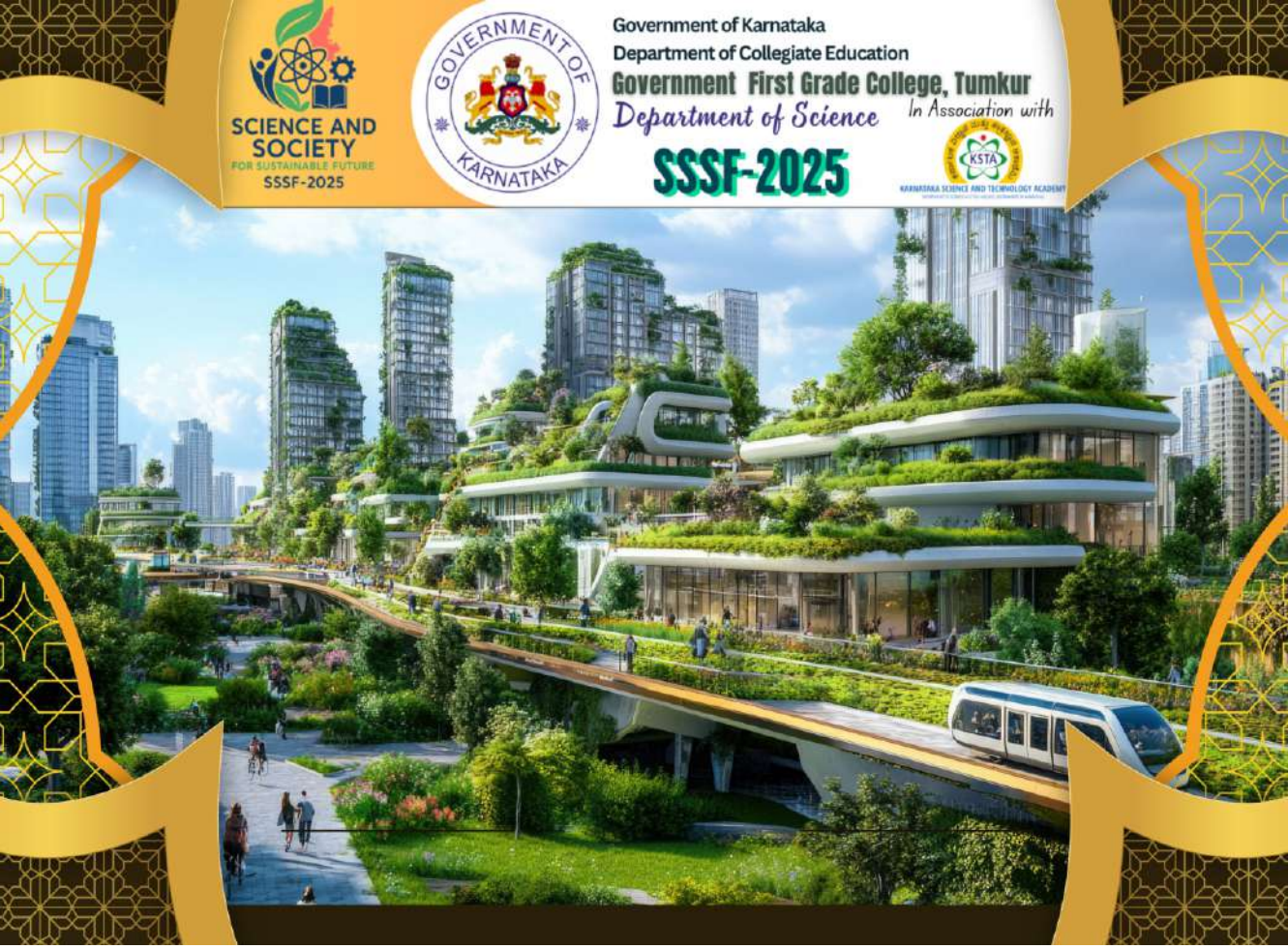

Science and Society for Sustainable Future 2025

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DeepScience

Science and Society for Sustainable Future 2025

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Preface

We are pleased to present the Book of Abstracts for the One-Day National Conference Science & Society for Sustainable Future (SSSF-2025), hosted by the Department of Science, Government First Grade College, Tumkur, in association with the Karnataka Science & Technology Academy (KSTA), Department of Science & Technology, Government of Karnataka. This volume reflects our shared conviction that rigorous, ethical, and inclusive science must translate into measurable benefit for society-across education, health, environment, energy, economy, governance, and culture.

The submissions gathered here span physical and life sciences; green chemistry and environmental studies; mathematics, biomathematics, statistics and computing; engineering and technology; nursing and medical sciences; commerce, management and ESG; humanities, social sciences and education; media and communication; library and information science; physical education and well-being; and a dedicated stream in Kannada aligned to science and sustainability.

