized ROM

Nomenclature: GPS Global Positioning System, SMS Short Message Service, API Application Programming Interface.

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Phytochemical analysis and Characterization of Leguminosae plant Family in Mahasamund Region

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Abstract

In the present study, I have selected one medicinal plant species belonging to the family of Leguminosae or Fabaceae and the subfamily Mimosoideae are widely spread in the tropics, mainly in Asia and America. From November to March become flowering and fruiting on this plant's family. In this region total of 88 plant species or varieties are present. These plant barks are to be used for astringent in dysentery, dermatitis, and eye inflammation. The leaves have been reported to possess astringent, emollient, abortifacient, and antidiabetic properties. Many natural components are present in our nature. They are present among many classes are having there like protein, lipid, amino acids, steroids, and flavonoids, etc. In this study, I have prepared various plant solvent extractions for phytochemical analysis and used some techniques for compounds characterization using Chromatography techniques. This species is used to treat ailments such as inflammatory conditions, diabetes convulsions, and intestinal disorders like indigestion, anti-dysentery, and anti-diarrheal. It is used for antifungal anti-viral, antibacterial, and also anti-inflammatory as a folk medicine in the country of the Philippines. It is also used to treat diabetes, intestinal disorders like diarrhea, dysentery, and even peptic ulcer and is also recommended as an anticonvulsant. The medicinal uses of this plant can be attributed to the presence of active substances like alkaloids, steroids, quinine, saponins, tannins, terpenoids, and xanthoproteins. This species has physically effective health-promoting, disease-preventing, and life-prolonging properties which have been described, investigated, and verified by modern researchers. It has also been having the application in the commercialization of active ingredients of biological and herbal medicinal products.

Keywords

Leguminosae plant species, Phytochemicals, and Chromatography.

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Medicinal Plants Used for Various Health Disorders by the Tribals of GariyabandDistrict Chhattisgarh

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Abstract

Medicinal Plants have been used by tribals and local people for cure of various diseases due to their rich capacity to treat specific disorders. They are remarkable diverse group of plants and usually used as traditional medicine by rural and tribal people. Man has been utilizing plants as medicinal purpose since long ago. Because of significant importance and for commercial value the sustainable utility and there conservation is necessary.

During the present investigation some areas of Gariyaband district in Chhattisgarh were selected for medicinal studies of herbal plants. These areas are also marked for rich biodiversity. For the above process 40 tribals were selected and through random interview data were collected. Medicinal plants their local name, botanical name, family name, plant parts which have the medicinal properties and their crude preparation method used for certain health disorders recorded in their local language. Gariyaband tribals had a great similarity regarding the use of plants as a source of medicines for life style diseases like diabetes, arthritis, hypertension, respiratory problem, digestive problem, CNS disorder, skin diseases etc.

In current study information about 32 plant species were recorded from tribals of the village bamhani, baruka, kosmi, bhaismunda, Panduka, etc. Some examples of the plant families were found like Fabaceae, Apocynaceae, Sapotaceae, Poaceae, Myrtaceae, Labiatae,Rutaceae, Malvaceae, Anacardiaceaeetc in which the dominant family is fabaceae.

Keywords

Medicinal plants, Health disorders, Local tribals, Gariyaband district.

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The Optical Properties of Lead Halide Perovskites Solar Cells of CH3NH3PbBr3 & CH3NH3PbI3

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Abstract

The optical phenomenon and its behavior of CH3NH3PbX3 (X = Br, I) characterized under the perovskite solar cell (PSCs). That type of crystals is having lowest-energy excitons are typical 3D Wannier-type excitons. We are finding in this work CH3NH3PbBr3 to have a larger bandgap and a more tightly bound nature than those in CH3NH3PbI3 due to replacement of halide excitations. They have a very large range of structural and optical phenomenon that can be tuned. PbI_3 as an example of LHPSCs, we are looking out the role of the organic positive ion in defining the structural and optical properties of LHPSCs. Even however excitons be a feature of in the metal halide layers and the organic materials frameworks cannot be easily separated, they must be viewed as a single unit in order to fully comprehend the optical phenomenon of LHPSCs. We discovered on that work explain of optical biased and irregular in the organic lattice.

Figure 1. Shown the comparison relation between the Wannier-Mott and Frenkel excitons. (a) Wannier-Mott excitons and (b) Frenkel excitons.

Keywords

Optical phenomenon; Lead halide perovskite Solar Cell (LHPSCs).

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Pharmacological Activity Determination of Asteraceae Weed via Phytochemical Screening

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Abstract

Weeds of family Asteraceae is well known and found commonly growing in different areas. Asteraceae weed is prevalent in nature and easily grows on well-drained soil or in full sun. It affects the growth of other agricultural crops due to its spreading nature by utilizing available space and nutrition. Unwanted weeds, on the other hand, are getting a lot of attention these days as they have certain unique qualities that allow them to thrive under abiotic stress situations. Plants are a rich source of phytoconstituents, which offer limitless possibilities for the discovery of novel therapeutic candidates. Therapeutic medications derived from natural materials are now widely recognised all over the world. The preliminary phytochemical analysis of asteraceae weed for the presence of several secondary metabolites was performed using a solvent extraction approach in this study. Phenols, flavonoids, alkaloids, steroids, saponins, glycosides, and other secondary metabolites have been found in asteraceae weed. Antioxidation, anti-cancerous, anti-microbial, cardiovascular, and anti-aging are only a few of the biological functions of secondary metabolites. Thus, studies of phytochemical and bioactive potential would open up new avenues for natural product research that would be both cost-effective and safe for humans.

Keywords

Asteraceae; Natural Products; Secondary Metabolites; Phytoconstituents; Bioactives.

