International Conference on Contemporary Researches in Engineering, Science, Management & Arts

ICRESMA 2024

22 – 24 February 2024

Created & Powered By

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National Foundation for Entrepreneurship Development (NFED)
Coimbatore, Tamil Nadu, India

KVJ. Prof. Dr. R. Ganesan

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Greatness of Any Research Work is Only through its Wider Applicability

- KVJ. Prof. Dr. R. Ganesan

Conference Proceedings

Acknowledgements

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Sd/-

Ms. Ramya Kandavel
Conference Director, ICCRESMA 2024
&
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Conference Blurb

The reality of conducting any research is to impart wisdom and growth in a society. The research contributions in the past have witnessed only interim growth and societal development. This situation continues due to unidisciplinary focus, wherein lack of integration of research across various disciplines remains untapped in many areas. The current global scenario is ever-changing and demanding, wherein the sustenance and livelihood will be more challenging in the ensuing years. Furthermore, the knowledge sharing through congregation of research across inter-disciplines and multi-disciplines for upbringing the overall socio-economic development and progression is quite indispensable.

Today's globalization has nurtured advancements in science & technology, entrepreneurial innovations, ergonomic practices, etc. due to IT interventions and digitalization. This has triggered the new gamut in the research arena, and it needs to address the upcoming trends in all sectors towards bringing in a holistic development. Hence, there is a need to holistically gauge the overall requirements of mankind in terms of achieving socio-economic sustenance and global stability.

Keeping these above-mentioned aspects in view, the international conference intends to focus on the paradigms of research innovations in the disciplines of sciences, engineering, technology, entrepreneurship, management, arts, humanities, and other inter-disciplinary contributions to have wider knowledge integration. Also, to envisage the future challenges through a radical approach for the betterment of mankind.

Hence, the conference has been officially coined by the Conference Chair & Chief Patron as 'International Conference on Contemporary Researches in Engineering, Science, Management & Arts' – ICCRESMA '2024 to garner the inter-disciplinary and multi-disciplinary research contributions across the nation and globe. This international conference has been created and powered by Centre for Research & Training (CRT) – A Growth Action Unit under the renowned National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu and officially scheduled on 22-24 February 2024.

Sd/-

KVJ. Prof. Dr. R. Ganesan
Conference Chair, ICCRESMA '2024
&
Chairman / Presidium Chair, NFED

Conference Objectives

To highlight the holistic research innovations in accordance with the current trends and future challenges for bringing in the socio-technological transformation

To congregate the research trends across various domains for upbringing socio-economic development and sustenance

To act as a global platform for knowledge sharing of various research contributions towards societal upliftment and global development

To encourage and promulgate the research acumen of young students, budding researchers, scholars, academicians, entrepreneurs, industrialists, and practitioners

NFED is a unique organization which is predominantly into promulgating entrepreneurship cult across the nation. NFED is driving and thriving on socialistic notion with righteous academicians, corporate citizens and entrepreneurs in its fold, which is established as virtual organization, since 2003 and registered as a Trust on 7th November 2013 towards accomplishing its mission 'In Pursuance to Create Socio-economic Sustenance through Entrepreneurship Development'. It is headquartered at Coimbatore District, Tamil Nadu and pertinent information regarding activities is floated in its aforementioned official websites.

NFED primarily aims in creating enterprising communities at large in Schools, Colleges and Varsities through its training and development activities, faculty development programmes on research and entrepreneurship development, awareness, workshops, refereed conferences, seminars, etc. pertaining to Management Development, Research Emancipation, Technology Innovation and Entrepreneurship Development. It frequently engages in research and development activities by publishing research articles, book chapters and edited books on holistic research, which congregates the disciplines like, engineering, technology, sciences, management, arts and humanities and women development. It also recognizes the talents of teachers, academicians, researchers, professionals, entrepreneurs (including social entrepreneurs), practitioners, freelancers, etc. throughout the globe through its National Awards since 2010.

NFED encourages the entrepreneurial spirit of youths and facilitates them with opportunity guidance. Also, serves under a glocal perspective to bring in prosperity by and large to foster entrepreneurial progression amongst all communities in general and women in particular, across the nation. It has associated and collaborated with academia including, schools, colleges, varsities, etc. and also with national and international organizations. NFED has instituted numerous programmes hitherto towards promulgating entrepreneurship development, career development, employability skills, research publications, women empowerment, etc. Thus, to promulgate entrepreneurship development and research & development, the presidium of NFED has constituted two apex units on 7th November 2015 namely NFED Business Facilitators Forum (NBFF) – A Strategic Action Unit under NFED and Centre for Research & Training (CRT) – A Growth Action Unit under NFED respectively.

Centre for Research & Training (CRT)

Centre for Research & Training (CRT) is a growth action unit under National Foundation for Entrepreneurship Development (NFED) initiated on 7th November 2015 with a goal to bring in quality research and promulgate enterprising faculties within the globe. CRT aims to bring in research and development climate through addressing mainstream aspects of research such as research structuring, research insights, publication process and publication strategies, thereby creating and nurturing research acumen within the aspirants across academia and industry. In addition to this, it also frequently engages in conducting Faculty Development Programmes (FDPs), Research Orientation Programmes (ROPs), Quality Publications (QPs) through infusing the importance of research and development. CRT has delivered more than 100 sessions and conducted numerous conferences, seminars, webinars, research workshops and faculty development programmes for understanding the new vistas in research and facilitating research career of academicians, scholars, practitioners, etc. at national and international levels.

NFED Business Facilitators Forum (NBFF)

NFED Business Facilitators Forum (NBFF) is a strategic action unit under National Foundation for Entrepreneurship Development (NFED) initiated on 7th November 2015 with a goal to congregate entrepreneurs to create an entrepreneurial cult across the globe and foster entrepreneurship development process. NBFF aims to bring in an entrepreneurial climate through encouraging youths and interested individuals to vent into entrepreneurial activities by providing the platform for fulfilling their business aspirations. Furthermore, to act interfacing plank for enhancing their motivation and inclinations to become prosperous and potential entrepreneurs. In addition to this, it also insists on business growth through the concept of interdependence by creating channels and integrating entrepreneurial talents for collective existence, sustenance and survival. NBFF has delivered more than 100 sessions and conducted numerous national seminars & workshops, international and national webinars in entrepreneurship fundamentals & emerging trends, facilitating entrepreneurship development among teaching faculties and promulgating entrepreneurial acumen of students across the nation.

NFED Publications

NFED believes that greatness of any research work is only through its wider applicability. Our academic and research aim is not only to publish a quality-centric book with ISBN but also to provide a strong reference and splendid foundation for research emancipation towards holistic research thereby attaining integrated knowledge development and overall nation building. NFED's publications focuses on understanding of various challenges in the society, not only at the perspective level, but also in various realms of research that are conducted towards upbringing the socio-economic and socio-technological development, which strives to facilitate the future generations to compete with excellence in innovation. Also, it intends to congregate and upbring the innovative research and its new vistas in terms of science, engineering, applications, approaches, policy initiatives, enterprise development, technology innovation, case studies, strategies, systems, best practices, problems, factors, challenges etc. pertaining to research and development through genuine research findings for achieving overall development. NFED publications has completed 38 published works, which includes books, edited books, award compendiums, ready reckoners, and conference proceedings.

Technology-Information-Management-Entrepreneurship - Review (TIMER - A Refereed Journal of NFED)

Technology-Information-Management-Entrepreneurship - Review (TIMER) is an International Online Multidisciplinary Refereed Journal (Open Access) under the aegis of National Foundation for Entrepreneurship Development (NFED), Tamil Nadu, India with E-ISSN: 2584-1602. The key objective of TIMER is to publish new vistas in research domain and to promulgate scientific advancements & innovations in terms of info-engineering, info-technology, techno-innovation, techno-management, techno-sciences and techno-arts. It will function as a torch bearer to academia and industrial research to be at par with global advancements by envisaging into social, economical, environmental, and entrepreneurial avenues respectively. The journal intends to congregate the Diverse Disciplines of Engineering, Technology, Management, Entrepreneurship, Basic & Life Sciences, Medical & Paramedical Sciences, Social Sciences and Arts & Humanities through appropriate inventive cum innovative research and development activities on inter-disciplinary avenues, which is of prime importance for enhancing socio-economic sustenance, educational excellence, nation building and global restructuring with talent convergence. It welcomes original, empirical, experimental, conceptual, contextual, analytical papers / articles / manuscripts / cases using appropriate research structuring.

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Karma Veer Jyoti. Professor Dr. R. Ganesan earned his doctorate from the reputed IIT Delhi with a special focus on Entrepreneurship Development. He possesses more than 25 years of research experience in the field of entrepreneurship and management. He has served in different academia ranging from Deemed Varsities, Engineering Colleges, Arts & Science Colleges, B-Schools, and International Varsities. He has more than 85 research contributions to his credit, which are published in refereed and indexed journals, books, book chapters, monographs, and conferences. He is a global author in Women Entrepreneurship, whose research papers are listed in Google Scholar and indexed in ISI (AHCI & ESCI), MLA Citations, Scopus, ABDC, EBSCO, Cabells' Directory, etc. He has authored two books on women entrepreneurship development and insurance management, which have been published at Germany and published 28 edited books. He is serving as editorial member and reviewer for numerous journals and possesses more than 21 years of editorial experience. He has edited more than 885 research articles and chapters to his credit, which includes his editorial experience across refereed and indexed journals, conferences, and book chapters at national and international levels. He has organized and hosted 3 national conferences, 6 international conferences, 4 international seminars and conducted 48 faculty development programmes (FDPs) respectively. He has delivered more than 250 national and international sessions (including webinar sessions) on Research & Development (Research Insights, Research Structuring, Publication Strategies, Statistical Insights, Crafting Literature Review and Publication Prospects), Entrepreneurship Development, Innovation, Managerial Skills, Career Development, Self-Management, Design Thinking, Employability Skills, Digital Marketing, etc. and inaugurated many Entrepreneurship Development Cells (EDCs) across the nation. He is the Chief Mentor for certification programs on E-Entrepreneurship and Innovation & Creativity for Business and Soft Skill Courses (Personality Development and Leadership Quality & Development). He has a deep inclination towards bringing up social sensation across communities and has hosted & organized 35 national award ceremonies for recognizing national and global talents. Also, he has an exorbitant interest in Tamil Literature, wherein he has written and published Agakurals (Voice of Self) for civility and few Traditional Poetries for societal transformation. In commemorating his laudable academic, research and societal transformational services through upbringing entrepreneurship development he has been conferred with the prestigious title Karma Veer Jyoti (KVJ) by Indian Confederation of Non-

Governmental Organizations (iCONGO), New Delhi, India on 22nd March 2015. He is the recipient of PFLA Excellence Award for his 'Outstanding Service to Education and Entrepreneurs' community from People First Leadership Academy (PFLA), Bengaluru, Karnataka on 19th January 2019. He has been conferred with 'Order of Eminence' the highest honour for his global contribution to research, teaching, and training in Entrepreneurship Development by the Presidium of NFED in its 10th National Teachers' Day Awards on 5th September 2019 at Coimbatore, Tamil Nadu. He has been bestowed with the prestigious Pride of India Award by South Asian Institute for Advanced Research and Development (SAIARD), Kolkata, West Bengal on 16th October 2022. He has been conferred with the Prestigious MTC Global Distinguished Teacher Award in Entrepreneurship Development in the 9th World Edu Summit organized by Management Teachers Consortium (MTC) Global on 7th September 2019 at Bengaluru, Karnataka. He is the Founder Chairman & Presidium Chair of the renowned National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu. Also, he is the Founder & Chair of NFED Business Facilitators Forum (NBFF) – A Strategic Action Unit, Centre for Research & Training (CRT) – A Growth Action Unit and NFED Publications respectively under the ambit of NFED. He is the Chief Adviser of Cynaris Solutions Pvt. Ltd. (CSPL) and Director of Sithandwa Pvt. Ltd. (SPL) respectively at Bengaluru, Karnataka. He is the Founder & Chief Executive Officer of Technovate Educational & Consulting Services (TECS), Coimbatore, Tamil Nadu.

Conference Director & Patron

Mrs. Ramya Kandavel

Mrs. Ramya Kandavel earned her Master's in Statistics from University of Madras, Chennai and Master's in Applied Psychology from Bharathiar University, Coimbatore. She holds a Diploma in Transactional Analysis from South Asian Association of Transactional Analysts (SAATA). She is a Psychological Counsellor and a Master Practitioner in Neuro-Linguistic Programming. Her expertise as a counsellor includes Personal One-to-One Counselling, Psychotherapy, Stress Management and Dream Interpretation. She has published her research work in national and international journals, book chapters in edited books and presented papers in numerous research conferences. She commenced her professional career in the ITES Sector and possesses more than 19 years of administrative experience at various corporates and academic institutes. She joined as an active member in the renowned National Foundation for Entrepreneurship Development (NFED) and has facilitated its national events as Event Anchor, Programme Coordinator, Programme Director, Chief Coordinator and Conference Director. She has hosted and organized 6 international conferences, numerous faculty development programmes (FDPs) and webinars focusing on research & development, entrepreneurship development, digital marketing, etc. at national and international levels. She is the Executive Chairman & Director and Financial Trustee / Treasurer of the NFED Trust, Coimbatore, Tamil Nadu. Also, she is functioning as the Chief Coordinator and Member Secretary of NFED Business Facilitators Forum (NBFF), Centre for Research & Training (CRT) and NFED Publications. She oversees the entire administrative activities of NFED and promulgates its social sensational programmes across the nation and globe.