Our editorial process focused on transparency and honesty, and had brief problem statement, methods, results and limitations, in which ethical standards of similarity, authorisation, and approval are strictly applied, and where there should be clear disclosure of any aid of AI. We also emphasized reproducibility and sharing as well as authors-where convenient-should also consider giving links to datasets, codes, protocols or even incorporating justified availability statements to permit those who see it to reproduce it.

Abstract acceptance is to have conference presentation. Authors can also be approached by post-event, and depended upon quality and extent, peer-reviewed journals or guided book chapters (no extra charge), and depending upon suitability, Scopus or WoS outlets (according to stated APC schemes).

We thank KSTA once more that it continues to support the science ecosystem in Karnataka in its activities; we thank our Advisory Boards, reviewers, session chairs and the Organising Committee that has worked hard; and we thank our student volunteers who have been very active. Above all, we thank the authors for trusting this platform and contributing work that is both methodologically sound and socially meaningful. We hope this book serves researchers, teachers, students, practitioners, and policy actors as a compact guide to emerging ideas and collaborations. May it spark classroom innovations, field pilots, and partnerships that carry science confidently into society.

Editor-in-Chief-***Dr. Yogeesh*** N
Editors-***K. C. Jagadeesha*** and ***Dr. Aisha Siddekha***

About the Organising Institution

Government First Grade College, Tumkur & Department of Science

Government First Grade College (GFGC) Tumkur is a public college in Tumkur, Karnataka, affiliated with Tumkur University and accredited by the Government of Karnataka and NAAC. The college offers a range of undergraduate courses in arts, commerce, and science, such as BA, B.Com, BBA, BCA and BSc, with a focus on academic excellence and holistic development. It provides modern infrastructure, including labs, a library, and smart classrooms, and supports student life through extracurricular activities like sports and cultural clubs. Offers varied placement options in both the corporate and public sectors, as well as entrepreneurship. Government First Grade College Tumkur is a Government college and is a college of Arts, Commerce, and Science, with bilingual instruction, clubs and outreach, which educates various urban-rural learners. The campus is hosting research skills, ethics, and employs events in the form of seminars and hybrid events, thereby promoting employability. The Department of science is a union of maths, physical, life, and computer sciences that have an inquiry-based and lab-based approach; the faculty focus on the involvement of bilingual (Kannada/English) education, experience, community action and trustworthy research. Seminars, workshops and hybrid conferences with researchers, industry and civic bodies make students feel the curiosity, communication skills, inclusion, ethics and open science, employability.

About the Collaborative Institution

Karnataka Science & Technology Academy (KSTA), Department of Science & Technology, Government of Karnataka

KSTA strengthens science–society linkages across Karnataka through talks, workshops, teacher training, student programs, and support for outreach and research dissemination. It promotes bilingual communication in Kannada and English, publishes materials including *Vijnana Loka*, and collaborates with schools, colleges, R&D labs, and industry. By advancing open, ethical, and evidence-based practices, KSTA helps translate scientific knowledge into innovation, policy insights, and community benefits statewide.

Objectives

- To inculcate scientific temper across civil society through science communication, particularly in Kannada
- To facilitate technology dissemination through Academia-Farm-Industry interface, with a focus on rural areas

- To foster Innovations & Entrepreneurship for societal benefits -To recognise talents and contributions through Awards
- To organise Conferences & Outreach programmes -To serve as Resource Centre for Capacity building in frontier areas of Science & Technology
- To act as a Science, Technology & Innovation Policy Advisory Body for the State

About the Conference Theme, Importance, and Scope

Science & Society for Sustainable Future (SSSF-2025) affirms a simple idea: sustainability is achieved not by science alone or society alone, but by their partnership. “Science” here spans rigorous theory, measurement and modelling (including biomathematics), experimentation, engineering design, and open data; “Society” includes policy and governance, culture and ethics, media and language, education and community practice, commerce and management. Together, they convert evidence into equitable action across energy and materials, water and ecosystems, health and food, climate and cities, and livelihoods. The title welcomes all streams natural and physical sciences, mathematics and engineering, life and environmental sciences, media/language/literature, humanities and social sciences, commerce and management to share research, tools, cases, and creative work that advance the People–Planet–Prosperity triad; “Sustainable Future” signals commitment to solutions that meet today’s needs without compromising the ability of future generations to thrive.

SSSF-2025 emphasises three verbs that guide the programme: Understand models, data, mechanisms, and measurement standards; Design technologies, curricula, and practice guides that are affordable, inclusive, and robust; Deliver policies, enterprises, and citizen participation that scale with trust and accountability. By convening researchers, policymakers, industry, civil society, educators, students, and creators on one platform, the conference aims to accelerate translation, strengthen public trust in science, and produce locally relevant, globally benchmarked outcomes for Karnataka and India.