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The Electrical Characteristics of Perovskite Solar Cells (PSCs) Using Intensity and Temperature Based on Photoluminescence (PL)

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Abstract

One of the most promising candidates for next-generation photovoltaics is hybrid organic-inorganic perovskite solar cells (HOIPPSCs). Furthering their performance, particularly efficiency, durability, and reproducibility, necessitates a thorough understanding of recombination losses during fabrication and within the device itself. We present a contactless, imaging-based procedure for spatially resolving electronic properties of PSCs such as implied open-circuit voltage (iV_{oc}) and its temperature coefficient, ideality factor (n_{id}), and activation energy of recombination (E_A) using illumination intensity and temperature-dependent photoluminescence in this paper. iV_{oc} illumination intensity dependence allows for the extraction of n_{id}, while its temperature dependence allows for the extraction of the temperature coefficient and E_A. This imaging method is then used to investigate changes in electronic parameters on fully and partially fabricated devices.

Keywords

Activation energy, Ideality factor, Implied open-circuit voltage (iV_{oc}), Perovskite solar cells, Photoluminescence imaging.

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Improvement in the Scalability of Blockchain based E-Voting System

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Abstract

Transparency, immutability, traceability, scalability, security is the requirement of the distributed system. These specifications are fulfilled by blockchain technology, due to the linking of the blocks by the hash value, no one can alter the information in the blockchain. While creating a new block hash value is compared with the existing hash values for uniqueness. This hash value is generated using the SHA algorithm and each transaction is approved by the nodes present in the blockchain called miners. Depending on the algorithm used for mining different mechanisms are used for the verification of the block. As the number of blocks in the chain increases the time required to verify the transaction also increases and hence the issue of scalability. The scalability of the blockchain depends on the network, algorithm used for the validation of transactions, and the platform used for the implementation of blockchain. Improvement in scalability makes the blockchain applicable to large-scale applications. Lightning network protocol can be used to improve the scalability, some researchers suggested increasing the block size for the improvement in the blockchain, side chain mechanism also be used for the improvement in the scalability. In this paper, we proposed the optimization of side-chain generation using a multiobjective genetic algorithm. In the proposed method it is observed that the transaction delay will be reduced by 28% compared to the other state-of-the-art methods. Due to this advantage, the proposed model can be used for a wide variety of applications.

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The Ethno- Botanical Studies of Wild Edible and Medicinal Plants Used by Tribals in BijapurDistrict

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Abstract

The tribal people of Bijapur still depend on the wild edible plants and wild medicinal plants to cure their disease and disorders in Bijapur forest region. Amongst four tribal communities Gond, Madiya, Muriya and Dorla community resides in Bijapur district, East Baster (C.G) Central India. The ethno – botanical studies of wild edible and medicinal plants of this region were done. The studies were performed by collecting and identifying the wild edible medicinal plants and common wild edible plants used by tribals. Local tribal experts were consulted for this study. Total of 22 edible plants belonging to 13 families were recorded in this study area. The highest number of ediblespeciesbelongedto Fabacea(3spp), Leguminosae(2spp), Amaranthaceae(2spp), dioscoreaceae (2spp), Nyctabginaceae (1spp), Lycoperdaceae(2spp), Myrtaceae(2spp) ,Moraceae(1spp), Sapotaceae(1spp) Ebenaceae(1spp), Rhamnaceae(2spp),Euphorbiaceae(2spp) , Poaceae(1 spp).The plant parts which were maximum utilized as edible parts were leaves ,shoot ,root(20 spp.) tuber(2 spp). These plant parts are commonly used as vegetables, fruits, spices and chutney. During survey it was found that local tribes people believed that diseases like - Corona, cancer, Diabetes, gynecological disorder, Jaundice, malaria, piles, skin diseases, wound infection, snakebite etc. can be treated with wild plants and they use these plants for the treatment. Reports of ethnomedicinal studies of wild edible plants of the tribals of Bijapur are very rare. So far not much detailed work on ethnobotanical studies of wild edible plants of Bijapur District is available. This study focuses on ethno- botanical studies of wild plants used as food and medicine. There is utmost need for conservation and documentation of these traditional knowledge for the benefit of mankind.

Keywords

Edible and Medicinal plants used by Tribals in bijapur, District east baster (C.G).

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The Quality of Vision (QoVn) and Quality of Life (QoL) After Vision Correction in Telangana State

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Abstract

India has been a leader in Community Eye Care Initiatives. Vision plays an important role at every stage of life. Vision is defined as all processes of the visual system and visual functions together. The act of seeing involves light passing through the refractive components (cornea and lens) of the eye and impinging on the retina. In the retina, the light gets converted into chemical activity and reaches the brain. The brain elucidates the information by using other activities such as learning or recollecting memories to notify a person.

If the refractive components (cornea and lens) function properly and the distance between the cornea and retina (axial length) is proper then a clear image if formed. This state is called emmetropia. If there is any abnormality in the refractive component or axial length then a clear image is not formed. This state is called ametropia. Ametropia in simpler terms is called uncorrected refractive error. Uncorrected refractive error is one of the leading causes of preventable blindness globally, it is estimated that approximately 1.3 billion people live with some form of distance or near vision impairment. According to World Health Organization 153 million were affected by uncorrected distance refractive error, 8 million are blind and 145 million have significant distance visual impairment.

Keywords

Kantivelugu, Refractive Errors, Blindness.

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Design and Deployment of IoHT Based Tele-Healthcare System for Feasibility and Performance Analysis

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Abstract

With the rapid development of the Internet of Things (IoT), it comes up with the sub-branch Internet of Healthcare Things or the Internet of Medical Things. With the help of portable healthcare sensors and wearable devices now ambulances can be converted into critical diagnostics units on the wheels. Monitoring the home care patient is not just part of an IoT application where doctors can remotely monitor the patient's situation by the means of sensors. It requires a complete system may be called telemedicine where multiple components will play a similar priority role to monitor the patient status using sensors, let the doctor connect the patient, data analytics calculate the progression, AI engine will detect the emergency and act upon. The proposed system is to design and develop centralized remote patient health monitoring and systematic analytics sharing with multiple levels of user with privacy protection. This will allow different authorities to take advantage of patient-generated records. The research will conclude with the Design and Deployment of a Tele-Healthcare System so that Patient Data will be easily accessible to any referred Doctors. This will be tested by the device that uses Electromagnetic Pulses to detect the disease of the patient.