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Dr. A. Krishnarathi
Assistant Professor
Unity College of Teacher Education, Dimapur, Nagaland

22-24 February 2024

Keynote Speakers - Day I (22nd February 2024)

Dr. Patrick Osa. Oviasuyi
Professor
Department of Public Administration, Faculty of Management Sciences
Ambrose Alli University, Ekpoma, Nigeria

Mr. Nanda Kumar
Founder & Director
Kovaion Consulting, London, United Kingdom

Dr. Gurmeet Singh
Vice Principal and Associate Professor & Head
P.G. Department of Mathematics
GSSDGS Khalsa College, Patiala, Punjab, India

Ar. Kavita Kulkarni
Co-Founder / Partner & Principal Architect
M/s. Kulkarni Associates
Bengaluru, Karnataka, India

Keynote Speakers - Day II (23rd February 2024)

Prof. Dr. Jari Salo
Head of Marketing Unit
Department of Economics & Management
University of Helsinki, Helsinki, Finland

Dr. S. Anuzsiya
Senior Lecturer Gr.I in History
Department of Social Sciences, Faculty of Arts & Culture
South Eastern University of Sri Lanka, Oluvil, Sri Lanka

Prof. Dr. K. Vijaya
Principal
Government Arts & Science College, Alangudi
Pudukottai, Tamil Nadu, India

Prof. Dr. Farida Virani
Head - HR & Behavioural Sciences
MET Institute of Management
Mumbai, Maharashtra, India

Ms. D. Susmitha
Founder & Managing Director
Suntowa Technologies Pvt. Ltd. (STPL)
Chennai, Tamil Nadu, India

ICRESMA 2024

22-24 February 2024

Keynote Speakers - Day III (24th February 2024)

Dr. Baby Sam Saamuel
Examiner
New York City Department of Civil Administration Services, USA

Dr. Seetha Lakshmi
Associate Professor & Assistant Head
Asian Languages & Cultures (ALC - Tamil)
National Institute of Education (NIE)
Nanyang Technological University (NTU), Singapore

Dr. R. Rajeswari
Professor
Department of Electrical & Electronics Engineering
Government College of Technology (Autonomous)
Coimbatore, Tamil Nadu, India

Dr. Renu Yadav
Associate Professor
Department of Education
Central University of Haryana
Mahendergarh, Haryana, India

Dr. G. Subhalakshmi
Assistant Professor
School of Law, Pondicherry University
Puducherry, India

Mr. Owaiz Khan
Co-Founder, Sithandwa Pvt. Ltd. (SPL)
Bengaluru, Karnataka, India

Valediction Keynote Speakers - Day III (24th February 2024)

Ms. Theviga Rani Wemel
Co-Founder & Chief Operating Officer
LTT Global Communications Sdn Bhd
Kuala Lumpur, Malaysia

Dr. Luzaan Hamilton
Associate Professor
School of Management Studies
North-West University (Vanderbijlpark Campus), South Africa

Ms. Syama Menon
Faculty
Bayswater
Calgary, Alberta, Canada

Dr. T. Kumuthavalli
Assistant Professor & Head
Department of Lifelong Learning
Bharathidasan University (Khajamalai Campus)
Tiruchirappalli, Tamil Nadu, India

ICRESMA 2024

22-24 February 2024

Session Chairs

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Professor & Chair
Centre for Research & Training (CRT)
National Foundation for Entrepreneurship Development (NFED)
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Track 2 - Management, Entrepreneurship & Innovation (MEI)

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Presidency University, Bengaluru, Karnataka

Dr. D. Anitha Kumari
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School of Management Studies & Commerce
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Dr. N. Sarulatha
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DDGD Vaishnav College (Autonomous), Chennai, Tamil Nadu

Track 3 - Arts & Humanities (AHU)

Dr. Kiran Lata Dangwal
Associate Professor
Department of Education
University of Lucknow, Uttar Pradesh

Dr. Anuradha Sekhri
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Dr. P. B. Beulahbel Bency
Assistant Professor
Department of Education
Mother Teresa Women's University, Kodaikanal, Tamil Nadu

Dr. Sheeba Khalid
Assistant Professor - III
Amity Law School, Amity University Lucknow Campus
Lucknow, Uttar Pradesh

Conference Highlights

The Three-Day International Conference on Contemporary Researches in Engineering, Science, Management & Arts (ICCRESMA 2024) has completed numerous deliberations in terms of keynote address, valedictory keynote address, paper presentations and participations across the globe.

I intend to place the following conference highlights in the capacity as the Conference Chair & Chief Patron of ICCRESMA '2024 and Founder & Chairman, National Foundation for Entrepreneurship Development, Coimbatore, Tamil Nadu, India.

This three-day international conference has exhibited 19 Keynote Addresses delivered by Keynote Speakers from Nigeria, United Kingdom, Sri Lanka, Finland, United States of America, Singapore, Malaysia, South Africa, Canada and from various States of India namely Tamil Nadu, Karnataka, Punjab, Maharashtra, Haryana, and Puducherry. The keynote speakers of this conference included renowned academicians, entrepreneurs, and professionals across the globe. Another important highlight of the conference is it has given enormous importance to women academicians which includes, Conference Director, Conference Convener, Associate Conveners/Co-Conveners, Organizing Secretaries, Organizing Committee Members and Session Chairs, wherein women constitute the maximum numbers. Also, majority of the participation to ICCRESMA '2024 are women. This indicates that National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu, India has been empowering women at all spheres and regards them as the potential workforce for nation building and global socio-economic transformation.

There are three main tracks in this international conference namely Science, Engineering & Technology (SET), Management, Innovation & Entrepreneurship (MEI) and Arts & Humanities (AHU). The are 32 streams under these aforesaid tracks, which are indicated below:

1) Under SET Track there are 17 streams namely Physics, Chemistry, Mathematics, Botany, Zoology, Biotechnology, Pharmacology, Computer Science & Engineering, Information Technology, Computer Applications, Electrical & Electronics Engineering, Electronics & Communication Engineering, Mechanical Engineering, Agricultural Engineering, Civil Engineering, Geology, and Environmental Sciences, wherein it included 85 paper presentations.

2) Under MEI Track there are 8 streams namely General Management, Human Resource Management, Organizational Behaviour, Marketing, Entrepreneurship, Commerce, Economics and Systems, wherein it included 25 paper presentations.

3) Under Arts & Humanities there are 7 streams namely Sociology, Psychology, Criminology, History, Education, Literature, and Home Science, wherein it included 33 paper presentations.

There are 143 presentations which have been scheduled across 9 parallel tracks and 1 individual track, distributed amongst 19 paper presentation sessions, which are chaired and moderated by 18 session chairs from India. The session chairs are from Tamil Nadu, Andhra Pradesh, Karnataka, Punjab, Chandigarh, West Bengal, and Uttar Pradesh. The e-proceedings have covered 80 abstract submissions. A total of 121 online paper presentations have been completed covering 84.62 percent, which is one of the remarkable achievements and indomitable accomplishments of our three-day International Conference (ICCRESMA '2024). A total of 228 registered participants from 26 States and 1 Union Territory out of India's 28 States and 8 Union Territories constituting 75% and witnessing vast majority of India's representation across its length and breadth through the academic participation in this international conference.

The research presentations have provided all of us with adequate knowledge sharing and intellectual enlightenment. The keynotes by various national and international speakers have highlighted on Research Innovations & New Research Vistas, Importance of Interdisciplinary & Multidisciplinary Research, Globalization Perspectives, Socio-Cultural Transformation & Change Management, Holistic Restructuring, Technological Advancements, Power Systems & Energy Management Techniques, Mathematical Modelling & Applications, Gamification & Trends, Digital Marketing, Managing Work-Life Balance, Entrepreneurship Development, Self & Life Management Skills, Tamil Language Teaching & Practices, Women Empowerment, Educational Enrichment, Corporate Readiness & Employability, and Sustainable Development.

I am sure the scientific inventions, technological innovations, management process, artistic approaches, research insights and humanistic views discussed in this ICCRESMA 2024 have been truly intellectual and indispensable to the global community for sustenance and growth. This knowledge sharing platform paves the way for a holistic global restructuring and transformation in our research innovation endeavours. Also, ICCRESMA 2024 has reinvigorated all of us to enrich our research potential and its promulgation through righteous research contributions towards achieving overall socio-economic growth and sustenance.

My hearty congratulations to the Conference Director, Mrs. Ramya Kandavel for her indomitable efforts and meticulously conducting & successfully hosting this three-day ICCRESMA 2024.

My sincere thanks to Technical Head & Adviser, Mr. Jaswin Kumar N. R. for his impeccable support to this virtual conference to become a grand success.

My best wishes to all the keynote speakers, session chairs, conference convener, conference co-conveners, organizing secretaries, organizing committee members, publishing partner, paper authors & presenters and participants of this international conference.

Thank You.

Sd/-
KVJ. Prof. Dr. R. Ganesan
Conference Chair & Chief Patron, ICCRESMA '2024

ICCRESMA 2024

22-24 February 2024

Paper Presentation Awards

Track 1: Science, Engineering & Technology (SET)

TR1-ICCRESMA2024-SET-12

A Study on Efficiency Evaluation of State Transport Undertakings in India
Dr. Ritika Chopra, Dr. Punita Saxena, Ms. Mansha Gupta, Ms. Mansi Sahrawat, Ms. Shivani Chauhan & Ms. Vincy Singh

Track 2: Management, Entrepreneurship & Innovation (MEI)

TR2-ICCRESMA2024-MEI-15

A Study on Street Vendors of Kolkata
Ms. Neha Dasgupta

Track 3: Arts & Humanities (AHU)

TR3-ICCRESMA2024-AHU-03

A Comprehensive Assessment of Artistic Craftsmanship and Transformation of Mughal Peacock Throne
Ms. Shaistha Shabnum & Dr. Anish Sharmila

Conference Paper Abstracts

Vermifiltration of Rice Mill Effluent: An Effective Bioremediation Approach

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Abstract

Rice is one of the most important crops and staple food for more than 50% of the world's population. Therefore, the complete processing of rice is indispensable for mankind. In this context, the concept of vermifiltration gains importance. Vermifiltration technology is an extension of soil filtration, wherein the microbial degradation activity is facilitated by the presence of earthworms. Vermifiltration technology by earthworms is self-regulated, self-promoted, self-driven, self-improved, self-powered, self-enhanced, very low energy and less chemical requiring zero-waste technology, easy to operate, construct and maintain as compared to sewage treatment plants (STPs) which are proving to be an environmental burden due to heavy 'sludge' formation. For this reason, some physico-chemical parameters (pH, electrical conductivity, TSS, TDS, BOD, COD, chloride, fluoride, and phosphate), which are considered as pollution load indicators in wastewater need to be analyzed. Hence, the present study attempted to assess the efficacy of vermifiltration of Rice mill effluent collected from periphery of Sambalpur town. The reduction in pH, electrical conductivity, TSS, TDS, BOD, COD, chloride, fluoride, and phosphate was by 20.34%, 50.41%, 78.06%, 48.36%, 78.4%, 61.95%, 53.04%, 75.87% and 95.32% respectively by 30^{th} day. Moreover, the vermifiltered water was colourless and odourless. Furthermore, the study revealed that there was a significant reduction of various physico-chemical parameters on vermifiltration. Moreover, the removal of BOD, COD, TDS, etc. is also achieved by microbial and geological system in the absence of earthworms in the present study in a controlled system, but it is less efficient as compared to vermifiltration. Thus, from the study it has been concluded that vermifiltration technology (VFT) is a cost-effective process for rice mill effluent treatment.

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Nanophage Therapy: A New Hypothesis for Treating Infectious Diseases

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Abstract

On this earth, viruses are the most abundant organisms with submicron size and made up of single-stranded or double-stranded DNA or RNA enclosed by a protein capsid. Majority of viruses are known for infecting bacteria and more appropriately known as bacteriophages. Moreover, the bacteriophages are predominant in Staphylococcus aureus (S. aureus) and have been extensively studied. They were firstly used for the grouping of clinical S. aureus isolates and are major human and animal pathogen that causes both nosocomial and community-acquired infections. S. aureus are also responsible for a wide range of diseases causing mild skin infections to severe life-threatening infections, such as soft tissue infections, wound infections, endocarditis, osteomyelitis, sepsis or endocarditis, etc. Hence, to tackle the staphylococcal risk there is a pressing need to develop novel antibiotics for unmade medical urgency. Nowadays, bacteriophage therapy alone has failed to serve as stand-approaches for treating staphylococcal infections refractory to the action of commonly deployed antibiotics. Thus, the tactic of integrating nanoparticles with bacteriophage and antibiotics assembly processes offers wider opportunities for reaching specific biomedical goals. As a result of nanoparticle exposure bacterial cell wall disruption occurs, which help to increase the membrane permeability, and this will assist cell lysis by bacteriophage. These organisms represent abundant nanoparticulate organic colloids with reactive surfaces. In this study, the combined antibacterial activity of bacteriophage with nanoparticle at its subinhibitory concentration has been demonstrated using the standard double agar layer assay and turbidimetric microtiter assay.

A Study on the Quantification of Vehicular Emissions and its Effects on Ambient Air Quality

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Abstract

Air pollution is projected to be a significant environmental issue in urban environment, wherein the major cause of air pollution is vehicular congestion and traffic. The rapidly increasing number of motor vehicles emitting pollutants significantly altering the quality of air pollution. Also, factors like traffic volume and vehicle speed add to the non-exhaust emission sources of pollution. It is to be noted that motor vehicles and traffic emissions are directly related to the fuel consumption caused by an incomplete combustion process in the engine system. Many researchers have considered Air Quality Indices (AQI) as a simple and understandable way to measure air quality concerning its effects on human health. The present study aimed to assess the quantification of gaseous and particulate emissions of different vehicles (2-wheelers, 3- wheelers, LMV's and HMV's) in high traffic density areas such as Vadlapudi and Vedhurlanarava at Visakhapatnam, Andhra Pradesh. The sampling has been carried out timely (from morning 7:00 a.m. to evening 6:00 p.m.) for every 30-minute interval in the day based on Peak and Non-peak traffic hours for a period of one month. The results have shown different concentration levels according to their background workplaces, geographical area, wind speed, and wind direction. Moreover, obsolete vehicles caused a substantial impact on local atmospheric pollution. Also, growth of transportation activities is closely linked with increased air pollution levels in many urban areas. In addition to CO_2 emissions from road vehicles, large amounts of TSPM and RPM, oxides of nitrogen (NOx), and carbon monoxide (CO). Among the study areas, the contribution of vehicular emissions is majorly by 2 and 3-wheelers (Autorickshaws) followed by LMV and HMV.

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Investigations on Power Enhancement and Emission Reduction in Four Stroke Diesel Engines – A Conceptual Review

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Abstract

Today, internal combustion engines (IC engines) are the backbone of automotive space, wherein they find their applications mainly for transportation apart from being used for power generation. In recent years, IC engines have gained prominence in power development. Power development incurs a challenge within itself as only a portion of the heat developed is converted to power and remaining is lost, which is often referred to as 'Power Loss'. Moreover, the frictional power loss is accountable and although the development of IC Engines is over a century; reduction of various losses remains a challenge to the designers and automotive experts. The reason being, power realized from IC engines suffers from inherent parasitic power losses, resulting from the piston cylinder mechanism, valve actuation and accessory power take-off drives. Hene, the applications ideally need a highly reliable and robust source of mechanical energy from automobiles, locomotives, aerospace to electrical power generators to define better amenities for future needs. There are several mitigating measures to reduce frictional power losses that are being tried out by manufacturers and designers in the automotive engineering arena, which are the main cause for engine power parasitic loss. The use of present technology being put to achieve power enhancement and friction reduction challenges is a motivation for this investigation work and to develop feasible measures, which could minimize the parasitic work losses. Many projects that have been proposed are based on the methods, which are tried out by various researchers and their approaches to reduce frictional losses and enhancement techniques for power are not fully achieved. The paper provides a conceptual overview for the development journey into various diesel engine power boosting / minimizing that exhibits the effect on Frictional Power Loss / Frictional Mean Effective Power (FMEP) consumption techniques and aiming for a reduction in exhaust gas emissions. This research work is proposed to model thedesign modifications with suitable experimentation in a dynamic manner in a laboratory assisted under standard test conditions. Since the power cylinder unit (PCU) is the main cause for frictional loss, the present study intends to discuss the different design techniques used in the past as well as to explore future vistas. The outcome of this conceptual research is to develop an optimized cylinder liner design combined with amatching choice of engine lubricating oil grades that needs to be tested under laboratory conditions for reducing power losses in automotives.