Aims (abridged): Bridge science and society so that rigorous evidence (theory, experiments, biomathematical modelling) becomes equitable, scalable solutions; integrate STEM with Humanities/Media/Literature and Commerce & Management with biomathematics as a quantitative thread; advance standards in modelling, measurement, open data, reproducibility, and ethics; and translate research to policy and practice via briefs, action guides, and pilotable interventions.

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Prof. Rajasab A H
Chairman, KSTA
Former Vice Chancellor, Tumkur University

MESSAGE

It gives me great pleasure to present this **Book of Abstracts** for the National Conference **Science & Society for Sustainable Future (SSSF-2025)**. This collection reflects the energy and diversity of India's scientific community faculty, researchers, professionals, and students who have come together to engage with questions that matter for **people, planet, and prosperity**.

The conference theme recognises a simple truth: **science achieves its highest purpose when it serves society**. The abstracts gathered here span physical and life sciences, engineering and technology, biomathematics and computing, health and nursing, commerce and management (ESG), humanities and education, media and communication, library and information science, and a dedicated stream in **Kannada**. This breadth is intentional. Sustainability is not the preserve of a single discipline; it is a **shared endeavour** that depends on rigorous evidence, practical design, ethical conduct, and effective communication.

Three priorities run through these pages:

Quality and Reproducibility: Authors have been encouraged to state clear objectives, methods, and limitations; to use transparent data and analysis wherever possible; and to observe **ethical norms**, including similarity thresholds, acknowledgements, permissions, and disclosures (e.g., human/animal studies, use of AI tools). Such practices are not formalities; they are the foundations of **trustworthy science**.

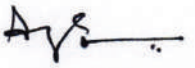
Translation and Impact: Many contributions address Karnataka's and India's pressing needs-**climate resilience, clean energy and water, affordable health, inclusive education, responsible data and AI, circular materials and manufacturing, and community well-being**. The emphasis on measurable outcomes what can change in the next six months or two years-moves us from theory to **actionable solutions**.

Inclusion and Communication: By welcoming scholarship in **English and Kannada**, and by engaging students and early-career researchers, the conference widens participation and strengthens our collective capacity. Science becomes more powerful when it is understandable, teachable, and usable-within classrooms, clinics, farms, factories, and local governments alike.

I commend the **Department of Science, Government First Grade College, Tumkur** for convening this platform, and I appreciate the support of our partners, reviewers, session chairs, and volunteers who shaped the programme and guided the selection. I also congratulate the authors whose abstracts appear here. May your presentations lead to constructive dialogue, collaborations across institutions, and publications that **meet global standards while serving local needs**.

As you read this book, I invite you to look for bridges-between disciplines, between research and practice, and between English and Kannada communication. Let these pages be a starting point for deeper study, joint projects, and policy-relevant outcomes. If even a handful of ideas from SSSF-2025 result in better decisions, better tools, or better learning for our communities, we will have honoured the promise of this gathering.

With best wishes for a stimulating and impactful conference.



Rajasab A.H.

Message from the Chief Patron

Prof. Vasantha T. D.
Chief Patron & Principal, GFGC, Tumkur – 572102

It is my privilege to present the **Book of Abstracts** for the National Conference **Science & Society for Sustainable Future (SSSF-2025)** hosted by the Department of Science, Government First Grade College, Tumkur. This volume captures the spirit of our conference **rigorous science in the service of society** and showcases contributions spanning physical and life sciences, engineering and technology, biomathematics and computing, health and nursing sciences, commerce and management (ESG), humanities and education, media and communication, library and information science, and focused work in Kannada aligned to science and sustainability.

Our college is committed to three ideals reflected in these pages:

1. Quality and integrity.
2. Relevance and translation.
3. Inclusion and capacity building.

I congratulate every author whose work appears here, and I thank the Organising Committee, Advisory Boards, reviewers, session chairs, student volunteers, and our partner Karnataka Science & Technology Academy (KSTA) for their guidance and support. May the dialogues sparked by these abstracts lead to collaborations, classroom innovations, community pilots, and publications that meet global standards while serving local needs.

I invite readers to engage with curiosity and purpose. If the ideas in this book help even a few institutions make better decisions-saving energy or water, improving learning or health, or building resilient systems-**SSSF-2025 will have achieved its goal**.

With best wishes for a meaningful and impactful conference.

Prof. Vasantha T. D.
Chief Patron & Principal
Government First Grade College, Tumkur

Message from the Distinguished Scientist & Chief Guest

Dr. Shubha V

Former Distinguished Scientist, Council of Scientific & Industrial Research (CSIR), Government of India

It is a pleasure to contribute a note to the Book of Abstracts of the National Conference Science & Society for Sustainable Future (SSSF-2025). This collection highlights a principle that guided much of my work at CSIR-that sound science, when coupled with societal purpose and ethical practice, becomes a powerful engine for development.