Keywords

Internet of Things (IoT), Artificial Intelligence (AI), Tele-Healthcare System, Data Mining, Real Time health monitoring System.

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Novel Approach towards Designing of Virtual Reality Based Indian Cultural Dance Training Suit with Haptic Feedback

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Abstract

Physical activity-based training like dance always needs personal attention and assistance of trainer. In today's world where online training is in highest demand becomes difficult for dance trainer to conduct training in right approach. It also become difficult for trainer to monitor multiple students at the same time. Virtual reality is playing major role in solving such issues where different virtual communication tools are helping developers to visualize real-world effect. Proposed system is an approach and methodology for motion capture, comparison and assessment combined with virtual reality visualization and natural user interaction designed for learning of Indian cultural dances. The methodology includes different methods applied over the three stages of the learning process capturing of the dance motions, playback of the training material in virtual reality and comparison and assessment of the trainee's movements in real-time. The training process itself can be execute in several different modes with increasing difficulty. The proposed wearable technology will allow trainer to create and present virtual 3D clone of dance movements, which can be view in 3D space. This suit will have a haptic feedback for error correct input to the given posture. Primary goal to preserve Indian cultural and folk dance in digital format, which are vanishing with the time.

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Application of Quantum Dots in Biological Domain

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Abstract

Quantum dots (QDs) are an elite class of nanoparticles, whose exceptional optoelectronics and photophysical properties may have tremendous utilization in biomedical application. The most fundamental reason behind their appropriateness is effective and multiple exciton generation, which eventually exponentially enhances their luminescence nature in terms of brightness as well as consumption of fewer amounts of QDs as compared to the traditional drug/dye molecules used in these domains. Therefore, in this review paper, at first, we briefly discuss about synthesis of QDs, with special reference to semiconductor QDs, as synthesis process has the maximum impact upon the effectiveness of utility of these molecules in their respective targeted applicative fields. Secondly, applications of QDs in biomedical sector is discussed thoroughly as the importance of these dots can be easily understood by focusing on their main applications, *viz*, drug carrier for tumor cell and tumor detection, cancer cell diagnosis, gene therapy etc., which also includes the utility of Carbon dots in biological domain as they are found to be equally effective as semiconductor QDs. Conclusively, from the present study we can easily justify the mammoth utility of these metamaterials, i.e., QDs, in every application of biomedicine where fluorescence nature of the material is a matter of primary concern with minimum cytotoxic effect.

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Predicting Air Quality Index using Machine Learning

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Abstract

Air pollution is a mixture of solid particles and gases in air. Predicting air quality is necessary step to be taken by government as it is becoming the major concern among the health of human beings. Air quality index measure the quality of the air. Various air pollutants causing air pollution are carbon dioxide, nitrogen dioxide, carbon monoxide etc. that are released from burning of natural gas, coal and wood, industries, factories, vehicles etc. Air pollution can cause severe disease like lung cancer, brain disease and even lead to death. Upcoming years it is very dangerous for all living organisms. So, by using machine learning we forecast the air quality of India's major cities to predict the air quality index of a given area. Air quality index of India is a standard measure used to indicate the pollutant (Sulphur dioxide, nitrogen dioxide etc.) levels over a period. We developed a model to predict the air quality index based on historical data of previous years given in the verified dataset and predicting over a particular upcoming year using different machine learning algorithms such random forest, SVM and logistic regression as to produce best accuracy and output. And finally random forest algorithm produced better prediction when compared to other algorithms ie., 98.9% accuracy.

Keywords

Machine learning model, Air Quality Index (AQI), Air quality monitoring, Random Forest, SVM, Logistic regression.

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Image Caption Generator Using Artificial Intelligence

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Abstract

Automatically describing the content of an image is a fundamental problem in artificial intelligence that connects computer vision and natural language processing. In this paper, we present a generative model based on a deep recurrent architecture that combines recent advances in computer vision and machine translation and that can be used to generate natural sentences describing an image. To enable detailed description, it requires the detection and recognition of objects, people, relationships, and associated attributes. To perform image captioning, heavy models are present which require lot of resources. To get an optimized solution, we are going to use pre-existing models like Resnet50 to perform the complex task of feature recognition and a special RNN which is LSTM to generate output efficiently. The model is trained to maximize the likelihood of the target description sentence given the training image. Evaluated with the Flickr8k dataset, the proposed system shows impressive performance, and outperforms state-of-the-art methods using various evaluation metrics.

Keywords

RNN, LSTM, Resnet50, Natural Language Processing, Artificial Intelligence.

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A Study of Challenges in Applying Artificial Intelligence in Agriculture

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Abstract

Agriculture is one of the oldest social activities performed by humans. It provides many crucial things like raw materials, foods, employment, etc, and, plays a very important role in a country's economy. The contribution of agriculture to the world economy is approx 6.4 %. Due to the increasing population, it is the need of the hour that the agriculture sector should increase the production of resources to match with the actual demand. The methods used by the farmers are traditional and not enough to fulfill future demands. To match future demand, agriculture needs to adopt some new innovative ways. Artificial intelligence (AI) is one of the emerging technologies and can prove to be a revolutionary step in agriculture. AI provides effective measures to change agriculture into smart agriculture. There are some major challenges in applying artificial intelligence in the field of agriculture. In this paper, the authors study various challenges in the different areas in the field of agriculture where artificial intelligence can be applied.

Keywords

Agriculture, Artificial Intelligence, Smart Agriculture, Agriculture Intelligence.

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An M/M/c/N Queueing System Analysis with Balking, Reneging, and Single-Phase Induction Vacations

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Abstract

We're looking at an M/M/c/N queueing system with synchronous server vacations, balking, and non - delivery risk. We should always see that the fairly constant probability vector is reflected by the partitioned matrix method matrix multiplication of two matrices. It is discussed how to estimate the inverses of the two matrices. The elements of the inverses of the two matrices are then used to estimate the steady-state probabilities. The conditional stationary distribution of queue length and waiting time is also estimated.