A Study on Lightweight Machine Learning Platform for Diagnosis of Brain Diseases using Computed Tomography Scans

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Abstract

Advancements in imaging technology and processing algorithms have enabled more prompt and accurate diagnostics of brain diseases. Moreover, maintaining a healthy brain is of utmost importance to improve the health and longevity of humans. The present study has developed a lightweight machine learning platform for diagnosis of brain images using computed tomography scans. The image dataset has been obtained from the Kaggle repository consisting of 2200 images with 11 classes, namely Normal, Alzheimer Mild Demented, Alzheimer Very Mild Demented, Alzheimer Moderate Demented, Alzheimer Non-Demented, Neurocytoma, Outros, Schwannoma, Glioma, Meningioma, and Pituitary Tumor. The images are standardized through standard scalar. In addition to that, machine learning has been carried out using Support Vector Machine (SVM) with linear kernel. The validation achieved accuracy, precision, recall, support, and execution time of 0.94, 0.95, 0.95, 220, 923(sec) respectively. The above results have shown that there is a possibility to achieve accurate diagnosis using the SVM algorithm. Being lightweight, it can be readily deployed on a mobile phone of a medical practitioner for diagnosis of a given case to an accuracy of 0.94 and suggests further reference for advanced medical treatment.

Polymer and its Future Perspectives: A Vista

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Abstract

Polymers are being explored for use in sensors and electronic devices due to their flexibility and compatibility with biological tissues. They are being researched for energy storage applications, including the development of high-performance batteries and supercapacitors. The future of polymers in advanced engineering holds exciting prospects, driven by ongoing research and technological advancements. Moreover, futurepolymers may be designed not only for their functionality, but also for their eco-friendly disposal, helping to address the challenges of plastic waste. Smart polymers are also known as stimuli-responsive polymers, which can undergo reversible changes in their properties in response to external stimuli such as temperature, pH, or light. The advances in additive manufacturing (3D printing) techniques will continue to influence polymer engineering. Future developments might include the use of multi-material and multi-process 3D printing for creating complex, customized, and functional components withimproved efficiency. Electroactive polymers (EAPs) that respond to electrical stimuli could find applications in soft robotics, artificial muscles, and flexible electronics. These materials may play a key role in the development of advanced prosthetics, human-machine interfaces, and wearable technologies. This could lead to the development of wearable sensors, flexible electronics, and bio-integrated devices for healthcare and human-machine interfacing. Polymer-based materials may also contribute to advancements in energy conversion technologies, such as organic photovoltaics and thermoelectric devices. Drawing inspiration from natural materials, bioinspired polymers aim to replicate the properties of biological tissues and structures. This includes self-healing materials, anti-fouling surfaces, and polymers with enhanced mechanical properties inspired by nature. Integrating polymers with quantum dots or other nanoscale materials could lead to the development of advanced materials for applications in quantum computing, photonics, and optoelectronics. Polymers are designed to withstand extreme conditions, such as those encountered in space exploration, durablematerials for spacecraft, spacesuits, and equipment used in harsh environments. These futuristic perspectives highlight the potential for polymers to continue revolutionizing various fields, contributing tothe development of innovative technologies with enhanced performance, functionality, and sustainability.

Role of Cryptography in Blockchain Technology

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Abstract

Cryptography serves several critical functions within the context of blockchain technology, contributing to overall trust and reliability of the system. The role of cryptography in blockchain is fundamental to security and integrity of the decentralized and distributed ledger system. Moreover, blockchain uses cryptographic hash functions to create fixed-size, unique representations (hashes) of data. Once a block is added to blockchain, its hash is included in the subsequent block. Also, any change to the data in a block would require changing the hash, which is practically impossible due to the properties of cryptographic hash functions. Blockchain technology, as the underlying framework for decentralized and transparent digital transactions, relies heavily on cryptographic principles to ensure the security, privacy, and integrity of data. The use of cryptographic hashing functions to create unique and irreversible representations of data. Hash functions play a pivotal role in creating blocks, linking them in a chain, and providing a tamper-resistant mechanism for data integrity. Additionally, cryptographic hashing ensures that sensitive information, such as user identities and transaction details, remains secure and resistant to unauthorized alterations. Public-key cryptography forms another crucial component in blockchain systems. Through the use of public and private key pairs, participants can securely engage in transactions and communication without the need for a centralized authority. This facilitates the establishment of digital signatures, allowing for verification of the origin and authenticity of transactions. This paper explores the multifaceted role of cryptography in blockchain, highlighting its significance in establishing trust among participants and safeguarding sensitive information.

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A Novel Approach for Ordering Pentagonal Fuzzy Numbers using Pascal's Coefficients

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Abstract

Today, ranking of fuzzy numbers plays a crucial role in the decision-making process to arrange the alternatives in order of their preference. The concept of fuzzy number is important for quantifying ambiguous data to make well-informed decisions. The existing methods are majorly concerned with triangular and trapezoidal fuzzy numbers, which may not incorporate real-world problems with diverse degrees of parameters in the fuzzy modelling. Keeping this in view, this paper proposes a novel ranking technique for pentagonal fuzzy numbers (PFNs) based on the weighted grading, using the Pascal's triangle coefficients. This technique ranks simultaneously a given set of pentagonal fuzzy numbers. Also, it discriminates between symmetrical pentagonal fuzzy numbers and fuzzy numbers which describes the compensation of areas. The advantage of this proposed approach has been demonstrated through numerical examples and comparison with the existing techniques published in the literature by various researchers.

A Study on Efficiency Evaluation of State Transport Undertakings in India

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Professor*
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Ms. Mansha Gupta
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&
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&
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Abstract

The transportation sector plays a critical role in the economic development of a nation. Moreover, efficient state transport undertakings (STUs) are essential for providing affordable and reliable transportation services to the public. Also, evaluating the efficiency of STUs is crucial to identify areas for improvement and optimize resource allocation. Keeping this in view, this research paper aims to assess the efficiency of state transport undertakings in India using the Data Envelopment Analysis (DEA) technique. DEA is a non-parametric method widely used for measuring the relative efficiency of decision-making units (DMUs), such as STUs, by operating on available inputs. The present study comprises of a comprehensive dataset comprising financial, operational, and performance indicators of 30 STUs across different states in India is collected. The input variables like costs, staff, and fleet are included, while output variables consist of revenue generated and passenger-kilometers. The Charnes, Cooper, and Rhodes (CCR) model is then applied to determine the overall efficiency of each STU, considering multiple inputs and outputs simultaneously. The findings of this study provide insights into the efficiency levels of various STUs in India, highlighting the best-performing units and identifying units where improvements are needed. Additionally, the study explores the factors influencing efficiency variations among STUs, such as infrastructure availability, operational strategies, and government policies.

Load Pattern Forecasting with Recurrent Artificial Neural Network

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Abstract

Learning and estimation for long-term and mid-term load forecasting are hard tasks due to lack of training data and increase of accumulated errors in long period estimation. The artificial neural network (ANN) algorithm is used to forecast short-term load pattern and many ANN structures have been developed for this purpose and commercialized so far. The research studies have showed good performances and effectiveness of the proposed RANN. Also, the proposed RANN gives good performances on estimating sudden and nonlinear demand increase during heat waves. The paper proposes a mid-term load forecasting structure in order to overcome these problems by input data replacement for special days and a recurrent type of neural network application. Moreover, the present research describes about using recurrent artificial neural network (RANN) method mid-term daily peak load forecasting for electric power system.

Assessment of Distillery Stillage for Physiochemical Characterization and Spectrophotometric Parameters

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Abstract

The distillery stillage is a dark brown pungent smelling liquid waste obtained during fermentation process producing alcohol. This discarded liquid contains many organic and inorganic compounds, which may have a wide impact on the environment. In furtherance, on complete analysis (physiochemical and spectrophotometric) of the sample, it has been observed that the sample has low pH, High electrolytic conductivity, BOD (Biological Oxygen Demand), COD (Chemical Oxygen Demand), TDS (Total Dissolved Solids) and TSS (Total Suspended Solids). All these high parameters are raising the organic load on the water bodies where they are added and increases the acidity of the environment. The spectrophotometric studies revealed the absence of any grease or oil component in the sample. A graph was drawn for absorption of the UV rays and drawn with X and Y axis. The liquid chromatography technique has been carried out for assessment of refractory pollutants present in the sample and it revealed presence of many pesticide-like residues, but under the limit of quantification. After analysis, it has been concluded that the distillery stillage contains many pollutants and should be discarded to the environment only after proper treatment. Moreover, even some biological fauna can reduce the cost-effective aspects involved in the process.

Landslide Early Warning in Guwahati City: An Experimental Study using Multi Sensor System

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Abstract

Landslides pose a significant threat to human lives, infrastructure, and environment, necessitating effective monitoring and early warning system. The parameters which are important to assess the susceptibility of an area to landslides such as geological conditions (soil type and rock formation), topography (elevation and slope angle), weather pattern (rainfall and temperature) are taken in this experimental study. A significant change in the sensor values is observed as the time for landslip approaches. Furthermore, this sensor based instrumental system provides a low-cost alert system for the people residing in the hills of Guwahati. This paper presents a multi sensor landslide monitoring and early warning technique for the landslide prone areas in the city of Guwahati (Assam, India) to enhance the accuracy and reliability of landslide detection and prediction.

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Development of Low-Cost Planar Gripper for Adaptive Gripping with Two Opposed Fingers Using Force Sensors

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Abstract

A planar gripper, suitable for grasping and handling a wide variety of objects has been developed. The present design has two fingers, three links, and one actuator, but can be directly extended to more links while keeping the number of actuators unchanged. This end effector utilizes a smaller number of actuators than it has degrees of freedom, thus providing measurable savings in weight, size, complexity, and cost. It is capable of conforming to different shapes and sizes of object. A hand prototype has been developed employing 3D printing technology and an intrinsic actuation approach. The planar fingers which represent hand fingers are equipped with a pre-calibrated force sensor FSR for the online estimation of the grasp force. A simple mechanism to control fingers by a linear actuator contributes to satisfactory work ability. Hence, in the present study the researchers used FSR in series with variable resistors to adjust maximum output voltage variation with respect to maximum applied grip force to achieve acceptable input range with signal conditioning unit. A two-finger, three-joint configuration is a simple and effective way of achieving gripping since most objects can normally be efficiently gripped at four contact points. The aim of this study is to design more general gripping device, wherein the jaws are required to be capable of conforming to different shapes with minimum sacrifice in grasping effectiveness with benefits, which include lower power consumption, simpler control and higher reliability.

Screening of Novel Derivatives Against Cancer Targets: In-Silico Study

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Abstract

Mitogen-Activated Protein Kinases (MAPK) are integral to cellular signal transduction, which play a pivotal role in fundamental cellular functions. Through extensive in-silico investigations, including pharmacokinetic studies and molecular docking analyses, the compounds passed drug likeness screening, indicating their suitability as drug candidates. Homology modeling of the target protein yielded a high-quality 3D structural model, emphasizing its potential as a reliable molecular target. Molecular docking analysis revealed Derivative 2 with a superior binding score compared to the reference standard Idelalisib, suggesting a potentially more favorable interaction with the active pocket of the protein. The Derivatives 3 and Derivatives 4 exhibited similar binding patterns to Idelalisib. This study focuses on the pharmacological potential of Idelalisib and its derivatives as promising candidates for cancer therapy by targeting MAPK (UniProt ID Q5QN75). These findings provide valuable insights into the potential therapeutic utility of the compounds in inhibiting kinase activity and, consequently, their potential application in cancer treatment. Moreover, in-vitro and in-vivo studies are essential to validate efficacy, determine optimal dosage, assess safety profiles, and elucidate precise mechanisms of action. The comprehensive assessments undertaken in this study contribute to advancing our understanding and may pave the way for the development of novel cancer therapies.

Solving Fuzzy Assignment Problem with a Ranking Function based on the Mean of Horizontal Points on Reference Functions

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Abstract

The Fuzzy Assignment problem (FAP) is an alteration of classical assignment problem that involves assigning a set of resources to a set of tasks while accounting for uncertainty in data. The uncertainty in data is demonstrated through a membership function, which enables the representation of ambiguous and imprecise information numerically. Moreover, in the FAP resources are assigned to tasks using membership functions, which represent the degree of appropriateness or compatibility between resources and tasks. Keeping this in view this study adopts a new approach for solving fuzzy assignment problems with a ranking function based on the mean value of horizontal points on membership functions (reference functions). The horizontal points on left/right reference function divide them in the same ratio $m{:}n$. Hence, to use this technique, the membership functions need not be linear and normal. Thus, to illustrate the proposed method, intuitive and existing numerical examples are taken into account. Findings of the proposed approach may contribute to a deeper understanding of Fuzzy Assignment Problems and their applications in scenarios where uncertainty plays a crucial role. The proposed method by the researchers is a straightforward extension of the conventional approach, which is quite conventional for decision-makers to comprehend and apply to real-life problems.

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Identification of Naphthoxy and Phenoxy Amide Derivatives as PARP1 Inhibitors by Molecular Docking, Free Energy Calculation, Molecular Dynamics Studies and In-Vitro Studies

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Abstract

The naphthoxy and phenoxy amide derivatives play a significant role in understanding the inhibitory activities of compounds especially towards molecular docking. In this present investigation, the researchers have designed novel derivatives containing naphthoxy and phenoxy amide moiety (C1–C18), which are subjected to molecular docking, MM-GB/SA, *in-vitro*, and molecular dynamics simulation studies to ascertain their PARP1 inhibitory activity. All the compounds are subjected to molecular docking studies by Glide module and result of this study suggested that the derivatives C11 and C12 have asignificant G-score (-8.97 and -8.6 kcal/mol, respectively) compared to the standard drug olaparib (-11.48 kcal/mol). The designed derivatives are also subjected to PRIME MM- GB/SA module in order to ascertain their binding free energy. From the results of MM- GB/SA studies, the binding energy Gbind of the inhibitors C3 (-63.79 kcal/mol) and C4 (- 65.32 kcal/mol) was found to be the most significant score. Based on in-silico findings, 18 compounds are subjected to *in-vitro* anti-cancer activity against MCF-7 cell line. Among the tested compounds, compound C11 (60.2 μg/mL), compound C12 (65.40 μg/mL), and compound C4 (66.69 μg/mL) have showed significant activity against the tested cell line respectively. Based on docking score, glide energy, and MTT assay results, the compound C11 is more potent than other derivatives. Hence, the compound C11 is subjected to a molecular simulation study. In MD simulations and MM-GB/SA calculations, the tested compound C11 provided the best results, suggesting that this ligand can inhibit the targeted enzyme more effectively.

Smart Reading Assistance System for Visually Impaired People

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Abstract

Today, approximately 4 percent of the complete population within the globe are expected to be visually impaired. It is observed that they are still finding it tough to roll their day-to-day existence. Moreover, they continually require the assistance of another person in anything they do. For this reason, it is essential to take important degree with the rising technology to help them to stay the current global irrespective of their impairments without the assist of others. This may help the visually impaired people toread any printed text in vocal shape. The photo captured analyzes the usage of Optical Character Recognition (OCR) with PyTesseract for detection of the text information in text layout. The detected text is then converted into speech the usage of a text to Speech (TTS) synthesizer. Eventually, synthesized speech is produced via the headphone/audio system. In the cause of helping the blind human beings to study books the researchers have proposed a clever specifications device for people with visual disabilities, which could perform textual content detection thereby generating a voice output.