The abstracts span a wide canvas-physical and life sciences, biomathematics and computing, engineering and technology, health and nursing, commerce and management, humanities and education, media and communication, library and information science, and a welcome emphasis on **Kannada scholarship** aligned to science and sustainability. This breadth does not happen by chance; it is absolutely necessary. Such issues as climate resilience, clean energy and water, public health, responsible AI, circular manufacturing, and inclusive education are not solvable by one-discipline solutions. They need transdisciplinary approaches, plausible information and a reproducibility culture.

Give me a chance to identify three expectations to the readers and presenters:

- **Rigor with transparency:** Be explicit about assumptions, uncertainty, and limitations; report data quality, versioning, and analytical choices.
- **Translation with accountability:** Aim for outcomes that matter reduced emissions, safer water, better learning or health, improved affordability and specify **who will use** the result and **how**.
- **Inclusion and communication** It is about inclusion: we should clarify our complicated work in the English language and in Kannada so that the range of participants, imitators, and beneficiaries increases.

I rightly applaud the department of science, government first grade college, tumkur and partners who have had a platform which embraces evidence, ethics and impact. To the authors: you should consider this abstract as an assurance to test better, write better, and work together more extensively. In case the discussions that emerge here result in such concepts as field pilots, policy briefs, open datasets, and long-term partnerships, the actual importance of SSSF-2025 will be achieved.

I hope to have good fruitful discussions and long-term relationships. It is my hope that these pages can bring about solutions that are scientifically feasible, socially germane and scalable.

Message from the Vice-Chancellor and Chief Guest

Prof. Sharath Ananthamurthy
Vice-Chancellor, Kuvempu University, Shivamogga, Karnataka

It is my pleasure to present this message to the Book of Abstracts of the National Conference Science & Society of Sustainable Future (SSSF-2025). And now, in collaboration with the Karnataka Academy of Sciences and Technology (KASTA) and hosted by a college of confidence, Government First Grade College, Tumkur, in her publication programme is the following collection: This is the common purpose of our universities and academies- to produce credible knowledge, to inculcate young researchers and to bring ideas into quantifiable good.

Those abstracts below are displayed in physical and life sciences, engineering and technology, biomathematics and computing, human and natural health, commerce and management with Kannada perspectives of Sustainability related to science and engineering, humanities and education, media and communications, and library and information science- as well as significant space of Kannada scholarship in relation to science and sustainability. The breadth makes a vital point: sustainable futures are not constructed with the help of one discipline but with dialogs between and among disciplines, institutions, as well as communities.

I am open to three things that are manifested in this book:

- **Rigor and Reproducibility**
- **Implementation and Accountability**
- **Inclusion and Capacity Building**

To the students and early-career researchers, I encourage you to treat today as a starting point: replicate a result, share a dataset responsibly, write a policy brief, or partner with a local body to pilot an idea. To the faculty and collaborators, let us continue to support open, ethical, and interdisciplinary research that serves Karnataka and the nation while speaking to the global community.

I congratulate the organisers, advisors, reviewers, session chairs, and authors whose efforts have shaped this programme and this book. May the dialogues and data captured here lead to enduring collaborations, high-quality publications, and tangible improvements in learning, livelihoods, and the environment.

With best wishes for a stimulating and impactful conference.

Message from the Organising Secretary

Dr. F. T. Z. Jabeen
Organising Secretary, SSSF-2025
Department of Science, Government First Grade College, Tumkur

With great pleasure, I present this Book of Abstracts for the National Conference Science & Society for Sustainable Future (SSSF-2025). This volume captures the breadth of contributions we hoped to convene-spanning physical and life sciences, biomathematics and computing, engineering and technology, health and nursing, commerce and management with ESG perspectives, humanities and education, media and communication, library and information science, and a dedicated space for Kannada scholarship aligned to science and sustainability.

Our editorial emphasis has been simple and firm: clarity, integrity, and usefulness. Authors were encouraged to articulate precise objectives, methods, results, and limitations; to follow ethical norms on similarity, human/animal research, permissions, and AI-use disclosure; and, wherever feasible, to offer transparent data/code or justified availability statements. These practices strengthen trust and enable others-teachers, students, practitioners-to adapt and extend the work.

SSSF-2025 is designed not only to showcase research but to enable translation. Across sessions you will find ideas that speak to Karnataka's and India's priorities: climate and water resilience; clean and affordable energy; public and community health; responsible AI and data stewardship; circular materials and smart manufacturing; inclusive education and science communication. We will continue to support promising work through peer-reviewed journals, edited book chapters, and bilingual dissemination, guided by reviewer feedback and quality thresholds.