Keywords

Queueing system; Partition matrix; Steady-state probabilities.

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An Environmental Study of Parasites and Food Supply

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Abstract

FAO and WHO are advising the government to promote action plans and monitoring methods, as well as strategies, to eradicate parasites of zoonotic food poisoning with the help of other agencies. Regulations and standards are two important strategies of international organizations to promote access to the global market for parasite-free foods. In the past, the risk of human parasite infection due to the adaptation of parasites to specific definitive hosts, selected intermediate hosts, and special environmental conditions has been thought to be limited to specific geographic areas. These barriers are gradually being lifted. First the development of overseas travel as a major industry, then the rapid transportation of refrigerated foods that began in the second half of the 21th century.

Food parasitology is a new field. Although its beginnings coincided with the beginnings of microscopy over 250 years ago, some of its methods are not as standardized as those of food bacteriology. Reasons for the under developed state of this science are the inability to easily culture most parasites and equivalent in the case of encapsulated forms in plant or animal tissues. It is not possible to carry out experiments in seed design working with natural patterns. Parasitology in general is often ranked of a discipline between microbiology and zoology. In addition, human pathogenic parasites may only be considered in the context of tropical medicine, although there is increasing evidence of their epidemic in temperate and Arctic climates.

Keywords

Environment, parasites, food supply.

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Assessing the Non-Timber Forest Products (NTFPs) in tribal-dominated area of district Anuppur, Madhya Pradesh

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Abstract

The Anuppur district, a part of the Achankamaar Biosphere Reserve and a tribal domibated area, listed as a scheduled area in Schedule VI. The area beuing a part of the protected area harbors rich flora and fauna. The district is mostly inhabited by the Gond, Baiga, Kol tribes. Since time immemorial these tribal hamlets are known to harness the ecosystem services/forest resources in form of non-timber forest products (NTFPs) for food, fodder, medicine etc. However very few studies have been carried out pertaining to the documentation of the associated plant species. A survey was conducted in 15 randomly selected villages. In the NTFPs survey; having 50% are Ethnomedicinal properties, 20% are having wild edible fruits, 10 % are having commercial properties, 10% are animal originated products, 3% are having edible mushrooms, 4% are having spices and condiment's, and 3% are having dyes. This field analysis represents the various types of NTFPs potential that present in AnuppurDistrict.The present work is an attempt to assess the NTFPs of the district Anuppur which is a conventional resource of livelihood for rural tribal communities and in the present context these NTFPs are the livelihood of the rural-tribal inhabitants for sustain their lives.

Keywords

Survey of NTFPs, NTFPs, District Anuppur, Livelihood, Medicinal plants.

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Towards the Modernization of Educational Data Science

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Abstract

In this transformation era that's proceeding towards cloud computing, data science, big data analysis, and data modernization, the education sector is in dire need of taking a long stride. Many enterprises, like logistics, banking, transport, retail, etc., have started implementing data modernization in their industries. But struggling with emerging AI and innovative technologies and a lack of tech-savvy resource people makes the modernization and hybridization of educational organisations a little challenging. Data science in the educational process can be used for the academic and overall development of a child and to work on their progress, achievement, and success. Through stable, scalable, and flexible databases that require little maintenance, modernising educational data will help to increase productivity. It will also enrich the teaching-learning process through data discovery, advanced analytics, and prediction capabilities. Using the various analysis tools, educators can recognise a learner's learning capability; challenges faced by them, and assess their behavioural response while keeping the data related to the learner's demographics, physical and mental health, and socio-economic conditions in consideration. The modernization of the data can be initiated by migrating or consolidating the data from the mainframe system platform to the central cloud data platform, further processing it according to the infrastructure, transforming it into operational data, and then providing the facility to optimize, visualize, analyse, administer and generate reports, and most importantly, keeping the data private and secured.The modernization of educational data science will not only empower educationalists to visualise the complications occurring in the teaching-learning process and eradicate them by proper exploration and analysis, but will also keep social-emotional learning in perception.

Keyword

Education, Modernization, Data Science, Digital Transformation, Data Analysis.

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Fixed Point Theorems in Matrix Normed Spaces

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Abstract

In this paper, we prove the trigintic functional equation in matrix normed spaces through the fixed point method and also prove the Hyers-Ulam stability of trigintic functional equation.

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Synthesis and Characterization of the Performance of OPSCs Using Lead-Methylammonium Halide

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Abstract

The photoelectric performance of perovskite $CH_3NH_3PbI_{2-x}$ doped with Cl_x layers produced on TiO_2 based using the spin-coating process is the basis for perovskite solar cells. XRD is used to calculate the unit cell's perovskite properties. The irregularity and porosity of the developing layer's morphology are visible. The purpose of this study is to investigate the performance of a created perovskite layer over TiO2 based and to do spectral analysis on it. As a result, the analytic analyses of this substance have a bandgap of 1.60 eV, indicating the order of perfect absorption coefficient and bandgap in the 400 nm thin layer region. Our study is focused on the idea of saving money while increasing efficiency. The current research could be useful in the development of solar materials and thin layers.

Keywords

Perovskite Solar Cells (PSCs), Methylammonium, Halide Spin-coating, thin layer.

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Machine Learning Based Photovoltaics (PV) MIPPT Power Prediction with Effect of Response Time and Starting Point of Duty Cycle for Microgrid

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Abstract

The Maximum Power Point Tracking (MPPT) concept is an important topic in the control and optimization of the power obtained from the Photovoltaic system (PV).The Perturb and Observe (PO) method is used for maximum power point tracking (MPPT) of a solar panel. For the development of Simulink model of a PV array, a Microgrid is to be connected via a Inverter, PO method is applied to adjust the duty cycle of the DC-DC converter which is present in MPPT.