Interplay of TLRs and Dysbiosis in Breast Cancer

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Abstract

Breast cancer is the one of most common cancers in women with an estimated 2.3 million cases worldwide. It is influenced by diverse factors modulating the pathogenesis or progression of the disease. Toll-like receptors (TLRs) are one of the pattern-recognition receptors that have significant impact on the development of inflammatory and other immune reactions. Moreover, an aberrant TLR expression in breast cancer tissue is associated with shorter period of disease-free survival. TLR2 and TLR4 also reported to be associated with high risk of breast cancer. High TLR5 expression in breast cancer patients has been correlated with lymph node metastasis as well as cancer grade. *In-vitro* studies in breast cancer cell lines have further highlighted the importance of TLRs in disease progression. The micro-environment of cancer cells has a significant impact of TLR expression and cancer initiation or progression. Microbiome and microbial metabolites are triggers for activation of inflammation. Furthermore, TLRs bridge the communication between microbiota and immune system. Recent advancements in breast cancer research have revealed that the microorganisms residing in breast tissue originate from skin, gut, mammary gland, and breast milk during early stages of life. Sporadic reports hints towards the differential distribution of commensals in healthy and cancer breast tissue along with an aberrant TLR expression. Local changes in microbiome composition in tumours have been suggested to impact expression and activation of TLR. In the present study, TLR and microbiome interaction has been primarily investigated in gut. Elaborating the cause-and-effect relationship among these entities and disease may provide an important insight into disease aetiology.

Audio Signal Processing using Computational Tools

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Abstract

The transformative impact of computational tools on audio signal processing, focusing on versatile and open-source tool Octave are compatible with MATLAB. Octave's extensive functions enable tasks from fundamental signal analysis to advanced feature extraction and synthesis. Moreover, it systematically covers key aspects whereas starting with lading and visualizing audio data, progressing through spectral analysis, filtering, time-frequency representations, and feature extraction. The integration of computational tools streamlines analysis, fosters creative experimentation, and Octave is the central focus. The present research study unveils the potential and versatility of computational tools in shaping the modern landscape of audio signal processing.

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Length of Graves Sequence of Triangles in Some Finite Geometries

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Abstract

Graves Triad is a cyclic triad of triangles that each circumscribe the next, in both projective and Euclidean planes. Also, research was carried out on Graves Triad around 1975. In Graves Triad every pair of triangles are perspective with each other, which are referred to as perspective Graves triad. A non-singular matrix criterion for perspective Graves triad has already been provided by Guinand. The present study intended to find the analogous condition using symmetric matrix. Also, the researchers previously examined the length of cyclic sequences of triangles in our recent study, wherein each triangle in the sequence circumscribes next and every pair in the sequence forms a perspective pair from a shared center of perspectivity. It has been proved that in Projective Plane over a field p, if $\frac{2^k - (-1)^k}{3} = p$, then researchers have a Graves sequence of length *k*. However, primes like 7 and 13 cannot be expressed in this form. Therefore, this theorem is not applicable to *PG (2,7)* and *PG (2,13)* but the Graves sequence will terminate and be cyclic. The present research study specifically finds Graves sequence for these planes. Also, it is determined that the length of Graves sequence over *PG (2,7)* is 6 and *PG (2,13)* is 12.

Counting of Multi-Perspective Triangles in Finite Projective Planes

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Abstract

The research studies on triply perspective triangles in a projective plane over a field F has been carried out already. A projective plane over a finite field of order *q* is denoted as *PG (2, q).* In this plane, using homogeneous coordinates every point is expressed in terms of a 3-dimensional vector with respect to a reference frame. This frame consists of the reference triangle $(A) = A_1A_2A_3$ and the unit point $U = \sum_{i=1}^{3} A_i$. In furtherance, any non-degenerate triangle (B) can be expressed with respect to a reference frame by a 3×3 non-singular matrix (A). This matrix will take a certain form if the triangles (A) and (B) are perspective and multiperspective. This matrix can be in the form of $(B)_A = \begin{pmatrix} a_1 & p_2 & p_3 \\ p_1 & a_2 & p_3 \\ p_1 & p_2 & a_3 \end{pmatrix}$ or $(B)_A = \begin{pmatrix} a & h & g \\ h & b & f \\ g & f & c \end{pmatrix}$ with the centres of perspectivity (p_1, p_2, p_3) and $\left(h, \frac{fh}{g}, f \right)$ respectively.

Multi-perspectivity occurs, when (A) and (B) are perspective in different arrangement of their vertices. The present study focuses on counting the number of multi-perspective triangles with the reference triangle (A) in a projective geometry over $GF(3)$ and $GF(5)$. In $PG(2,3)$ the researchers have four triply perspective and four four-fold perspective triangles. In $PG(2,5)$ taking one of the vertices of triangle as (1,1,1), fifteen triply perspective triangles are found. Moreover, when three centres of perspectivity of these triply perspective pairs form a third triangle such that every pair is triply perspective, and this family is called a triad of triply perspective triangles. Thus, in $PG(2,5)$, out of fifteen triply perspective pairs the study has found only six family of triads and three four-fold perspective triangles.

Research Issues on Big Data Analytics and Tools

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Abstract

A huge repository of terabytes of data is generated each day from modern information systems and digital technologies such as Internet of Things and cloud computing. The analysis of these massive data requires a lot of effort at multiple levels to extract knowledge for decision making. Therefore, big data analysis gains utmost importance in the current area of research and development. The present study intends to explore the potential impact of big data challenges, open research issues and various tools associated with it. As a result, this research paper provides a platform to explore big data at numerous stages. Additionally, it opens a new horizon for many burgeoning researchers to develop solutions based on the challenges and many research issues.

Characterization, Impact of Compatibilizers and Surface Functionalization on the Nano-Filler

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Abstract

The automotive and packaging sectors have found the use for rubber-toughened polypropylene nanocomposites that exhibit favorable thermal characteristics and tensile strength. The detailed characterization of polypropylene and ethylene-vinyl acetate copolymer reinforced with graphene oxide (GO) and graphene oxide that has been silane-functionalized (f-GO). Two silanes, c-mercapto propyl trimethoxy silane (MPTMS) and c-glycidoxy propyl trimethoxy silane (GPTMS), were added to GO. Also, it determined how the compatibilizer systems affected the composites' characteristics. It is for the first time, a comparative analysis of structure and thermal behavior of GO and f-GO has been conducted in the present research. The reduced overall reflectance evidence for the effective interactions of silanes with GO has been provided by X-ray diffraction (XRD), Raman spectroscopy studies, and Fourier transformation infrared (ATR-FTIR). Thermo-gravimetric analysis (TGA) revealed that the f-GO has greater thermal stability than GO and more tensile strength and stiffness as per the mechanical analysis when compared with the other nanocomposites. According to TGA data, the thermal stability has significantly improved when compatibilizers and f-GO are included. According to DSC analysis, the degree of crystallinity with respect to melting and crystallization temperatures of polypropylene increased with the inclusion of nanoparticles. The domain size of EVA particles is significantly reduced by the addition of compatibilizers, as demonstrated by scanning electron microscopy.

Analysis of Morphometric Indices io Understand Active Crustal Deformation in Parts of Inner Lesser Himalaya, Central Kumaun, Uttarakhand, India using Geographical Information System

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Abstract

The intercontinental collision of Indian and Eurasian plates gave rise to the Himalaya Mountain range. Moreover, these plates are still convergent and one of the earth's most actively deforming zones. There are several tectonic blocks that contributed to structural architecture of the mountain range since it is spanned by numerous faults that run both transverse and parallel to the regional Himalayan strike. Hence, gaining knowledge of these distinct tectonic blocks' active tectonics and associated crustal deformation offers a chance to understand the active tectonic processes of developing orogens like the Himalayas in particular. Therefore, the present study is carried out in parts of a Tectonic Window and overriding allochthonous units of Baijnath and Berinag klippen in Kumaun Inner Lesser Himalayan to understand the pattern and extent of active tectonics. The study is based on qualitative and quantitative geomorphic approaches, including the calculation of geomorphic indices like Transverse Topography Symmetry Factor (T), Hypsometrical Integral (HI), Basin Elongation Ratio (Re) for all 3rd order drainage basins and Stream- Length gradient Index (SL) for all 1st and higher order streams of the area in a Geographical Information System by using the relief and drainage information provided in Survey of India toposheet on 1:50,000 scale, and hydrologically corrected DEM along with the statistical analysis. The study reveals spatially varying magnitudes of tectonic activities in all the parts of three aforesaid tectonic blocks. The Tectonic window is actively down tilting towards the east and is undergoing moderate tectonic activities. While the Berinag klippe and Baijnath klippe are experiencing moderate to intense tectonic activities and they are actively down tilting towards west and south, respectively.

Darjeeling's Liquid Challenge: Escalating Growing Population and Water Scarcity

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Abstract

In the pristine realm of Darjeeling, the looming water crisis combined with difficulties to access demands our immediate attention on its fragile ecosystems. The surge in population growth significantly influences water supply dynamics, creating a complex web of challenges. This region has a "Hybrid System" of water management with the involvement of community and markets. The main water supply sources in Darjeeling are natural springs with only 14 springs out of 26 and from the Senchal Lake. Primarily the scarcity emerged due to city's population growth plus floating population influx of tourist, students and additional residents further strains the water resources. The findings underscore a pressing adversity in Darjeeling Municipal city with a daily requirement of 15-18 lakh gallons, wherein the municipality can only meet 7-8 gallons during dry spells, this creates a deficit of 13.32 lakh gallons of water per day. The crisis of water also aggravates the health conditions of the inhabitants. Growing populations amplify water scarcity, expansion of water supply, triggering climate changes, wasteful practices and inadequate infrastructure. The Darjeeling city grapples with water scarcity is leading residents to rely on rainwater collection and private water markets resulting in informal water markets over traditional and municipal sources. Thus, these difficulties advocates for the exploration of remedial measures to ensure sustainable, equitable and reliable access to water.

Chakhao Husk Activated Carbon: A Noble Adsorbent for Anion Removal from Aqueous Solution

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Abstract

Water pollution problems have severely threatened global water security, prompting the exploration and development of novel techniques to mitigate environmental pollutants in drinking water sources. Numerous methods have been developed to remove various pollutants from the environment. Among them, activated carbons are the emerging and widely used adsorbent in various industries such as pharmaceuticals, food and beverage production, and water treatment, owing to its highly porous structure, extensive surface area, and strong adsorption capabilities for contaminants. A bibliometric analysis conducted revealed a significant increase in research publications, which have focused on activated carbon and related areas in the recent years, indicating the growing popularity of this approach due to its effectiveness, cost-efficiency, and energy savings. In this study, CHAC, a notable activated carbon derived from a local aromatic rice variety in Manipur, demonstrates impressive removal efficiencies, achieving 98.6 percent for phosphate and 96.62 percent for sulphate removal from aqueous solutions.

Image Encryption using Chaotic Map and Cellular Automata

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Abstract

In the era of digital technology, ensuring the safe transfer and preservation of sensitive visual data, such as photographs has become significantly more important. The conventional encryption methods may not offer the necessary level of protection to safeguard these visual assets from contemporary cyber threats. The study presents a novel method for encrypting images by combining revolutionary chaotic mapping and cellular automata dynamics. This advanced encryption technique utilises the unpredictability of chaotic systems and intricate patterns of cellular automata to ensure strong protection for digital images. The integration of these two features in the encryption system seeks to greatly improve the secrecy and integrity of sensitive image data. This makes it appropriate for various applications, wherein secure image transmission and storage are of utmost importance.

Soil Image De-Noising using Hyper Wavelet Double Window Median Filter (HWDWM)

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Abstract

In soil classification digital images are playing vital role to analyse the quality of soil and its features. It also plays an important role in the following fields such as monitoring traffic, geographic information system, astronomy, and handwriting recognition. Some of the noise may occur during the capture of image, wherein it contains different types of noise. The visual quality of the image affected by noise also decreases brightness of the image. Noise may create unwanted effects in an image such as blurring, strips, damage of edges and unseen lines forming a bad impression surrounding the image. Moreover, removing noise from soil is a very big challenge for researchers. Hence, the present study focuses on reducing noise and improving the quality of image using Hyper Wavelet Double Window Median Filter (HWDWM). Also, this research study introduced a new algorithm to increase quality of the soil image.

A Study on Behaviour of Geopolymer Concrete Filled Steel Tubular Columns

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Abstract

Concrete made of Geopolymer is a good alternative for conventional concrete since it emits less carbon dioxide. The use of Geopolymer concrete improves construction efficiency, reduces pollution, and is less harmful to the environment. The Geopolymer concrete filled steel tubular columns will enhance the load carrying capacity and avoid the possibility of local buckling and cracking induced in concrete at high-load levels. The present study involves two phases. In the First Phase, it includes the production of Geopolymer concrete from industrial wastes like fly ash and GGBS. In furtherance, for binding of constituents of Geopolymer concrete, alkaline activators are utilized. Also, in addition to this it involves the partial replacement of M-Sand with the optimum percentage of steel slag in Geopolymer concrete, which is obtained from strength and durability tests. In the second phase, behaviour of steel tubes filled with Geoploymer concrete developed from Phase I test results are observed. The variables involved in Phase II study are D/t ratio and height of Geopolymer concrete filled steel tubular (GPCFST) columns. An experimental procedure has been conducted to examine the behaviour of GPCFST columns. Thus, from the results, it is revealed that GPCFST columns of D/t ratio 31.43 with 300 mm height performed well in terms of axial load carrying capacity and ductility when compared to other GPCFST columns. It is inferred from the present study that there is a scope for utilizing the industrial waste for the production of Geopolymer concrete, which in turn maintains the environmental sustainability by controlling carbon emission.

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Study on Flood Inundation of an Urban Area using HEC-HMS

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Abstract

Floods are one of the natural disasters, which frequently threatens people by causing crop losses, frightening residential areas, and loss of life. The principal factors contributing to urban floods include anomalous increases in precipitation, significant alterations in land-use and land-cover patterns caused by human activity and ensuing negative hydrological effects. There are different methods available to calculate flood runoff estimation. The present study evaluates the suitable flood modeling technique HEC-HMS, which is applied successfully for urban catchments to calculate the runoff. The area chosen for the study was Cooum river basin of Chennai zone, which is one of the most flood catchment in Chennai. Also, the urban flooding in this area for which the satellite image was generated through Google earth engine for the years 2005, 2009, 2015 and 2021 respectively. Then the curve number is generated by merging the land use map and soil map data using ARCGIS. Rainfall data are collected, and extreme rainfall events have been found using HEC-HMS model. Hence, the results calculated represent that there is an increase in runoff for the years (2005-153.56, 2009-178.79, 2015-297.39 and 2021-309.64). Furthermore, in accordance with the results, it is concluded by giving some of the suggestive measures to the government like providing adequate drainage system and better waste management system to be carried out at least once in six months to ensure the adequate collection and treatment of waste to solve the issues of water clogging and related aspects in the drainage basin.

Duality in Operator Representations of Frames

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Abstract

The operator representations of frames are a relatively young research direction in harmonic analysis. Duality assumes a pivotal role in the study of various facets of frames. The present study discusses the properties of dual frames associated with frames representable by orbits of linear operators. For a given frame representable by an orbit of a bounded and invertible operator, the study discusses characterizations of the dual frames that also have representations through orbits of bounded operators. Moreover, this research considers instances wherein a frame though representable by the orbit of a bounded and invertible operator and has associated dual frames that cannot be similarly represented. Furthermore, the research highlights some open problems within this research domain.