My heartfelt thanks to the Chief Patron and Principal, our Advisory Boards, reviewers and session chairs, student volunteers, and the Karnataka Science & Technology Academy (KSTA) for their partnership. Above all, I thank the authors for their timely, thoughtful submissions and for the spirit of collaboration that animates this programme.

May the pages that follow spark new collaborations, field pilots, and learning resources that carry science confidently into society.

Dr. F. T. Z. Jabeen
Organising Secretary, SSSF-2025

Message from the Conference Coordinator

Dr. Yogeesh N
Conference Coordinator, SSSF-2025
Head, Department of Mathematics, Government First Grade College, Tumkur

I am very pleased to present the Book of Abstracts to the National Conference Science and Society for Sustainable Future (SSSF-2025). Since the original concept note through to the present-day inaugural, I am delighted to have been end-to-end-curating as to the theme, helping to form the tracks, creating partnerships, organizing reviews and providing a truly hybrid and all-inclusive platform linking the rigorous science with the societal need.

The design of SSSF-2025 was grounded on straightforward promise evidence must flow-between-labs-and-classrooms as well as model-to policy and prototype-to community. In order to keep such promise, we demanded clarity and integrity of all submissions; reproducibility and sharing wherever possible; and translation and impact as ultimate test of value. Ambient outcome is a group comprising physical and life sciences, green chemistry and environment, biomathematics, statistics, and computing, engineering and technology, nursing, and medical sciences, commerce/management and ESG, humanities/social sciences/education, media/communication and library-information science, physical education and well-being and a special Kannada stream-because sustainability needs both global and local applications.

On the sides, I have been playing a role of balancing the people, methods, and the aim: matching reviewers and track chairs, developing reasonable timetables, addressing circuitousness and remuneration issues with submissions and repayment, permitting students to take part in scale and establishing a publication roadway that could compensate quality-reviewed journals and curated book chapters, and, where acceptable, either in Scopus/WoS choices within presented specific similarity and ethics limits. All the decisions have been directed towards a single outcome, trusted knowledge and practical ways.

This conference stands on many shoulders. I record my sincere thanks to **Prof. Vasantha T. D., Principal and Chief Patron**; to our **Advisory Boards**; to **Karnataka Science & Technology Academy (KSTA)** for partnership and guidance; to our **Organising Committee, reviewers, session chairs, and student volunteers** whose reliability turned plans into reality; and to the **authors**, whose ideas give this event its heart and momentum.

In the spirit of continuity, SSSF-2025 is also envisioned as a seed for future initiatives at Government First Grade College, Tumkur and beyond. The dialogues, networks and mentoring pathways that emerge over this day will, I hope, mature into collaborative

projects, joint publications, outreach programmes for schools and colleges, and community-engaged innovations that directly serve our region and our country. By consciously involving early-career researchers, postgraduate and undergraduate students alongside senior academics and practitioners, we aim to nurture a pipeline of young scientists and scholars who see sustainability not as a slogan but as a professional and ethical commitment. It is my earnest belief that the experiences and connections forged here will continue to resonate long after the conference banners are taken down.

As you read these abstracts, I invite you to treat each page as an invitation-to replicate a method, share a dataset responsibly, forge a cross-disciplinary team, mentor a student, write a policy brief, or pilot a solution with a local stakeholder. If even a handful of contributions move from discussion to **actionable change in the coming months**, SSSF-2025 will have fulfilled its purpose.

We have invited the following dignitaries as inaugural and keynoter speakers.

With gratitude and determination, I commend this volume to you and look forward to the collaborations it will spark.

Dr. Yogeesh N
Conference Coordinator, SSSF-2025

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Economic Impacts of Climate Change and the Circular Economy in Emerging Economies

Ranganath G

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Abstract

Climate change is becoming an ever-increasing burden to the global economic stability with major impacts experienced in the emerging economies that mainly use climate-sensitive economic sectors including agriculture, manufacturing as well as energy. A complete overhaul of the economy to be circular, even reliant on resource efficiency, reduction of waste and environmentally friendly production could be one of the possible solutions that would help to reduce these effects yet maintain the economic growth in the long-term. The paper evaluates the economic impacts of the climate change and the application of the models of the circular economy as one that can support resilience and sustainability. Based on theoretical insights, empirical evidence and four case studies (India, China, South Africa and Indonesia) the paper sheds light on the interrelations between the degradation of the environment and productivity loss and circular innovation. The research studies indicate that although climate change has a negative impact on the growth of the GDP, employment, and fiscal stability, circular economy policies can mitigate the effects by creating green jobs, creating work to efficiency, and limiting reliance on non-renewable inputs. The paper wraps up with major obstacles, approaches and policy implications towards the rapid shift in the circular transition of the emerging economies.