In this paper, the system is proposed where the temperature and isolation of PV array remains constant. The MPPT power is predicted with effect of response time, the starting point of Duty Cycle is varying. Then the effect of Voltage and Current in MPPT & Microgrid will be observed. i.e. the change required in duty cycle with respect to temperature, isolation and have been critically observed. The observations shows that MPPT algorithms work erratically due to insufficient delay between two consecutive feedbacks and improper starting point of duty cycle. Later it will collect the simulate data sets acquired such as temperature, isolation and duty cycle. The comparative analysis between the different optimally devised models trained and tested using AI or Machine Learning methods like ANN, GA, BA etc.

Keywords

MPPT; Microgrid; Duty Cycle; Machine Learning.

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Toxicity Evaluation of Quantum Dots: A Review

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Abstract

Quantum Dots (QDs), being known for their tremendous optoelectronic properties due to the exponential enhancement of these atom like metamaterials than the bulk material in the domain of excitonic emission, are expected to have the dominance in the field of biomedical applications *viz*, targeted drug delivery, bio-imaging and bio-tracers. However, due to various inherent factors within these tiny dots like generation of surface dangling bonds, these dots may counter serious threats towards higher organisms while utilizing them in various biomedical applications, if the reasons behind such cytotoxicity are not adressedpropertly. Therefore, it is indispensable to understand the logic behind their cytotoxic effect so that these drawbacks can be modified, hence QDs can be utilized in biologcal applications. Keeping in view the imporatance of these factors, in this review a short introduction about the QDs, their primary synthesis methods (top down and bottom up), applications and finaly evaluation of the cytotoxicity of QDs are incorporated. Conclusively, the factors which are the barriers towards the application of QDs in biomedical domain as well as their root causes are thoroughly investigated and found that if these causes can be diminished, QDs can be easily integrated in various appliance of biomedical sector.

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Identification, Synthesis and Structural Elucidation of Impurities Observed in Forced Degradation Study of Ranolazine API

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Abstract

Impurities are the unwanted substance that present in API and finished products has no therapeutic properties even they may have some adverse and toxic effects too. Hence for the safety of patients the potential unknown impurities must be identified and quantify by the specific methods. During forced degradation study of ranolazine API, two major unknown impurities observed in oxidative degradation through chromatographic purity test on HPLC. With help of LC-MS the molecular weight of impurities found. Precise synthesis method developed for the synthesis of these unknown impurities. C18 column with mobile phase ammonia and acetic acid in water and acetonitrile used for chromatographic purity test with gradient elution. As these impurities formed majorly in oxidative stress condition of API. Based on molecular weight of the impurities it is propose that one impurity is an oxide of the parent molecule and the second one is bis- oxide of the parent Molecule. With the help of HPLC chromatogram, MS spectra and NMR data the structure of impurities elucidated.

Keywords

Impurities, force degradation, structural elucidation.

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Ultrasonic Study of Some Binary Liquid Mixtures of ethyl acetate with 1 – Alkanols at 303.15 K

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Abstract

Experimental values of ultrasonic velocity (u), density (ñ) and viscosity (ç) for the binary mixtures of ethyl acetate with 1-alkanols have been measured at 303.15 K over the entire mole fraction range. Using these data, excess molar volume (), excess free volume () and excess available volume () have been calculated. These parameters were used to study the nature and extent of intermolecular interaction between components molecules present in the binary mixtures. Excess values of molar volume, free volume and available volume were plotted against the mole fraction of ethyl acetate over the whole composition range. From the properties of these excess parameters the nature and strength of the interactions in these binary systems are discussed.

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Thermal Properties of Materials and Enhancing the Control of Building Energy Systems Using Optimization Techniques

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Abstract

In the present scenario, energy loss plays a very important role not only for human beings but also in building structures. The natural environmental reaction also causes energy losses. The global environmental problems, using of different chemicals & their reactions, stratospheric ozone depletion, and the greenhouse effect is such problems, whose threat to mankind and nature has become increasing awareness during the last years. Many types of materials are used for building insulation purposes. These different types of insulation materials have different thermal properties and mechanical properties like density, thermal conductivity, fire resistance, and strength. This mechanical and thermal property varies with temperature.

The overall structure energy use consumes of India's total periodic primary energy consumption. HVAC (heating, ventilation, and air-exertion) systems are the major source of energy consumption in structures and are designed to give inhabitants a safe and comfortable terrain. Although energy consumption in structures can be bettered by retrofitting being structures in terms of the structure envelope and HVAC design, it involves huge labor costs and is economically not a doable result whereas, perfecting control algorithms to operate HVAC systems efficiently is a cost-effective result. Structures are major stakeholders for power requests and the adding cargo demand and rapid-fire penetration of distributed energy coffers into the being grid induces further misgivings in maintaining the force-demand balance.

The main work is to focus on the building property of materials and try to control the heat transfer or energy transfer of various parameters of different materials using optimization techniques and enhancing the control of the energy system for long-term performance. Understand the mode of heat transfer from a different zone, Analyze the value of thermal conductivity of different materials also analyze the mechanical property of materials, analyze the building interior zone, analyze the perimeter zone behavior and control the building heat transfer systems.

Keywords

Building insulation materials, Energy transfer mode, Mechanical properties, and Optimization techniques.

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Water Management Problems and Challenges in Chhattisgarh

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Abstract

The authors of this research examine the state of water in Chhattisgarh, as well as new difficulties and management challenges. The authors suggest that water demand will skyrocket in the coming decades as a result of population expansion, particularly in metropolitan areas, urban population concentration in a few cities, growing income levels, and rapid industrial growth. While groundwater degradation, surface water pollution, and the depletion of current surface reservoirs would continue to reduce water supplies, water scarcity problems would become more intense and widespread. Conflicts are anticipated to increase not only between sectors, but also within sectors, as a result of scarcity.