A Novel Prediction for Climate Change using Deep Learning

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Abstract

One of the biggest environmental problems which is currently plaguing our world is climate change. Moreover, to fully comprehend the consequences of global warming and to take the necessary steps to lessen those effects, accurate detection and continual tracking of climate change are essential. The accuracy of this rediscovery of climate change has been greatly enhanced by deep learning algorithms, which have demonstrated significant potential when applied toremote surveillance imagery. More objectives for employing remote sensing imagery to identify climate change. Convolutional Neural Networks (CNNs) represent one of the methods for deep learning that have demonstrated significant promise in enhancing the accuracy of remote sensing picture processing. Previous research on employing remote sensing photos has shown that Deep Learning algorithms are effective in identifying variations in the climate, wherein some of these studies have even managed to achieve classification precision of up to 95 percent. Multispectral photos taken over an extended period by the satellites will be included in the dataset. The pre-processing of images will reduce noise and enhance review quality. The photos will then be ranked by a CNN model based on environmental factors including temperature, vegetation, and land cover. A set of labeled photos willbe used to train the CNN model to recognize a particular environmental characteristic through supervised learning. Transfer learning approaches will be used to modify the pre-built CNN model to fit a particular set of data. The accuracy and performance of the previous model will be evaluated by testing it against a collection of validation photos. In the present study, researchers combine Convolutional Neural Networks (CNN) and Bidirectional Long Short-Term Memory (Bi-LSTM) to construct a more accurate model for sentiment analysis on customer reviews. The study highlights that while Deep Learning models in many domains exhibit high precision. Also, it indicates that they do not have the explanations that XAI (Explainable Artificial Intelligence) may provide to optimize its performance for climate change detection.

A Study on DFP 6 Pump Training Modules and its Effectiveness on Increasing Productivity

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Abstract

Learning and development are subsets of HR, which aims to improve team and individual performance by increasing and honing skills and knowledge. Moreover, it is often referred to as training and development, which forms a part of organization's talent management strategy. It is designed to align group and individual goals and performance along with the organization's overall vision and goals. Delphi TVS endeavour is to establish an environment where people can develop and advance. One should be able to incorporate their personal skills and abilities in the company while also receiving the possibility to take part in suitable trainings to make new and valuable experiences. This will enable Delphi TVS to meet day-to-day business challenges most effectively and efficiently. The study focuses on ever increasing demands of customers and government norms that leave room for regional adaption of learning content. Hence, to integrate more Digital / Technology based resources and actions into learning at DTVS. Also, at the same time value addition at class-room training, designing for better learning experiences flexible in time and place, create more opportunities to learn self-guided / self-learning pace, preference that work better for each learner. In furtherance, to train and develop new skills or know-how learning, which are quite interesting and transformed easily to the workforce. The design of training starts from Training Need Identification towards BS VI norms and its requirements, wherein the researcher followed ADDIE (Analysis, Design and Development, Implement, Evaluate & Effectiveness) model. Moreover, training process includes, training need identification & analysis, design of training with course content, faculty, duration, methodology & evaluation, review of design and approval by department heads (users), fine tune the process and execute, evaluation and feedback, effectiveness analysis, standardization & conclusion. The findings suggested improvements that can improve the training effectiveness and any other points that would emerge during the study, which potentially support the improvement activities.

A Sustainable Approach in Environment Management Using Biochar

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Abstract

Environmental sustainability management concerns to conserve natural resources and protect the ecosystems to support health and wellbeing globally. The water, air, and soil quality has been deteriorated due to many natural and human activities. Hence, to control the environmental deterioration, biochar is emerging as a cheap, environment friendly and sustainable alternative for existing costly conventional technologies. Moreover, thermochemical conversion of agriculture biomass into carbonaceous product i.e., biochar is having tremendous potentiality for a better environment and agro-waste management. It is to be noted that Biochar promotes soil health and fertility by raising soil pH, increasing moisture holding capacity, attracting more beneficial fungi and microbes, improving cation exchange capacity, and retaining nutrients in soil, thus boost agricultural yield. It is also widely being used as an adsorbent for organic and inorganic pollutants from soil and water. The large surface area, wide pore volume, various functional groups and charges present on the surface of biochar play an important role in removal of pollutants. Other environmental applications includes sequester atmospheric carbon into the soil, reducing greenhouse gas emission, and improves degraded soil. The biochar properties depend on type of feedstock, heat transfer rate, residence time, pyrolysis temperature, and pyrolysis procedure. The present study provides an insight on diverse applications of biochar in several fields ranging from sustainable agriculture, carbon sequestration, mitigating climate change and pollution remediation.

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Petrochemical Studies of Pachakkadu Pyroxenite from Pakkanadu-Mulakkadu Alkaline Complex, Tamil Nadu, Southern India

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Abstract

In South India, the Southern Granulite Terrain (SGT) is studded with alkaline complexes demonstrating the Precambrian alkaline magmatism event. One of the complexes is the Pakkanadu-Mulakkadu Ultramafic-Alkaline-Carbonatite Complex (UMACC), wherein a variety of rare litho-assemblages namely pyroxenites, syenites, carbonatites, etc. are emplaced. The pyroxenite body is located at Pachakkadu. Moreover, within the UMACC, a NE-SW trending linear body extends about 500 meters in length with variable widths of several meters and is located at Pachakadu, which is located at south of Pakkanadu. Furthermore, the petrographic studies have indicated that the rock exhibits equigranular texture by mode and it is mineralogically composed of clinopyroxene (77-88 percent), with subordinate amphibole, and biotite/phlogopite. Magnetite, titanite and secondary calcite are also observed. The development of triple junction points is noticed in the rock. The Fe-Ti oxides are noticed along the cleavage planes of altered pyroxene. Geochemically, the pyroxenites are characterised by low SiO_2 (39.50-40.48wt. percent), low Al_2O_3 (4.58-8.34 wt. percent), CaO (6.66-10.24 wt. percent) and with higher MgO+FeO. The total alkalis range from 0.48 to 2.49 wt. percent. The Mg# ranges from 0.67 to 0.83 suggesting their derivation from the mantle. The trace element geochemistry indicates high Ni (146.11- 299.95 ppm) and Cr (652.56- 4766.6 ppm) contents in the rock. An overall depletion trend with respect to Mg# reflects on controls by clinopyroxene fractionation. The overall geochemistry suggests that the pyroxenites are of cumulate origin with minor involvement of evolved residual liquid in accumulating the fine-grained variety, which experienced early fractionation of minor plagioclase and Fe-Ti oxide accumulation.

Diabetic Retinopathy Detection using Deep Learning and its Effectiveness

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Abstract

The early detection and intervention are crucial for preserving vision. In this context, Diabetic Retinopathy (DR) is a prevalent complication of diabetes that can result in vision impairment if left untreated. The present study aimed to develop a deep learning model for automated DR detection and deploy it using Streamlit for real-time prediction of DR severity. A modified ResNet18 model has been employed for DR severity classification. The model is trained on a curated dataset of retinal images collected from different databases labelled with five DR severity levels: Mild, Moderate, No DR, Proliferative DR, and Severe. Data pre-processing techniques enhanced model performance, including resizing, normalization, and augmentation. The Adam optimizer and categorical cross-entropy loss function are utilized for parameter optimization. The trained model achieved an accuracy of 88 percent in classifying DR severity levels on a test dataset of 100 retinal images. The model is then deployed using Streamlit, enabling users to upload retinal images for real-time prediction of DR severity. The application pre-processes the uploaded image, passes it through the trained model, and forecasts the severity level of DR, including Mild, Moderate, No DR, Proliferative DR, or Severe. Furthermore, integrating deep learning with web-based applications, such as Streamlit, offers a promising approach for automated DR detection. The developed system facilitates early diagnosis and treatment options that can help prevent vision loss in patients with diabetes. This user-friendly tool empowers healthcare professionals to assess and monitor DR progression, ultimately improving patient outcomes and safeguarding against vision loss.

Investigation of Musa Acuminata Stem Water Core Shell Nanoparticles for Nephrolithiasis and its Applications

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Abstract

The most common (about 80 percent) renal stones are calculi of calcium oxalate (CaOx) crystal. CaOx crystals, which are the primary constituent of human renal stones, exist in the form of CaOx Monohaydrate (COM) and CaOx Dihydrate (COD) respectively. The remedial measure for the aforesaid problem is usage of medical drugs. However, there are many side effects when drugs are used directly. These problems can be solved by trapping the drug in colloidal forms like nanoparticles. On the other hand, drug activity period as well as therapeutic index increases by incorporating the drug into carrier system. The present study intends to formulate a product, which is an eco-friendly, simple, readily available natural plant source reducing the side effects when used directly and increasing the biological activity. *Musa acuminate* stem contains many nutrients like Potassium, Vitamin B6, Vitamin C Manganese, carbohydrate, fibers and minerals and other micronutrients. The potassium content in the stem stops the formation of calcium crystals or calcium lumps in the kidney. The aim of the study is to prepare *Musa Acuminata* stem water core shell nanoparticles, which are characterized and optimized by using Box Behnken Design for kidney stones. This attempt has been made in the field of plant-based nanoparticles preparation to fulfill the people's demand of prevention and cure of kidney stones using a simple, eco-friendly and environmentally sustainable source. The performance of the nanoparticle activities is compared with plant extract. Interestingly, both plant extract and nanoparticle have not showed antimicrobial activity. While antioxidant activity in nanoparticles is found to be more as compared to plant extract.

Sucking Insect Pests of Brinjal (*Solanum melongena*) and their Natural Enemies

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Abstract

Brinjal, which is commonly known as 'Egg Plant' is one of the important vegetable crops grown in all over the India. The brinjal plat belongs to solanaceae family and it is commonly known as baingan, waangum, baigan and peethabhala etc. in the various part of India. It has ability to grow under various agro-climatic conditions, especially sub-tropical and tropical regions. It is infested by variety of insect pests, and common among them are brinjal shoot and fruit borer (*Leucinodes orbonalis*), white fly (*Bemisia tabaci*) and aphid (*Aphis gossypii*). These aforesaid sucking insect pests of brinjal are playing an important role in affecting its growth and yield. Keeping this in view, the researchers have conducted an experiment during November 2022 to March 2023 in a local farm of Jodhpur, Rajasthan to study on natural enemies of sucking insect pests of brinjal. Results of the study has recorded three major natural enemies against the sucking pest insects viz., *Chrysoperla carnea* (Lace wing), *Coccinella spp*. and spider spp. These two species of coccinellidae are found as the most dominant natural enemies of sucking insect pest.

Green Synthesis of Biodiesel from Cassia biflora Non-Edible Seed Oils using Eggshell Nanocatalysts

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Abstract

Energy management and conservation of natural resources are important avenues across the world for addressing future requirements and challenges. Hence, there are many research studies on non-conventional energy sources for meeting energy deficits in accordance with population growth. The concept of biodiesel has been discussed widely. However, its energy efficiency in comparison with other conventional energy sources is always arguable. In the context of environmental aspects, it gains momentum. Keeping this in view, the present study explores the possibilities of adopting an environmentally friendly approach for synthesis of biodiesel from non-edible seed oils extracted from Cassia bifora. The focus is on utilizing eggshell nanocatalysts to enhance the transesterification process, making it more sustainable and economically viable. The experimental methodology involves extraction of oil from Cassia bifora seeds through a solvent-based approach. The obtained oil is then subjected to a transesterification reaction with methanol in the presence of eggshell nanocatalysts. The nanocatalysts are prepared by a simple and cost-effective method, showcasing the potential of utilizing waste materials for sustainable catalysis. Characterization techniques such as Fourier-transform infrared spectroscopy (FTIR) and gas chromatography-mass spectrometry (GC-MS) are employed to analyze the chemical composition of produced biodiesel. The catalytic activity and reusability of the eggshell nanocatalysts are also investigated to assess their efficiency and practical applicability. Results of this study have demonstrated the successful conversion of Cassia bifora seed oils into biodiesel with improved yield and purity using eggshell nanocatalysts. The use of these nanocatalysts not only enhances the reaction rate but also provides an eco-friendly alternative to conventional catalysts. Moreover, reusability of the catalysts highlights their potential for large-scale biodiesel production.

Ionic Liquid-Assisted Exfoliated Graphene-Based Bimetallic Nanocomposite for the Electrochemical Sensing of Hair Dye

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Abstract

Graphene oxide is a significant derivative of carbon possessing -OH, -COOH and -CO. The electrical conductivity is poor because most of its carbons are sp3 hybridized. Exfoliation of graphene oxide produces a single-layered sheet i.e., 'reduced graphene oxide' or 'graphene'. The exfoliation is carried out using any reducing agent or by introducing molecule / nanoparticles in interlayer spaces of GO to increase the distance between layers. In this regard, the researcher has utilized ionic liquid '1-butyl-3-methylimidazolium hexafluorophosphate ([Bmim]PF6)' to exfoliate the GO followed by its association with electrochemically prepared nanoalloy nanoparticles Cu-Ag. The combination of nanoalloy to exfoliated graphene enhances electrocatalytic property towards the electrochemical detection of an organic hair dye component '*p*-phenylene diamine (PD). The monitoring of PD in hair dye products is essential because PD causes several ailments in humans for example skin problems, eye issues, carcinogenic effects, etc.

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Design and Fabrication of Bluetooth Control and Solar Operated Multipurpose Agricultural Vehicle

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Abstract

Agriculture is an important sector of the economy in many countries. India is an agricultural country cultivating a greater number of ground nuts in the village sides of the country. Groundnut is a crop of global importance, which is widely grown in the tropics and subtropics, being important to both small holder and large commercial producers. The groundnut business is a huge market and faces huge profits when they are planted and maintained perfectly. The available planting machines are importedfrom foreign countries. The imported machines are not only bulk in size but also cost more in lakhs. The present research has attempted to design and fabricate multi-Agromachines exclusively for small farmers at low cost. The machine is made versatile such that it comprises of simple components, which are employed in the fabrication and reason for low cost of the machine. In furtherance, this Agri vehicle is controlled by mobile phone Bluetooth operations. This research aims to enable small-scale farmers with limited access to conventional farming equipment to increase productivity and yield while reducing labour costs and environmental impact. Moreover, it explores the design and implementation of solar powered multipurpose agriculture. The reason being farmers are always looking for ways to improve productivity, efficiency, and profitability. Using solar powered multi-purpose farming machines can help farmers achieve this goal. The researchers propose a machine, which can perform various agricultural operations such as ploughing, planting, fertilizing, and harvesting. Also, it discusses the benefitsof solar energy in agriculture, including cost savings and environmentalsustainability.

Robotics Telemedicine Kiosk – Assisted by AI

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Abstract

People living in rural India are facing challenges in finding enough medical care. The public funding for healthcare is often minimal. Moreover, the small amount invested in this sector is being used for metropolitan pockets than rural areas. The primary target of private hospitals are urban areas than rural ones. All over India, there exists an acute shortage of healthcare professionals. Therefore, to get better medication in terms of Professionals and Infrastructure facilities the rural people have to travel even up to 100 miles. Unfortunately, we do have a severe shortage of qualified, trained, and expert medical professionals to treat rural people. Presently, our system has many limitations in terms of geographical, distance, and infrastructure for treating remote people. A proper system is required to overcome the above problem, which is also a sheer necessity. A creative and improved AI technology will help rural people to get good medical diagnostics with no aforesaid limitations. The present study has proposed a system named Robotics Telemedicine Kiosk – Assisted by AI. This system can be installed in the local hospital or even anywhere within the village location. The patients can able to access and get consultation from licensed medical professionals based on his/her needs. The proposed system uses a biometric scanner for patient identification, wherein a robot asks various questions about patient's health issues. Subsequently, the patients are directed for specialized physician consultation through AI, following the consultation, the local Accredited Social Health Activist (ASHA) worker can effectively provide them with medication and other pertinent services.