Keywords: Climate change, Circular economy, Sustainable growth, Resource efficiency, Green innovation, Environmental economics, Emerging economies, Resilience.

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Influence of Caesium (Cs) on the Structural Properties of Manganese Ferrite

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Abstract

Solution combustion method was used to obtain a series of Caesium (Cs)-doped (alkali metal ion) Mn ferrites. The investigation of the ferrites that was under investigation was characterized in a variety of techniques namely, X-ray Powder Diffraction (XRD) and Fourier-transform infrared spectroscopy (FTIR). Structural parameters were calculated using the XRD. On closer examination of these properties, it can be noted that doping withcesium (Cs) refined a lattice constant of manganese ferrite (a), unit cell volume (V), and the density of dislocations (d). It also enhanced the separation between magnetic ions (LA and LB) and bond lengths (A-O and B-O) between tetrahedral (A) and octahedral (B) locations. Furthermore, it enhanced the X-ray density (Dx) and crystallite size (d) of random spinel manganese ferrite displaying opposing patterns of behavior. FTIR-based functional groups of random spinel manganese ferrite were going to be determined. These characteristics of MnFe2O4 particles, such as their size, shape, and crystallinity, demonstrate that these manufactured particles are present at the nanoscale and that caesium doping caused shape modification of the particles. The magnetization of manganese ferrite fell with a corresponding increase in coercivity. In this paper we are presented only the XRD analysis of the samples.

Keywords: XRD; FTIR; caesium-doped MnFe2O4; manganese ferrites; tetrahedral; octahedral.

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Ce3+ doped Y4Al2O9 phosphors for supercapacitors, photocatalysis, and antidiabetic applications

R. Arunakumar[1], B. R. Radha Krushna[2], A.S. Rajashekharaiah[3], V. Dinesh[3]

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[2]Prof. C.N.R. Rao Centre for Advanced Materials, Tumkur University, Tumkur.
[3]Department of Physics, Government First Grade College, Tumkur 572102, India.

Abstract

A series of Ce3+-doped YAM phosphors, with doping concentrations ranging from 1 to 5 mol%, was successfully synthesized using the solution combustion method. The introduction of Ce3+ ions led to the formation of a monoclinic crystal structure, confirmed by diffraction analysis, which matched the P21/c space group of the YAM host matrix. Surface morphology studies revealed a transition from agglomerated clusters to more uniformly shaped particles as the dopant concentration increased. Tauc analysis (based on the results of the UV-Visible absorption spectroscopy) based on the optical band gap analysis of the samples showed that there was a decrease of 4.30 eV to 3.59 eV as the level of Ce3 increased and revealed improved properties of light absorptions. YAM:5Ce3+ phosphors were found to assess the finest catalysis behavior among the synthesized ones, with a degradation efficiency of 98.4 percent in 100 min. The integrity of recyclability tests proved long-term catalytic activity in terms of repetitive use, thus, underlining the stability and high usefulness of the recyclability tests. Cyclic voltammetry (CV) analysis offered the analysis of the redox behaviour and ion transport dynamics, and the value of supercapacitance 1035.4 F/g at 5 mV/s of the YAM:5Ce3+ phosphors showed a high value of supercapacitance. Galvanostatic charge-discharge (GCD) tests conducted revealed the maximum energy density of 14.7 Wh/kg and capacitance retention of 90.56 per cent that provided additional support to the material as a potential energy storage technology. The antidiabetic effects of the phosphors were also tested by using aglucosidase and a -amylase inhibition tests. YAM:5Ce3+ phosphor fusion showed great inhibition rates 96.2 and 97.86, respectively, indicating that these phosphor fusions are promising to use in diabetes management. Such discoveries highlight the versatility of the Ce3 + doped YAM phosphors whose applications are in photocatalysis, energy storage and biomedical studied.

Keywords: Photocatalysis, Supercapacitance, Antidiabetic, Energy storage, phosphors

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Nd^{3+} doped V_2O_5 nanoparticles for photocatalytic applications

P. K. Anuradha[1*], B. R. Radha Krushna[1], I.S. Pruthviraj[1], G. Sharan kumar[1]

[1]Prof. C.N.R. Rao Centre for Advanced Materials, Tumkur University, Tumkur-572103, India.