There are numerous obstacles to developing a sustainable, equitable, and efficient management of India's water resources. First, the lack of proper scientific data on water quantity and quality, demand for water in various sectors, and the nature, scope, and causes of water problems are important roadblocks to designing long-term water management strategies. Another set of difficulties arises as a result of technological advancements. Water technology advancements aiming at developing technically possible, commercially viable, environmentally and ecologically sound, and socially acceptable water management solutions are not taking place.

Second, existing water sector institutions are technically oriented, sectoral, and centralised, with the responsibility of managing supplies. They take piecemeal methods to solving sectoral issues and are woefully lacking in the ability to change social institutions to promote effective water usage and pollution management. Due to a lack of organizational coordination, the agencies are unable to respond to the conflicting requirements and interests of many stakeholders. They also lack the institutional capacity to assure equitable and efficient water allocation and use across sectors, as well as to settle conflicts.

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Multi-Objective Integer Linear Programming and Their Cases

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Abstract

In this article paper we will discuss about development technique and some cases can be applied Multi-objective Linear programming approach to more than three variables they also use to approaches Integer Programming in different fields of Operation Research. fundamental idea of definition in number programming fields just as use in Binary whole number programming ideas in this area.

Keywords

Multi-Objective Integer Linear programming, Optimization Technique, Binary Integer Programming.

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Metaphor Generation Process in Banjara Language

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Abstract

The metaphor processing interns of comparison with literal sentences has been the main focus from various fields includes linguistics, psychology and cognitive science. This study aims to investigate the processing of literal sentences and metaphors (novel & conventional) in Banjara language. Cognitive functions like vocabulary and RT were used. The results indicate there are different mechanisms are involved to generate simple and metaphor sentences in Banjara language. Though convectional metaphors are more easier to generate than novel metaphors, both the metaphors can be processed through the continuation of a single mechanism like conceptual mapping which will help novel metaphors through analogy and convectional metaphors through categorization are understood in conceptual mapping mechanism. Though both novel and conventional metaphor generation are linked to attentional resources, the novel metaphor generation is more complex in nature compared to conventional metaphors because conventional metaphors need just working memory in the brain, which is already stored as a mental lexicon; they are fixed and frozen metaphors. So whoever has a good working memory/lexicon, they may be better at conventional metaphor generation. Whereas novel metaphors are more creative in nature, and you can see them a lot in poetry and literary terms. Novel metaphors are more imaginative/poetic metaphors in nature; that is why the novel metaphor generation process is more complex than conventional metaphor generation. In this paper, 45 native speakers of Banjara participants are involved; they have used a metaphor generation task that assesses novel and conventional metaphor generation for the Banjara language.

Keywords

Metaphor generation, Conventional and Novel Metaphors, Banjara language, Reaction Time, Vocabulary, Familiarity, Interpretability.

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IL2ATL: Design of A High Efficiency Load Balancing Model Using Augmented Deep Incremental Transfer Learning

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Abstract

Designingload balancing models for cloud deployments is a multidomain task, which involves task pattern prediction, capability analysis of virtual machines, deadline estimation, priority control, etc. A wide variety of task scheduling models are designed by researchers, and each of these models performs the mentioned tasks in one order or another for scheduling. Most of these models design a set of rules, and schedule tasks based on them, with minimal run time reconfiguration. This is an inherent lacuna which limits their real time scheduling capabilities. In order to improve scheduling capabilities during load balancing, this text proposes an augmented deep incremental transfer learning model. The model initially uses a fusion of Genetic Algorithm (GA) & particle swarm optimization (PSO) for deadline aware task scheduling. The hybrid GA PSO model is analyzed for every batch of scheduled tasks, and hyperparameter augmentation is performed using VGGNet19 convolutional neural network (CNN) model. These parameters are given to an incremental learning layer based on gated recurrent unit (GRU) for fine tuning and feedback learning. Finally, a Generative Adversarial Network (GAN) based autoencoder (AE) model is used for transfer learning, which assists in improving scheduling efficiency via usage of pre-trained weights from standard scheduling models. The proposed load balancer was tested on Google Cloud Jobs & IBM Telecom Scheduling datasets for performance evaluation. This performance was compared w.r.t. standard models in terms of precision of scheduling, recall, deadline hit ratio, computational complexity, mean task waiting time and scheduling delay. It was observed that the proposed model achieved 9% better precision, 8% better recall, 2% better deadline hit ratio, moderate level of computational complexity, 3% lower mean task waiting time and 18% reduction in scheduling delay when compared with standard models. This efficiency improvement is found to be consistent across different datasets, and different cloud architectures, thereby making the proposed IL2ATL model applicable for a wide variety of scenarios.

Keywords

Scheduling, balancing, CNN, GAN, GRU, AE, VGGNet19.

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Assessment of Parameters of Water Quality of Municipal Corporation of RajimRegion Chhattisgarh

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Abstract

Water provided by municipal cooperation is used for drinking and day to day use for citizens. Water quality testing is an important part of environmental monitoring and health of public. When water quality is poor, it affects not only aquatic life but the surrounding ecosystem as well as living beings. deterioration in the water quality may lead to various diseases. water quality parameters can be physical, chemical or biological. Physical properties of water quality include temperature and turbidity. Chemical characteristics involve parameters such as pH and dissolved oxygen. Biological indicators of water quality include algae and phytoplankton. These parameters are relevant for testing all types of water. The specific contaminants leading to pollution in water include a wide spectrum of chemicals, pathogens and physical changes. Several water quality parameters should normally be sampled and tested to ascertain water quality, and the data recorded. These include pH, dissolved oxygen (DO), biological oxygen demand (BOD), temperature, conductivity, turbidity, and discharge or flow measurements.

Keywords

Temperature, BOD, COD etc.