Recognition of Handwritten Numerals in Bengali using SLPs - An Application of AI & ML

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Abstract

There are so many approaches available for recognizing handwritten Bengali Numerals. Among them ANN (Artificial Neural Network) based approach is a very efficient and authenticated approach focusing on human brain by attempting to make the functions of nerve cells and their interactions, which produce intelligent behavior in human mind. In this present study, Single Layer Perceptron (SLP) has been selected as classifier for their easiest learning and generalization approaches. After collecting samples of Bengali numerals, they are passed through the steps of pre-processing following that SLPs are trained for unique samples from the training set. These samples from the test set are given to SLPs as input for recognition to their actual categories. The goal of this study is to design a suitably powerful recognition system of handwritten Bengali numerals so that before a pattern recognizer it can be properly designed. However, it is necessary to collect a huge number of samples of handwritten Bengali numerals. It is to be noted that after collecting those samples they are passed through the pre-processing steps of Pattern Recognition. After these steps train the Perceptron, which has been used here as a classifier with the samples from training set. The bipolar entries of each threshold digit image are used to train the Perceptron. Furthermore, after the training phase samples of test set are given to the SLP as input and after some iteration the SLP converges it and decides the type of the input according training set. In this system SLPs are trained separately for 10 different numerals (0 to 9).

Drowsiness Detection using YOLOV5 Model

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Abstract

Driver fatigue-related tragedies are a major global issue. Moreover, drivers who are weary or fatigued have trouble reacting quickly, making immediate choices, and occasionally might even drop off while operating a vehicle, which can lead to crashes. Several existing works provide poor performance in prediction of individuals face along with their expressions owing to extrinsic environmental characteristics. The major issue behind such performance depends on light as well as position of camera. Hence, this research work focuses on driver's drowsiness detection using deep learning based neural network to train the images. Moreover, this employs facial regions that relate to the entire face in order to estimate the drivers' condition. The present study used the following techniques for face detection such as: i) YOLOV5 model and ii) Image AI model. The CNN (Convolutional Neural Network) architecture used for drowsiness detection is deep sparse coding network for driver's face image classification that produces greater performance to avoid accidents while driving.

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Digital Libraries: Revolutionizing Access to Information

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Abstract

Digital libraries are redefining information discovery, access, and interaction through the convergence of technology, information science, and librarianship. They include a wide variety of well-chosen and arranged items, such as books, research papers, multimedia, archive collections, and relics from cultural heritage, that are easily retrieved. The development of digital technology and introduction of internet are the origins of digital libraries. The foundation for this revolutionary idea has been set by early pioneers who envisioned a world in which knowledge would be liberated and democratized through digital means, rather than being restricted to the walls of physical libraries. These days, digital libraries are essential to research, academia, education, and other fields. For instance, it is useful for academicians, professionals, students, and lifelong learners, wherein they are invaluable tools that enable people to delve deeper into the subject matter, interact with a variety of viewpoints, and develop their critical thinking abilities. Digital libraries have several advantages viz. by removing obstacles to access, they encourage inclusion, collaborate and multidisciplinary study, and expedite speedy distribution of knowledge. They also make it possible to preserve historical objects and cultural legacy, preserving humankind's collective memory for future generations. Digital libraries have been not possible only without any difficulties. Hence, to ensure its sustainability and efficacy, issues like copyright issues, data privacy, digital preservation, and equal access need to be addressed.

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Assessing the Effectiveness of Women Safety Apps: A Comprehensive Survey

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Abstract

Women have the right to be free from harassment, abuse, and discrimination in a society. Therefore, ensuring their safety is a significant issue within the contemporary society. Today, technology plays a major role in improving women's security and well-being, which is more essential. The mobile apps developed for 'Women's Safety' help them to feel more secure in the recent years. The present research has taken the existing mobile application named "Kaavalan", which is in practice by our Tamil Nadu Police for safeguarding the public. However, the researchers have found some drawbacks in this mobile app like, there could be a chance of data breach and possibility of individual's data getting misused. In furtherance, it has been observed that at times this app does not serves its purpose, wherein this mobile application (mobile app) asks permissions to access our media files and sensitive details. These kinds of access need to be restricted as it is quite irrelevant in accordance with objective of providing public security. The reason being unwarranted access to personal information through this mobile app might create additional complications to the user more precisely women at large. The study has attempted to create a mobile application named "Sheshield", which contains better features to overcome the aforesaid aspects. Moreover, it has figured out technologies such as Figma for UI/UX, Android studio to build the proposed mobile app using Kotlin programming language and Google firebase to save the data in cloud.

Design and Fabrication of Banana Transplanter

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Abstract

Banana is a multipurpose and tropical crop. The cultivation of Banana is a vital component of global agriculture, contributing significantly to food security and economic growth. Efficient transplantation of banana seedlings plays a crucial role in optimizing crop yield and resource utilization. This study presents the development of a manual banana transplanter designed to improve the planting process, reduce labor requirements, and enhance the overall productivity of banana farming. This transplanter is designed with an ease to operate, making it accessible to small- and large-scale farmers. The transplanter's functionality is designed in a simple way with an effective mechanism that allows users to dig planting holes, insert seedlings, and compact the soil around them in a single, efficient motion. This significantly reduces the time and effort required for planting while ensuring proper seedling depth and spacing, which are critical factors for healthy banana growth. At present the cultivation practices depend entirely on manual labour, which is expensive and in high demand. In addition to improving planting efficiency, the manual banana transplanter offers economic benefits by reducing labor costs and increasing planting accuracy. Its design is environmentally friendly, minimizing soil disruption and promoting sustainable agriculture practices. This yields and tool has the potential to enhance the livelihoods of banana farmers, boost crop yields, and contribute to food security in regions where banana cultivation is prevalent. Thus, by providing a cost-effective, user-friendly solution for banana transplantation, this manual transplanter presents a valuable opportunity for optimizing the banana farming process.

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A Comparative Study on Benefits and Setbacks of Merger & Acquisition

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Abstract

In the present scenario companies are striving for the growth and expansion to fulfill their long-term benefits. The merger and acquisition are used as a tool for restructuring of corporate structure, which is mainly done for analyzing the financial performance of the organizations. Moreover, merger and acquisition results in achieving geographical amplification, transfer of combined knowledge, balanced economies of scale, structuring of capital, partnership, and risk minimization. Also, it helps in enlarging the company's share along with its market share. Thus, to successfully overcome the challenges posed by the corporate sector, global organizations and companies are restructuring their operations. This paper focuses on the positive impact of opting for merger and acquisition on the benefit of organization. It also emphasizes the need to centralize setbacks and achieve the desired results. Merger and Acquisition is an integral part of finance for any organization as this will help them to expose nationally and internationally. However, outcome of entering Merger and Acquisition often depends on keen investigations of a plan, careful execution of strategy and steady commitment towards work, which can only be reached with positive attitude of recovering from setbacks. The present study clarifies domestic mergers and acquisition with a focus on greater market share with clear innovation strategies in gaining technology competence, customer base and growth of capital.

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Examining the Factors Affecting the Growth of Cashew Processing Firms in Tanzania

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Abstract

The emerging economy countries like Tanzania are dependent on agro-processing industries. The agro-processing industries like cashew processing firms are known to be the crucial drivers for enhancing the economic growth in Tanzania. Also, it plays a vital role in creating income generation and employment opportunities for the people at large. The country produces a yearly average of 200,000 Metric tons of Raw Cashew Nuts and exports over 90 percent in raw form, thus failing to capitalize on value addition, leading to significant economic losses. The current cashew processing capacity is approximately 60,000 tonnes per year, which is not fully utilized, thus impeding the growth of the cashew processing industries. Therefore, this study aimed to identify and examine the determinant factors affecting the growth of cashew processing firms in the study area. The research data collection is carried out through questionnaires, and a linear regression model has been adopted. The findings showed that technological capacity, market accessibility, management and labor, government support, and financial capability are the main factors that significantly and positively affect the growth of cashew processing firms. The processing industries encounter obstacles such as adopting cost-effective and new technologies, unreliable power supply, insufficient market information for kernels, deficiency of skilled labor, unsatisfactory subsidies and incentives, insufficient working capital, and high interest rates. The study recommends facilitating access to low-interest and long-term financing and investment in the infrastructure for capacity-building in every cashew-producing district to increase technical know-how. Furthermore, the government should incentivize cashew processing industries to access the global market for cashew kernels through tax incentives, subsidies, and other initiatives to enhance competitiveness and export capabilities.

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Challenges Faced by Women in Managing Work-Life Balance - A Conceptual Study

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Abstract

Employees face stress in their day-to-day life while balancing their personal and professional life. In this ever-changing world, balancing work and family becomes a very difficult task. Moreover, in organizations and at home front work-life balance challenges are rising to the top of many employers and employee's consciousness. Also, it highlights the impact on professional growth, mental wellbeing, and family dynamics. The demands and pressures of work make it difficult to stretch time for balancing work-life activities. This is more so in case of women employees at their workplaces as they need to take care of work-life and fulfil the requirements at their family front. It is important to note that balancing the work-life is an art that each individual needs to ascertain so that they can manage their mental stability. Thus, without knowing the art of balance, human resources especially women workforces are facing many changes in their daily agenda and are undergoing depression. In general, employees are shredded between work and personal life, wherein work-life balance plays a vital role in every woman employee's life. The present study focuses mainly on work-life balance avenues, women's work-life balance aspects and suggestions to overcome stress while managing work-life balance. Also, highlights the possibilities for the working women to have both a successful career and a fulfilling family life.

A Study on Impact of Advertising on Emotional Behaviour of Customers

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Abstract

Advertising – a tool or a channel where people are induced and attracted towards the company's product and service. Also, it is a vital platform where people communicate about the attributes and brands of a product to prospective customers. The advancement in technology and competition around the surrounding necessitates advertising over a broader spectrum for gaining market prospects. Today, marketers are more focused on innovative and creative advertising to construct positive and everlasting connections with their customers. At times, it becomes a part of advertising, wherein customers build an emotional connection with the brand. The reason being emotions play a key role in making purchase decisions with regard to a product and service. Emotional advertising is where marketers project their ads in such a way that the customers can relate their product to relevant happenings such as fear, sadness, joy, occasions, and cravings. The present study focuses on traditional and conventional advertising. The study adopted survey method, wherein the data collection is carried out using a questionnaire and findings are interpreted accordingly. Results of the study highlighted the effect of advertisement role and emotional effect on customers in accordance with both positive and negative perspectives.

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A Pilot Study on Rewards in E-payments as a Strategy Influences for Buying

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Abstract

Currently, there are various organizations working on providing the different modes of E-payment platforms, which gives manifold rewards for the digital transactions along with enormous offers to their users with the main intention of winning new audiences and retaining the existing customers. This research aims to study the impact of rewards, which lead to the creation of buying behavior of customers towards a particular product. Also, it can be inferred that rewards do contribute for the buying behavior and gives new touch points through which customers can prefer to interact with brands. However, it is vital to know the success ratio of the same which can be studied by knowing the actual performances i.e., encashment of offers and uses of those rewards in real-time. Basically, the study has covered the relationship among the offers made, expectations and performance of rewards for wider understanding of E-payment rewards and its influences on buying behaviour of customers.

A Study on Estimate of Under-5 Mortality Rate at the Micro Level

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Abstract

Child mortality is one of the fundamental indicators of child health and overall development of a nation. Although a developing country like India has shown a remarkable decline in the child mortality but still the mortality rate amongst the children under 5-aged is high over the past decades. Hence, it requires a lot of effort to achieve the target with regard to Sustainable Development Goal (SDG). Furthermore, ever since the creation of welfare states it has been decided to be the main objective, wherein the district administrations have shifted their focus increasingly on developmental activities. However, lack of sufficient and reliable data in the micro level has turned out to be a major hindrance in achieving this objective. Therefore, the planners are compelled to use state-level indicators as a substitute for planning purposes at the micro level. The main drawback in using state-level indicators is that the standard of living is not well distributed across the state and even though the parameters depict a scenario of overall growth, some areas inside the state are left unattended. Keeping these aforesaid aspects in view, the present study has intended to estimate the most essential element for child health at micro level.

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A Study on Child Mortality in Assam using Chi-Square Analysis

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Abstract

Child mortality is one of the key aspects to be addressed in a developing country like India to sustain the voluminous youth population hitherto. Hence, analyzing child mortality proves to be a valuable method for grasping demographic dynamics and identifying specific regions that might benefit from targeted attention or intervention. The present study focuses on studying the factors associated with child mortality in Assam. This study utilizes information regarding child mortality from the National Family Health Survey round five Report. The various factors namely mother's dwelling place, mother's educational level, religion of mother, wealth index, birth order number, age of mother at first birth and sex of the child have been included. Chi-square test is conducted to ascertain the relationship between child mortality and various factors, which are under study as per the report. The results of chi-square test showed that there exists a significant association between child mortality and factors such as mother's education level, wealth index, birth order, mother's age at first birth and the sex of the child. These findings hint the necessity of introducing policies targeting women and children to reduce child mortality.

The Revolution in the UPS Technology – An Overview

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Abstract

Most of us own a computer and are quite aware of using an uninterruptible power supply (UPS) as a backup source to charge our computer. It is to be noted that UPS is first introduced in 1934 and has a long history in terms of power storage and backup. Today, it is an important device present in offices, libraries, universities, industries, data centers, homes, etc. UPS is designed so well to offer temporary power during outages and maintain steady power supply during fluctuation from the utility lines. The UPS system has an inverter, which recreates the AC power from the DC power stored in the battery bank. This present study intends to describe the development of UPS from the 19th century to the present. Also, it explains the future trends of UPS technology and how it benefits the customer.

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Influence of Psychological Factors in Investment Decisions: A Study on Female Educators of Select Higher Educational Institutions of Guwahati City, Assam

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Abstract

Investment decisions are crucial for any individual as they help the person to build wealth. However, it is a complex task as there are numerous alternative options for investment available in the financial market and every type of investment has its own advantages and disadvantages depending on return, safety, tax exemption, etc. it offers. As per traditional philosophy, all investors are assumed to be rational in making investment decisions. Moreover, with the advent of behavioral finance, it cannot be overruled that psychological biases can affect investors in making investment decisions. There are various psychological factors that may have an impact on investment choices of individuals. In recent years, the financial system has witnessed a notable increase in the participation of women in investment activities in India. As women contribute to nearly half of the total Indian population, understanding of the psychological factors shaping the investment behavior of female educators is of importance. In this regard, the present study seeks to identify the various psychological factors that influence female educators in selection of various investment alternatives that are available for investment. The research included female educators of selective higher educational institutions of Guwahati city of Assam for the purpose. The methodology of the study shall involve a mixed-method approach, combining surveys and interviews to gather comprehensive data on different psychological factors affect decision-making processes of female educators.