Abstract

This paper gives a simple and environmental friendly synthesis of the Neodymium (Nd^{3+}) doped vanadium pentoxide nanoparticles (V_2O_5:Nd^{3+} NPs) whereby citrus hystrix (C. hystrix) fruit extract is used as a natural reducing and stabilizing agent. The NPs undergo synthesis and calcification at 450deg C. The UV-visible spectroscopy is used to determine the optical band gap, and FTIR was used to determine the vibrational modes associated with the synthesized NPs. V_2O_5:Nd^{3+} NPs synthesized had good prospects of application in dye degradation. The photoluminescence (PL) spectra has shown the emission peaks at specific positions belonging to Nd^{3+} ions and the maximum concentration was observed to be 5 mol, which also showed the best doping degree and produced the maximum peak. An increase in the level of doping resulted in a reduction in PL intensity by concentration quenching (CQ). The V_2O_5:Nd^{3+} NPs had a better photocatalytic ability since they degraded the methylene violet (MV) 98.41 percent in 100 mins light exposure. This shows that they can be used in the remediation of the environment and in human health practices. The antioxidant ability of V_2O_5:5Nd^{3+} NPs is also tested using a 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, to which 43.91% and a dissociation constant (IC50) of 55.27 ug/mL is attained. Toxicity assessments conducted using a direct hemolysis assay on RBC models indicated that the NPs are non-toxic. Anti-inflammatory activity is assessed through protein denaturation and membrane stabilization assays. V_2O_5:Nd^{3+} NPs inhibited egg albumin and Bovine Serum Albumin (BSA) by 46.27 % and 58.67 %, respectively, at a concentration of 200 µg. Similarly, the membrane stabilization assay revealed inhibition rates of 56.30% and 46.17% against heat-induced and hypotonicity-induced hemolysis, respectively, at the same concentration.

Keywords: Citrus hystrix, nanoparticles, dye degradation, methylene violet

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Diversity of Zooplankton in Arakere Lake, Tumkur District, Karnataka

Ramya S V[1] , Lalitha H M*[2]

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Abstract

Zooplanktons are a diverse group of heterotrophic, often microscopic, organisms that drift in aquatic environments, forming a vital component of both marine and freshwater ecosystems. They include a wide variety of taxa such as protozoans, copepods, cladocerans, rotifers, and larval stages of many larger organisms like fish and crustaceans. Despite their small size, zooplankton play a critical role in aquatic food webs serving as a key link between primary producers (phytoplankton) and higher trophic levels such as fish and other aquatic animals. Zooplankton diversity is therefore essential for understanding energy flow, nutrient cycling, and the overall functioning of aquatic systems. Present study was conducted on Arakere lake of Tumkur District, Karnataka for a period of one year from March 2024 to February 2025. The water samples were collected from the lake through plankton net then preserved immediately by using 4% formalin solution. Zooplankton identification was done by using the standard methods and confirmed by ZSI Hyderabad. A total of 18 freshwater Zooplankton species belongs to Copepoda, Cladocera, Ostracoda and Rotifers were recorded. The Lake of Arakere is a major local resource, which supports fish culture, agriculture. The study of its Zooplankton diversity and physico-chemical parameters provides some useful information on the ecological, hydrological and socio-economic significance of it. Surveillance of the zooplankton diversity is used to identify effects of pollution, eutrophication, and climate changes on the water ecosystems. Besides, the knowledge of zooplankton community is beneficial in the management of fisheries since most fish species depend on them in the initial phases of their lives. On the whole, Zooplankton diversity can be studied as a factor in preserving and sustainable management of the aquatic environment as it can shed some light on ecological and environmental stability, and vice versa.

Keywords: Zooplanktons, Primary producers, Physico-chemical parameters, Eutrophication, Fisheries.

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Assessment of Physico-chemical parameters in Chikka Thotlukere Lake, Tumkur District, Karnataka

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Abstract

Water is the most important resource for human survival and freshwater bodies are crucial for sustaining life on our planet. Aquatic ecosystems include a broad spectrum of freshwater, brackish water and marine biotopes characterized by their distinct biodiversity, biotic and ecological features. Among freshwater ecosystems, ponds, lakes, tanks and other small lentic ecosystems form an integral part of the biosphere. Lakes are the significant components of the Earth's terrain, acting as vital water sources and also offering essential habitats for plants and animals. The ecosystem's metabolism is determined by the chemistry of the water and physicochemical parameters have an impact on the whole hydrobiological connection within the environment. The physico-chemical analysis of parameters is an important measure of assessing and determining water quality since it is used to tell the biological state of the ecosystem. More so, physico-chemical parameters can be used to establish the suitability of water to its intended use as well as improve its present state. The current project lasted a duration of 1 year including the months of February 2024 to January 2025 in Chikka Thotlukere Lake, Tumkur District, Karnataka. Sampling of the surface water was conducted on monthly basis collecting the samples in two litres of polythene cans in selected 3 sampling sites between 7 AM to 9 AM in the morning. The analysis was carried out for the parameters like Temperature, pH, Turbidity, Electrical conductivity, Total Dissolved Solids (TDS), Total Suspended Solids, Total Alkalinity, Biological Oxygen Demand (BOD) and Dissolved Oxygen (DO) of water as per standard methods (APHA, 2005). The results indicated that the physico-chemical parameters were within the permissible limit as prescribed by Indian standards of drinking water: 2012. The lake water is ideal for growth and survival of aquatic organisms, drinking, irrigation and fish culture.