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Investigation of Optical Properties of Cerium Activated Strontium Alumino Silicate Phosphor

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Abstract

Present article reports the synthesis and optical studies of Cerium activated Strontium alumino silicate phosphor synthesized via conventional Solid State Reaction Method (SSR) and optical characterization were done through Photoluminescence and Thermoluminescence studies. Phase identification of synthesized phosphors were done through X-ray powder diffraction tool. Photoluminescence studies reveals that prepared phosphors show very high color purity as compared to commercial BAM: Eu^{2+} phosphor implies that they may act as a suitable candidate for blue phosphor and mercury free lamp. Thermoluminescence studies were also done in detail.

Keywords

Photoluminescence, Color purity, Thermoluminescence.

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Probability Theory

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Abstract

Probability theory, a branch of mathematics concerned with the analysis of random phenomena. The outcome of a random event cannot be determined before it occurs, but it may be any one of several possible outcomes. The actual outcome is considered to be determined by chances.Probability theory is the mathematical study of phenomena characterized by randomness or uncertainty. More precisely, probability is used for modelling situations when the result of an experiment, realized under the same circumstances, produces different results (typically throwing a dice or a coin).Probability is of course at the heart of modern financial and actuarial mathematics and much of your future studies in these areas will necessarily rely on probability theory.

The word probability has several meanings in ordinary conversation. Two of these are particularly important for the development and applications of the mathematical theory of probability. One is the interpretation of probabilities as relative frequencies, for which simple games involving coins, cards, dice, and roulette wheels provide examples. The distinctive feature of games of chance is that the outcome of a given trial cannot be predicted with certainty, although the collective results of a large number of trials display some regularity. Probability theory is a branch of mathematics that evolved from the investigation of social, behavioral, and physical phenomena that are influenced by randomness and uncertainty. Probabilistic thinking plays an important role in most fields of scientific research. This role is central in disciplines engaged in large-scale data collection and interpretation. A probabilistic model formulates relationships among the observables – relationships that are not supposed to hold exactly for each observation but still give a description of the fundamental tendencies governing their behavior. As we compare probability to daily life, we go through this kind of probability everyday whether it is weather forecast or dice rolling or in cards game or in coin tossing. So in every point of daily life, we come across the probability or the predictions, in this way Probability Theory comes applicable in daily life and this is also a part of applied mathematics.

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A Comparison on Scalar Field Dark Energy Models: Accelerated Expansion of the Universe

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Abstract

Cosmological observations suggest that our Universe is currently accelerating its expansion. The component of our Universe that causes this acceleration is known as 'dark energy'. The most common and widely used model for acceleration of the Universe is the 'cosmological constant model' with an equation of state w=-1. This model has some theoretical problems, and there are observational inconsistencies between some independent observations as well. On the other hand, observations do not rule out variation in the equation of state. These facts motivate cosmologies to study other dark energy models.

A potential alternate for the above model is the scalar field models of dark energy, e.g., 'tachyon dark energy' and the 'quintessence dark energy' model. We revisit the constraints on these models using background measurements. We obtain stringent constraints on the model parameters by using a new data set of Baryon Acoustic Oscillations, Supernova Type Ia and direct measurements of Hubble parameter. We further extended our study and analysed structure formation in the Universe. To compare our theoretical findings with observation, we use clustering measurement in the form of redshift space distortion. We find that although dark energy can be considered homogeneous at sub-Hubble scales, it becomes significant at the Hubble and super-Hubble scales w.r.t matter clustering. The tension between Planck CMB and clustering measurement is reduced when the equation of state parameter w is larger than "1, and dark energy is allowed to get perturbed.

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Preeclempsia in the Rural Populations of Chhattisgarh - a Longitudinal Retrospective Study

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Abstract

Hypertension is the most common medical problem encountered during pregnancy. Hypertensive disorders during pregnancy are classified into 4 categories, pre-eclampsia, Gestational hypertension, Chronic hypertension and pre-eclampsia superimposed on chronic hypertension. Pre-eclampsia and/or gestational hypertension stands out as a major cause of maternal and perinatal mortality and morbidity which makes it a major cause of concern. Pre-eclampsia (PE) is a pregnancy specific, multisystem syndrome characterized by reduced organ perfusion. The common patho-physiological like inadequate placentation exist from early stages of the pregnancy, however hypertension and proteinuria tend to become become apparent in the second half of pregnancy and are present in 2%–8% of all pregnancies overall.It develops usually after 20 weeks of gestation with symptoms of hypertension, proteinuria, Sudden weight gain etc.,

Our longitudinal retrospective study aimed at assessing the prevalance of pre eclempsia in the rural populations of Chhattisgarh. The study included 305 subjects from the year of 2014 to 2021 of which 12.54% had Pre-eclampsia. We observed the highest occurences (81%) of preeclempsia within the age group 19-23 compared to the other groups above 24 years. We attribute the highest occurences in the lower age group to the trend of early marraiges and child bearing in these populations.

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Lie Groups and Their Classification

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Abstract

Lie groups is an intersection of two fundamental fields of mathematics: algebra and geometry. Lie groups is a first of all the group and secondly it is a smooth manifold which is a specific kind of geometric objects. The circle and the sphere are example of smooth manifolds. A circle has a continuous group of symmetries. You can rotate the circle an arbitrarily small amount and it looks the same. Finally, we can say that A Lie group is a group of symmetries where the symmetries are continuous.

Keywords

History of lie group, Definition of Lie group, Classification of Lie group, Importance of Lie groups.

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Some Common Fixed-Point Theorems in Complete Metric Spaces

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Abstract

In [2], Binayak S. Choudhury has proved that if (X, d) is a complete metric space, then every weak C-contraction on X has a unique fixed point. The main result of this paper is a generalization of this result in complete metric spaces. An example is given to show that our results are proper generalizations of the existing ones.

AMS Subject Classification

47H10, 47H09

Keywords

Common fixed point, Contractive mapping.