A Study on Skill Enhancement in E-Commerce towards Entrepreneurs Development in Mysuru District

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Abstract

The implementation of E-commerce in enterprises is very important to the development of nations across the globe for swift economic growth. E-commerce revolutions took place only because development in social media networks and new innovations in mobile applications. The Government of Karnataka has set up the skill-oriented entrepreneurs' deportment in 2016 to enhance the entrepreneur skill through acquiring necessary skills as well as motivation and promotion in their business areas. The National Institute of Entrepreneurship and Small Business Development (NIESBUD) also work for the betterment of entrepreneurship skills and promoting entrepreneurs by supporting them in all aspects of their business. In today's rapid evolution in business world, the entrepreneur plays an important role in creating employment opportunity in the society and involving various innovation activity in promoting economic growth. Moreover, in navigating the technology, collaborative industry experts also support the evolving needs of entrepreneurs by using E-commerce applications. The present study focuses on skill enhancement in E-commerce towards entrepreneur's development in Mysuru District. Furthermore, the study indicates that E-commerce is significantly enhancing the entry of entrepreneurs to start business in all sectors. The primary data is collected from various entrepreneurs by administering questionnaires belonging to the rural and urban areas of Mysuru District. The secondary data has been collected through various published and unpublished data. This research is an attempt to understand whether e-commerce really enhances the skills of entrepreneurs.

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A Study on Adaptation of Digital Payment Tools in Business and its Impact on Users Behavior with Special Reference to Mysuru District

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Abstract

Digital Transformation has made a tremendous change in the business in all over India with respect to efficiency in terms of business performance, increasing customer satisfaction and enhancing value of stakeholders. Integrated digital technology increases overall performance of the business operation with hundred percept customer satisfaction. One of the reasons behind the cultural changes is due to digital transformation in India. Moreover, Demonetization and Covid-19 has brought in drastic changes and impact in the financial structure of India and introduced the era of Digitalization. Nowadays, traditional methods of payments (coins and notes) have been replaced with digital payments, cashless payments, and electronic means of payments. These changes also impacted the consumer behaviour on many dimensions such as speed and secured way of transaction for their payments. The main aim of the study is to understand the adaptation of Digital payment tools and its impact on users' behaviour in Mysuru District. The research study comprised of both primary and secondary data. The study adopted random sampling in Mysuru District, wherein primary data is collected from focused group through online questionnaire using Google form. The secondary data has been collected through research articles, journals, published and unpublished data, newspapers, etc. This study is also an attempt to understand the needs of Digital payments tools in business and its impact on users' behaviour.

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A Study on Street Vendors of Kolkata

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Abstract

In India, street vendors constitute part of the informal economy and a source of self-generated employment for many. Street vendors can be identified as micro-entrepreneurs who deal in food, clothing, flowers, and other miscellaneous items. Global Economist, Joseph Schumpeter identified entrepreneurs as those who make innovations and engage in the act of creating endeavours. These street vendors are operating with low investment and nominal capital. Also, street vendors innovate on a smaller scale through their ways of selling and negotiations with urban power structures. Due to their smaller scale of operation and uncertainties prevalent in the informal economy, the business sustenance of street vendors has to undergo more risk than other enterprises, especially during periods of loss and times of crisis such as Covid-19. This study intends to exhibit the social dimension of entrepreneurship among street vendors in Kolkata. Also, to understand their modes of operation, relationships with fellow street vendors, and various challenges that they face in day-to-day life, which constitute the social aspects of street vendors. The data collection has been carried out using both primary and secondary data sources. The study adopted descriptive research design and data are interpreted accordingly. The primary data has been collected through questionnaire and secondary data from books, journals, magazines, websites, etc. The findings highlighted the problems of street vendors into food selling.

A Study on Brand Image towards Nandini Products at Mysuru Milk Union Ltd. (MYMUL)

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Abstract

Brand image is a name that often appears in consumer behavior research. Moreover, there are numerous studies on brand image that have been reported over the years. The phrase 'Brand Image' has been widely used in a variety of technical and casual applications. In furtherance, the practitioners and academicians have embraced this phrase as an example of theoretical truth that people buy products something other than their physical attributes and functions. The researchers intend to examine the customer preference towards brand image of Nandini milk products at Mysuru Milk Union Ltd. (MYMUL). Also, in this research various socio-economic factors are used to collect the data from respondents. Findings of this research study revealed that the success of Nandini Milk products are due to periodic sustenance of its good brand image in the dairy industry.

A Study on Recruitment and Selection Process in Service Sector

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Abstract

The growth of any company / organization is always attributed to its employee strength. The reason being they are the crucial and essential components to bring in the required growth and causal for its perpetual existence. The growth and existence of an organization directly depends upon the upgradation of its recruitment policy and adoption of an appropriate selection process that has been carried out over the years. In this context, selection of applicants in accordance with job-fit gains utmost importance. Also, it is to be noted that the human resources department has been deemed to have a handful of key functions to find the appropriate applicant for a job at the right time. Despite these efforts, attrition remains a challenge in the service sector. Keeping this in view, the present study intends to understand the recruitment and selection processes carried out in the IT sector. The main aim of this research is to understand the expectations level of different employees in an IT company having a multicultural environment with diverse populations at different career stages. The study comprised of primary and secondary data sources, wherein primary data are analyzed and represented accordingly. The study focused on organizations' values, mission, culture, etc. and seeks to find out how these organizations demonstrate their employer reputation during recruitment and selection processes in accordance with applicants' job-fit.

Saree Selling – Income Generation Activity for Women

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Abstract

The role of entrepreneurship in economic development is substantial. India's entrepreneurial activity expanded in 2021. In India, that growth is significant – over the last ten years, the percentage of women-owned businesses has increased from 14 to 20 percent. Saree is one piece of clothing that bears the heaviest of emotions among women. Moreover, starting a saree business is a lucrative option in India and it is well suited for women entrepreneurs. The present study has been undertaken to provide elicit information on saree selling business carried out by women entrepreneurs. The focus is on understanding the reasons for taking up the saree selling business, time spent on saree selling business, analyse their income and expenditure pattern along with satisfaction level. The results revealed that majority of the respondents reasoned out that they took saree selling business because of gaining income on day-to-day basis followed by less education, flexible hours, and benefits of work from home. In furtherance, most of the respondents devoted their time in saree selling business for 6 to 8 hours per day. Also, it has been found that higher percentages of the respondents are satisfied with their saree selling business.

A Comprehensive Assessment of Artistic Craftsmanship and Transformation of Mughal Peacock Throne

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Abstract

The Peacock Throne is a gilded platform, canopied in silk and encrusted in precious jewels, was commissioned in 1628 AD by the Mughal Emperor Shah Jahan on the day of his coronation. Many skilled artisans and craftsmen have been involved in the production of Peacock Throne, which took 7 years to complete. Also, it is believed that its cost is twice as much as the construction of Taj Mahal. This comprehensive assessment is all about the aspects that are mesmerizing the world towards Mughal Peacock Throne by exposing the intricacies of its unparalleled artistic craftsmanship and exploring the transformative journey of this iconic seat of royal power. Originating from 17th century during the reign of Emperor Shah Jahan, the Peacock Throne stands as a testament to the opulence and grandeur of the Mughal Empire. The aim of this research is to shed light on the historical significance of Peacock Throne, unraveling the stories embedded within its design and construction. The analysis of this study extends beyond the surface beauty, delving into the meticulous details of the throne's construction including the use of precious materials such as gold, gemstones, and intricate enamelwork. Furthermore, the evaluation explores the transformative journey of Peacock Throne over time, considering its historical context and the various changes it has underwent hitherto. This assessment also contributes to the appreciation and recognition of Mughal Peacock Throne in the realms of art, history, and cultural heritage. Thus, by exploring both artistic intricacies and historical context, this evaluation contributes to a deeper understanding of the famous Mughal Peacock Throne and its enduring legacy.

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Pedagogical Communication in Transition: A Conceptual Study Exploring the Anticipated Impact on Indian Higher Education Teachers through Generative AI Integration

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Abstract

Today, pedagogical communication serves as the cornerstone of effective teaching, wherein the introduction of generative AI presents both challenges and opportunities. Moreover, the landscape of higher education in India is undergoing a transformative shift with the increasing integration of generative artificial intelligence (AI) into pedagogical practices. Teachers are tasked with navigating a dynamic educational environment where the traditional modes of communication are augmented by AI-driven tools. The anticipated impact encompasses multiple dimensions, ranging from changes in instructional methodologies to the transformation of the teacher-student relationship. Generative AI, with its ability to automate certain aspects of communication and information dissemination, has the potential to enhance efficiency in content delivery. However, the challenge lies in ensuring that the human touch in pedagogical communication is not compromised. The role of teachers in understanding and adopting the transition towards pedagogical communication transition is quite important. The reason being, teachers must strike a delicate balance, leveraging AI for administrative tasks and content distribution while preserving the personalized and interactive aspects of communication that foster student engagement. Together comes issues of ethical considerations as generative AI becomes an integral part of pedagogical communication where the teachers must grapple with questions of transparency, accountability, and the responsible use of AI in educational settings. Furthermore, the anticipated impact extends to the professional roles and skills required by higher education teachers. This paper aims to explore the intricate relationship between pedagogical communication, the anticipated impact on Indian higher education teachers, and the evolving role of generative AI in this context.

Rethinking Faith and Belief: A Comprehensive Review of Four Collections on Cults, New Religions and Spiritual Evolution

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Abstract

Faith and belief are the predominant aspects in the human life. The reason being it becomes one of the causes for socio-psychological progression in a society. Moreover, it accounts for the human evolution and growth in past and present. In general, it is subjected to an individual's thinking process towards subjects and actions over a period since birth. Also, it gains utmost importance when it influences the group of individuals possessing a particular faith and belief towards a certain things and practices. For instance, God which has been worshipped and / or followed and / or accepted by majority of people across the world due to their faith and belief segments. Furthermore, the concept of God has a wide influence in the Culture, Religion and Spiritual Evolution at large. These aforesaid views might have been developed and / or planted in their minds for many generations across thousands of years by hearsay and / or rituals and / or practices, which needs a rethinking over time. Keeping these aforesaid aspects, the present study intends to conduct a thorough review of four recent edited collections centered on cults, new religions, and evolving spiritual landscape. It is to be noted that emphasizing the critical assessment of these collections, the present research aims to extract insights and pose fundamental questions about the field's trajectory. The primary objective is to analyse how these collections, each with a nuanced focus, collectively contribute to the understanding of contemporary religious movements and stimulate fresh theoretical and research directions. The conceptual analysis in this study in accordance with studies that have been spearheaded by established scholars highlighted the valuable perspectives on cults and new religions, encompassing sociological insights and global perspectives. While uncovering significant debates and areas of agreement, it is important to note that potential limitations in the sociological and psychological interpretations are provided. Ultimately, the implications drawn from this review certainly prompts the scholars in behavioural sciences to reconsider the existing paradigms and delve further into intricate the aspects of faith, belief, and dynamic spiritual landscape in the modern era.

Gender and Cultural Dynamics as a Social Construct: A Review

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Abstract

Gender is a social concept whereas sex is biological. Also, gender and culture are interdependent and interlinked with each other. Culture is the cumulative deposit of knowledge system shared by a moderately large group of people through generations. The changes in the society take place through variable gender roles. The acceptance and understanding of cultural stigmas, similarities and differences establishes the contexts, wherein these genders need to adopt for social identities and behaviour. It is to be noted that strictures of behaviour are multidimensional and cognitive based. They can also be recognised by tracing through various cultures and time frames. 'Cultural plurality' not only brings dynamism but also navigates the changes in gender roles. Added to economic surges, orthodox and unorthodox attitudes the assimilation of neutrality is much needed. 'Gender Dynamism' allow us to review relationships and communications with and among people based on gender. The 'social environment 'directs the behavioural changes and perception patterns. Socialization is effective to determine the transfer of gender roles and their changing issues. This paper attempts to re-establish and search new areas to measure the influence of culture on individual and its impact on society. The survival of a society is reliant on the enthusiasm of change and its acceptance. Since culture is heterogeneous, where social representations, power, history, geographical contexts, economics, politics, and environment has an important role to play on its people and the way they interpret their culture. The distribution of gender-based experiences helps share a balance in authority and resources.

Pedagogical Innovations in Inclusive Education – A Conceptual View

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Abstract

The process of development is an essential component of any human endeavour. Innovative technology is one tool that may help bring about this kind of progress. Also, the Technical, educational, organizational, or managerial innovations that improve production system efficiency or product quality by the application of scientific knowledge and best practices are known as innovations. Innovations in general pedagogical training of future teachers are crucial. This includes updating the approaches to teacher training that enables them to conduct innovative educational activities and solve complex pedagogical problems, incorporating national and world experience. Fundamentally, innovative techniques and methods of contact between instructors and students that guarantee the successful accomplishment of educational activities are pedagogical innovations. Pedagogical innovations encompass various strategies, including updating educational content, adopting new technologies, and enhancing teacher training. The essence of pedagogical innovation lies in fostering creative thinking, critical evaluation of information, and ability to devise novel approaches. The societal responsibility of education is highlighted and emphasizing its role in shaping a nation's intellectual property and cultural progress. Moreover, the importance of research in the current context is to address inclusive education, which can be enhanced through a range of pedagogical innovations that prioritize the unique needs of learners. Universal Design for Learning (UDL) fosters adaptable and personalized learning paths that cater to individual differences. Furthermore, for students with disabilities, assistive technologies such as speech-to-text software are essential support tools. Differentiated instruction tailors' lessons to individual learning styles, while cooperative learning strategies encourage group work and strengthen collaborative skills. Pedagogical innovation in inclusive education plays a crucial role through teachers as they serve as the catalysts for implementing and sustaining transformative practices. Despite the challenges such as financial constraints and resistance to change, this study emphasizes the importance of embracing innovative pedagogical practices to ensure that education remains relevant, inclusive, and effective in preparing students for a rapidly evolving world. It highlights the necessity for continuous development and adaptation of educational strategies in response to societal changes. In furtherance, it underscores the importance of equipping educators with the skills and knowledge required to implement these innovations effectively. Overall, the research advocates for a dynamic and adaptive approach to education, incorporating innovative methodologies to meet the diverse needs of learners. The researchers conclude the study by highlighting the transformative power of pedagogical innovation in fostering a progressive and inclusive society.

A Survey on Basic Awareness of Cybercrime among Rural Public of Sirsa District, Haryana

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Abstract

Cybercrime is an umbrella term that includes a wide range of traditional crimes including offences against property, women and children, offences against state, sexual offences, which are happening in cyberspace. The NCRB's 'Crime in India-2022' reported a total of 65893 cases under Cyber-crimes. This shows a 24.4 percent increase in the cases compared to 2021. A rapid increase is found in the number of cases over a period due to fast growth, necessity, and more utilization of information technology. Numerous academic researches have indicated that many cybercrimes go unreported by its victims which forms as dark-figures of crime. The frequently upgrading electronic devices along with the busy life of people often force them to use easier online services in their routine tasks such as banking, shopping, education, business. Moreover, lack of basic awareness among the public irrespective of their socio-economic and educational status makes them a victim of cybercrime. These scenarios make the cyber criminals' task easier. Especially, rural people can easily become victims of cyber-crime unknowingly. The present study has been conducted with the aim of understanding the basic cyber awareness and experiences of cyber-victimization among the rural people of Sirsa District of Haryana. In furtherance a survey was conducted with 126 samples using convenient sampling method in the year 2023. The authors have provided suggestions to the policymakers, law enforcement agencies and community organizations in formulating strategies to increase awareness for mitigating the risk associated with cyber-crime among the rural population.