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Combining Vedic &Traditional Mathematic Practices for Enhancing Computational Speed in Day-to-Day Scenarios

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Abstract

Vedic Mathematics provides a wide variety of *Sutras* for performing general purpose arithmetic calculations. These *Sutras* are based on simplifying existing calculation steps, which assists in high-speed Mathematics, thereby improving its efficiency over traditional steps. But application of these *Sutras* requires knowledge about their working, and their usage is complicated in day-to-day scenarios. For instance, *Yaavadunam*can easily estimate squares for numbers of any length, as long as they are close to a base of 10, but for other numbers traditional methods are preferred. Due to this lacuna, effective usage of Vedic and traditional Mathematical practices is limited. In order to improve the efficiency with which both these methods are applied to day-to-day Mathematics, this text proposes a novel model, which can estimate the methods to be used for a particular arithmetic calculation. The proposed model uses a pre-trained decision engine, which can efficiently identify required *Sutra* for a given computation, and then recommend whether to use the Vedic method or traditional one for solving it. Due to which, the model is capable of selecting between Vedic and traditional methods with over 95% efficiency, which assists in improving speed of day-to-day Mathematical operations. Furthermore, the model was tested on a large data set of tasks, and it was observed that computational delay for performing these tasks was reduced by over 20% (on average) when compared with application of either Vedic or traditional models. There by making the model useful for a wide variety of day-to-day arithmetic calculations.

Keywords

Vedic, *Sutras*, Mathematics, traditional, speed, complexity, performance

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An Overview on Breast Cancer and it's common causes

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Abstract

In recent years many new diseases have arose, of this cancer remains on top. The cancer is the most lethal illness and of all the types of cancer, breast cancer continues to be the most life threatening and a major cause of cancer deaths among women across the world. According to World Health Organization (WHO), in 2020 "there were 2.3 million women diagnosed with breast cancer and 6,85,000 deaths globally" .

All cancer is named as per the body part in which the tumor had originated, therefore the unpredictable growth and proliferation of cells in the breast tissue is named as breast cancer. There are various kinds of cells and tissues in the organ but most breast cancers occur in the cells of ducts and cells of the lobules. Thus the two most common types of breast cancer are namely Infiltrating lobular carcinoma which accounts for 10%-15% of the cases and Infiltrating ductal carcinoma responsible for about 80%. Currently there are various reasons which is accountable to cause breast cancer but the most common one's are hormonal imbalance. Fluctuations in the estrogen level proves to be one of the major cause for the cells of the organ to become cancerous. This imbalance is caused due to the boundless usage of oral contraceptives and hormone replacement therapy.

Today, when everything is modernised and people are aware we still have a deadly disease which can't be avoided. Nevertheless, by early detection it can treated. Women should do monthly breast self exam(BSE) for the tumor to be detected early. As the quote goes – "If detected early, it can be treated effectively".

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Analysis of Customer Behavior, Emotions and Interest UsingAutomatic Survey & Data Analytics

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Abstract

Most of the populations are not exposing themselves in sunlight worldwide due to this covid pandemic. For this percentage of vitamin D deficiency is increased. In the process of calcium absorption there is a major role of vitamin D, and it is very important for our bone health. The only major source of vitamin d is sunlight. About 50 to 90% of vitamin d is absorbed by people through sunlight and rest we can get from our meals. So, people need to expose themselves to sunlight to maintain the amount of vitamin D. Dark skin people have less capacity to absorb sunlight as compared to light skin people. In this pandemic period people are restricted to go outside and because of this people are not exposing themselves in sunlight. It affects newly born babies because they don't have any other source of vitamin d except sunlight. It also affects adults and old generation peoples' life, because all people need to expose themselves in sunlight for 20 minutes in a day with 40% of skin exposure, and for older people they need to expose himself in sunlight because of aging they don't have capacity to absorb vitamin D from sunlight so they need to take supplements. For dark skin people they need to expose three to five times more as compared to light skin people. Vitamin d deficiency may lead fractures in older people, rickets in children and it can also lead to autoimmune disease such as type-1 diabetes, rheumatoid arthritis etc. solution is, people need to expose themselves in sunlight and for old people, they need to take right amount of supplements.

Keywords

Vitamin D, Vitamin d deficiency, Covid, Calcium.

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Electrocatalytic Performance of Polymer Nanocomposite

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Abstract

A novel, simple, sensitive, and highly selective sensor based on the synergistic effect of polyaniline (PANI) and multiwalled carbon nanotubes (MWCNTs) has been developed. The morphology and electroanalytical performance of the fabricated sensor were characterized by scanning electron microscopy, square-wave voltammetry, and cyclic voltammetry. The influence of various parameters such as pH, effect of scan rate, and loading of PANI-MWCNTs hybrid film onto glassy carbon electrode (GCE) on electroanalytical performance of the developed sensor was investigated.

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Forecasting Diabetes Prediction via Machine Learning

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Abstract

Diabetes is one of the critical diseases and lot of people are suffering from this disease. Age, obesity, lack of exercise, hereditary diabetes, living style, bad diet, high blood pressure, etc. can cause Diabetes Mellitus. Big Data Analytics plays an significant role in healthcare industries. Healthcare industries have large volume databases. Using big data analytics one can study huge datasets and find hidden information, hidden patterns to discover knowledge from the data and predict outcomes accordingly. In existing method, the classification and prediction accuracy is not so high. In this paper, we have proposed a diabetes prediction model for better classification of diabetes which includes few external factors responsible for diabetes along with regular factors like Glucose, BMI, Age, Insulin, etc. Classification accuracy is boosted with new dataset compared to existing dataset. Further with imposed a pipeline model for diabetes prediction intended towards improving the accuracy of classification. A technique called, Predictive Analysis, incorporates a variety of machine learning algorithms, data mining techniques and statistical methods that uses current and past data to find knowledge and predict future events. By applying predictive analysis on healthcare data, significant decisions can be taken and predictions can be made. Predictive analytics can be done using machine learning and regression technique. Predictive analytics aims at diagnosing the disease with best possible accuracy, enhancing patient care, optimizing resources along with improving clinical outcomes. In this study, various machine learning algorithms are applied on the dataset and the classification has been done using various algorithms of which Logistic Regression gives highest accuracy of 96%.

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