A Study on Women Education in Current Scenario

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Abstract

Education of women refers to every means of education that aims at inculcating the knowledge and skills in women. It includes general education at home, school, college, society for vocational and technical education, health education, etc. by providing the required facilities and opportunities for facilitating the women's learning process. Education develops women to become more aware, who can be economically active, independent and can make smart decisions in matters that affect women. It is to be noted that for ages, women have been viewed as inferior and not good enough compared to men. Several factors act as barriers to women's education such as lack of safety, distance, economic and social status, responsibilities, and so on. The present barriers to women's education will probably be the concerns of tomorrow. However, the degree of their individual issues may differ. Women's education plays a vital role in expressing women's ability to shape their future and society. Since independence, the Indian Constitution has initiated and adopted many schemes and policies to encourage women's education and to improve the status of women. The reason being women are great contributors and add value to the nation building, wherein educating women is necessary for achieving continuous socio-economic growth of the society. The study finds out that learning has equipped women intellectually and empowered them through the acquisition of skills and knowledge. The study concludes with an observation that attaining education by overcoming the barriers to bring change in all aspects of social structure is the key factor to women's education and empowerment.

A Reflection on NEP 2020 in the Light of Educational Philosophy of Swami Vivekananda and Mahatma Gandhi

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Abstract

Indian ethos education is regarded as one of the means to liberate man from the bondage of ignorance and bring about spiritual enlightenment. The ancient seers emphasized on the manifestation of true nature of human soul as the aim of education. Moreover, this has been stressed since ages from Upanishads to Ramakrishna Paramahamsa, Swami Vivekananda. Rabindranath Tagore, Sri Aurobindo, Mahatma Gandhi, and Radhakrishnan. Moreover, the spirit of education is reflected in the philosophy of NEP 2020. The present research intends to argue that the main objective of NEP 2020 is aligning with the educational philosophy of Swami Vivekananda and Mahatma Gandhi. Swami Vivekananda believed that truth is inherent in man and education is the manifestation of the perfection already in man and teacher's role is to remove the obstruction (ignorance) and enable the child to actualize the potentiality within. Gandhi stressed that education should enable the child to live a good life and due emphasis should be given to the three aspects - physical, intellectual, and moral. Also, the study examines their ideas of education for a harmonious, integrated, and holistic living. It also explores few key areas of the policy, particularly its vision of a "forward looking", holistic and multidisciplinary education, promotion of indigenous culture along with the recent advancement and progress in science and technology.

A Paradigm Shift - Looking Beyond the Dichotomy of Subject and Object

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Abstract

The concept of relationship between subject and object determines our orientation in the world. It brings up the fundamental question whether nature has any intrinsic worth or value as the means for some other end beyond that of its own right to exist. The issues pertaining to relationship between man and nature as a pragmatic consideration needs to be repositioned so as to bring out their underlying complexities. The accepted dichotomy between subject and object is also extended to our treatment of anything that exists external to us. The present study envisages into how this dichotomy has affected the man–nature relationship. There are many problems that arise due to the precarious nature of dichotomised and polarised man and nature relationship. The intimate and inseparable nature of the relationship between man and nature, which had been a perennial fountain of ideas in the aesthetic, religious and philosophical consciousness of men became threatened by this bifurcation between subject and object. The present study focuses on Heidegger's total rejection of subject-object bifurcation through his alterative formulation of Dasien and Husserl together challenged the subject-object dichotomy paradigm of the Western tradition. It also proposes the need to adopt a more harmonious equation between man and nature on a broader scale to mitigate the harmful effect of man viewing nature as something of an object to exploit for his own needs and greed.

Implementation of Punishment While Considering Rogerian Approach of Psychological Functioning: An Analysis

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Abstract

The Rogerian approach of psychological functioning, which is also called client-centric approach of psychological counselling, provides empathy and unconditional positive regard to the person seeking therapy. Moreover, these two components, which are the primary components of the Rogerian approach, help the person to become fully functional in a positive direction after the therapeutic process. The definition of punishment says it is an imposition of penalty or charging something for an offence. The forms of punishment depend on the accused, the situation, the place of occurrence, and obviously and obviously on the person punishing. Furthermore, there are impacts of punishment at the receiving end, which may be positive or negative. The proposed study aims to understand if the Rogerian approach of psychological functioning is considered while implementing the punishment in a classroom setting for students. Also, to highlight how it will impact the receiver because the impact of punishment can shape the functioning process of the receiver with regard to a particular punishment. Also, a sample survey has been conducted on teachers who teach psychology initially, and statistical analysis of the samples has provided the results and discussed accordingly.

Discrimination Sensed by Women in Police: A Minor Study in Mumbai Sub-Urban Region

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Abstract

Policing is often regarded as one of the most male-dominated professions. Also, police positions and ranks are the same for men and women, wherein women are often under-represented and are not deployed to field operations to the same extent as males. The strength of women in the Indian police force has been steadily increasing over the years. However, they face numerous challenges and obstacles that are unique to their gender. Despite these challenges, women police in India have been working hard to break the glass ceiling and achieve success in a male-dominated field. The present study comprised of 30 women police from 6 police stations of Mumbai sub-urban region have been randomly chosen for the present study. Depending upon the convenience of respondents, questionnaire and interview method has been adopted during data collection period (June 2023). This study discusses the experiences felt by women-police as discrimination in their profession. Also, the findings showed that the respondents with higher educational level tend to express more optimism about women's potential in law enforcement. A portion of respondents' perception also highlighted the significant hurdles and disparities faced by female police officers. They reported situations such as underutilization of skills, limited recognition, and promotional opportunities, that sheds light on the professional biases and inequalities that persist. The authors have suggested to ensure a fair professional climate for both genders in policing to guarantee the equal contribution of women in police.

Indic Pedagogical Roots of English Language Teaching – A Conceptual Overview

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Abstract

Indic pedagogical elements are writ large in foreign language teaching in India that inter-alia deals with Skill Based English Language Teaching (SBELT). Moreover, the Pedagogy of English language as well as other modern languages that are taught in the famous Universities of the globe follow the same methods and strategies that have Indic roots. The present research has applied Comparative Linguistic Analysis (CLA) and Contrastive Analysis (CA) as methodology for reviewing and finding out the roots of pedagogical practices used for teaching foreign languages in India. In addition to this, the study has investigated the pedagogic practices of Indic aphorism and linguistic insights of Sanskrit vis-a-vis English Language Teaching (ELT) Pedagogy. The observations showed Sanskrit pedagogy of "Shikshan Vidya" is an integral part of the "Chaturdash Vidyastanas", as mentioned in Yask's "Nirukta" i.e., etymology as one of the "Shara Vedangas" of Ancient India. Also, the study revealed three key principles that veer around Sanskrit pedagogy, which are being used in ELT. Most interestingly these three principles are still in vogue for teaching and learning foreign languages in India. The three key principles are namely 1. "Shrabana" i.e., Listening, which includes Reading too. 2. "Manana" i.e., Reflection or Self Reflection and 3. "Nididhyasana" i.e., The state when the learner imbibes complete understanding, wherein he / she internalizes the theme and substance accordingly. The traces of the application of these aforesaid principles are still found in the Pedagogy of English Language Teaching. This research has delved deep into representative texts of Sanskrit Literature from Vedanta to Vedangas for tracing application of Indic linguistic roots in English Language Teaching Pedagogy.

Women in Panchayats: An Overview on History, Perspective and Background

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Abstract

Women play a key role in India's Panchayat Raj System by serving as Panchayat members and Chairpersons. The main reason for together with women in the system is to engage them in nation's administration and progress respectively. The United Nations (UN) adopted the Convention on Women's Political Rights in 1952. Also, it has organized four World Conferences on Women out of which fourth conference was held in Beijing in 1995. It has declared that women's equivalent participation in decision-making is not only a stipulation for simple justice or democracy other than being capable of but also being seen as an essential situation for women's well-being, which needs to be considered. UN also declared that women must have at least a 30 percent share in decision-making positions. Conversely, partaking of women, in common, in politics and public life in India has been dreadfully little. The present research intends to focus on various aspects, which are the causal barriers towards their political empowerment over the years. The observation is that there is a huge gap between men and women in political actions away from voting. The involvement of women at the higher level is lower compared to their involvement at the lower level of governance structure. In the domestic field leadership and administrative skills of women are wordlessly renowned still; they are not given space in the public sphere. Whereas other marginalized communities such as Scheduled Castes and Scheduled Tribes got reservations in the Parliament and State Legislative Assemblies, no reservation for women has been given in the Constitution of India since its official enactment, which restricted their political empowerment.

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Social Forestry Encourage Eco-Conservation, Cultural Tradition for Tribal Upshot – A Conceptual Overview

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Abstract

Social forestry encourages the management of forests for the benefits of local people. India is a multi-ethnic society, where people practice their traditional well-being with eco-conservation, which encourage cultural importance. Community development, forest regenerations, and forest management ushers in a new way of life and livelihood sustenance. Indian forest and forestry have been enhanced with various new steps. Forest is the priority for socio-economic pursuit to maintain economic upliftment for the people at large. It emphasises on various aspects viz. forest management, forest protection, and afforestation of deforested lands with the objective of improving the rural, environmental, and social development along with community protection. Moreover, every species of the forest bears a traditional approach with cultural values. Human existence could have been impossible if the forest has been denuded. Environmental conservation is needed to overcome the battle of global warming, climate change, loss of medicinal value of the natural species. It is a practice that paves the way for protection, conservation, and manage the natural resources to encourage personages in adherence with social sway. The present research has focused on the Khagra Beat within Hijli Range of Kharagpur Forest Division with the involvement of people surrounded by way of social forestry explorations and plantation of Sal Trees to protect the environment with traditional engagement of tribal people. The study observed that these aforesaid aspects enhance cultural value orientations and encourages the involvement of personages to adhere social seesaw.

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Livelihood Vulnerability Assessment of Rural Communities to Climate Change in Jirang Block of Ri-Bhoi, Meghalaya, India

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Abstract

Over the past ten years, research on vulnerability in society in accordance with climate change has grown significantly. Given future projections of climate change, it is quite imperative to identify the places that will be severely affected by the disruption of social livelihoods caused by climate change. A composite index-method, which uses primary household-level data to generate a single value for each study site and more closely represents the actual situation on the ground. This method is an effective way to map the areas based on their vulnerability status. There are more vulnerability studies in recent years. However, there are not many studies conducted in northeastern India, which is especially sensitive to climate change because of its geo-ecological fragility and high population dependency on natural resources. Hence, by applying the index-method to Jirang Block in Ri-Bhoi area of northeastern India, the researchers intend to understand the research gaps. Also, assessing the susceptibility of livelihoods to climate change. The present study developed the Livelihood Vulnerability Index (LVI) for this study area with values ranging from 0 (least vulnerable) to +1 (most vulnerable). The bulk of the study areas villages are classified as medium risk with a small number of greater susceptibility settlements situated next to forest areas and in the block's interior with poor road access. Furthermore, the livelihood vulnerability profile map in this study has showed the relative vulnerabilities of several regions, which paves the way for understanding about the impact of climate change.

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A Study on Influence of Jurisprudential Inquiry Learning Strategies and Logical Thinking

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Abstract

Information technology is one factor that can change society. The reason being its existence also creates negative impacts such as the emergence of hoaxes in the society. Moreover, impact of hoax is very dangerous, such as conflicts between individuals to conflicts between groups. In line with educational goals that want to create a knowledgeable and characteristic human, it is expected to avoid the dangerous hoax that spread in the community. The present study focuses on learning innovation, wherein it concentrates on implementation learning model through jurisprudential inquiry analysis as a learning strategy and logical thinking among social science students. The researcher tries to introduce jurisprudential inquiry model of learning. It is a model that can improve the mind-set of students to have critical thinking so as to analyse the social phenomena found in the community, which is related to the phenomenon of hoax. Also, this research finds out how effective the model jurisprudential inquiry learning can influence students' thinking in analysing the truth of news in society. Several research studies regarding social family of models of teaching have observed that variables like social empathy, social leadership, intelligence, self-confidence, value clarifying, secular mindedness and sex awareness has significant effect on jurisprudential inquiry model. Moreover, it is to be noted that no study has been carried out in the field of jurisprudential inquiry model in relation with social competency. The study found that effective use of jurisprudential inquiry model will help to improve social tolerance among the students. Also, it has advantages and systematic syntax regarding the steps in addressing various actual issues relating to social problems that occur in society.

A Study on Colour Fastness Properties of Almond Shell Waste on Polycotton Fabric Using Two Mordants

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Abstract

Natural dyes are biodegradable, non-toxic, safe for body contact, harmonized with nature, obtained from renewable sources, and they prepared without any chemical reactions due to which natural dyes are preferred over synthetic ones. The study on natural dye will lead to awareness and selection of dyes that may be used for textiles. Almond is used as a vital food and cultivated in many regions of Turkey. A huge amount of shell waste, which is used as fuel and fertilizer by inhabitants. Moreover, it has been used to extract the natural dye for dyeing textile fibres using different mordants and dyeing techniques, almond shell extract can be used to get various colours and shades with satisfactory fastness properties. There is no study using mordant such as alum and myrobalan with almond shell waste. The main purpose of this research is to study the natural dyeing behaviour of almond shell waste on polycotton fabric (composition of fabric cotton 80 percent and polyester 20 percent) using mordants namely, alum and myrobalan by pre-mordanting method. The geometric properties like fabric weight and fabric thickness are assessed before and after dyeing, wherein it showed a considerable increase in the weight and thickness and whereas the fabric count showed a considerable decrease. The colorfastness properties are studied by subjecting the samples to laundering, sunlight, pressing (dry & wet) and crocking (dry & wet). The study concluded that polycotton fabric is dyed with almond shell using myrobalan. Also, it showed good colour fastness to laundering, pressing (dry & wet) and crocking (dry & wet), when compared to polycotton fabric dyed with almond shell using alum. In furtherance, the colour fastness to sunlight is excellent in both alum and myrobalan.

Stakeholders' Perception of Effectiveness of Safety and Security Measures among Hospitals in Jaipur: An Analysis

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Abstract

Hospital is a known institution as a place for diagnosing of diseases, providing care and treatment to the sick and injured people. The global scenario of security management has evidenced that hospitals are prone to various risks, threats and hazards including fire accidents, baby stealing, violence, terrorism, gas leak, internal and external threats, etc. Although a national level study conducted by NITI Ayog among thirty-eight districts revealed that only 7 hospitals have emergency manual. Similarly, 9, 14 and 6 hospitals respectively have disaster management plan, fire & building safety, and periodic staff training, periodic mock drill respectively. In furtherance, it has been reported that many hospitals lack in ensuring safety and security measures. Moreover, it has become increasingly important for health services to be committed towards providing a safe environment and security protection to patients, staff, and visitors. Keeping these aforesaid aspects in view, the present study has been conducted among the hospitals in Jaipur to understand the perception of stakeholders on effectiveness along with safety and security measures using a well-structured questionnaire. The study included 4 government and 6 private hospitals respectively from Jaipur through convenient sampling. The findings have thrown insights on the sense of effectiveness among staff and patients over various safety and security measures within hospital premises, which eventually pointed out the need of ensuring proper implementation of safety and security 'guidelines and standard operating procedures (SOPs).