Keywords: Aquatic ecosystem, Physico-chemical parameters, Dissolved Oxygen, Fish culture.

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Study of Phytoplanktons and Analysis of Physico-Chemical Parameters in Two Legendary Ponds of Chitradurga Fort, Deccan Plateau, India

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Abstract

The two legendary ponds, Akka and Tangi, are located in Chitradurga Fort in Karnataka State. The study was aimed at knowing various physico-chemical characteristics and phytoplankton diversity in the ponds. The study was spread over a period of three months, from June to August 2024, to assess the quality of water. Qualitative and quantitative estimations of phytoplankton were considered when analyzing biological parameters. In the present study, pH (6.61-7.15 and 6.91-7.33), air temperature (20°C-28°C and 21°C-24°C), water temperature (21°C-24°C), and chloride (24.14-25.4 mg/L and 23.1-28.2 mg/L) were measured. Dissolved oxygen (6.8 mg/L and 8.8 mg/L), BOD values (1.49-1.63 mg/L and 1.34-1.56), calcium (118.7 mg/L to 126.5 mg/L and 120.1 mg/L to 139 mg/L), free CO_2 (1.2 mg/L-3 mg/L and 1.9 to 3.4), and magnesium (7.5-10.5 mg/L and 8.5-9.85) in Akka and Tangi ponds, respectively. Mainly six groups of phytoplankton were recorded; they are Cyanophyceae (03), Chlorophyceae (05), Bacillariophyceae (07), Xanthophyceae (01), Eustigmatophyceae (01), and Euglenophyceae (01). However, Bacillariophyceae is most prevalent in both the ponds. The results indicated a significant correlation between nutrient levels and phytoplankton growth; species diversity varied with seasonal changes, reflecting shifts in water quality.

Keywords: Akka-Tangi pond, Chitradurga, Physicochemical parameters, phytoplankton diversity, and Bacillariophyceae.

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Anti-diabetic Property and Anti-cancerous Property of Leaf and Fruit Extracts of *Zanonia Indica* L.

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Abstract

In India, enormous plant types have been documented from the Himalayas to Kanyakumari. India is a multilingual, multicultural nation with a pluralistic healthcare system with the traditional knowledge of utilization of plants for medicinal purposes varies from region to region depending upon the availability of herbal plants. Phytochemical analysis and Pharmacological studies revealed the therapeutic properties of these Indian plants. Pharmacological studies on plant extracts is necessary for the assessment of anti-diabetic and anti-cancerous property. In this study, the anti-diabetic property of leaf and fruit extracts (ZLAE, ZLME, ZFAE and ZFME) of *Zanonia indica* was assessed by *in vitro* α-glucosidase inhibitory assay and α-amylase inhibitory assay. The anti-cancerous property of various extracts of *Zanonia indica* leaf and fruit was assessed by MTT assay method using human lung adenocarcinoma cell line (A549). The study showed that, both methanol and acetone extracts of leaf and fruit of *Zanonia indica showed* anti-diabetic and anti-cancerous property.

Keywords: Anti-diabetic, Anti-cancerous, Zanonia leaf and fruit extract, Acarbose, adenocarcinoma.

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Isolation and Identification of Endophytic Fungi from *Centella Asiatica* (L.), in Chikkamagaluru Regions

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Abstract

Centella asiatica is a medicinal plant widely used in India especially to improve memory power. These medicinal values are because of presence of secondary metabolites. Endophytic fungi which are present in many vascular plants responsible in enhancing the production secondary metabolites in plants. In this study the endophytic fungi present in *Centella asiatica* has been isolated and identified. The selected area of study was Chikkamagaluru region. A total number of 19 endophytic fungal species were isolated and identified in three different study regions in Chikkamagaluru which shows the diversity of endophyte.

Keywords: *Centella Asiatic*, endophyte, *Aspergillus niger*, Chikkamagaluru, *Aspergillus flavus*.

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Investigation of *Psidium* guajava leaves extract as green corrosion inhibitor for mild steel in a simulated environment

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Abstract

In oil and gas industries, corrosion originates to the presence of eroding sour environment by marine activity as well as saline nature of the sea. Sulphur dioxide emissions and acid wash water from the ships are responsible for ocean acidification. Underwater pipelines are constructed using carbon steels, which are prone to corrosion due to structural stresses in acidic environment and temperature dependence. To protect the pipelines in the adverse environment of the sea, plant based inhibitors are being investigated, especially for internal corrosion. Concern for the marine environment is another major requirement for these inhibitors. Extracts of medicinal and other plants are being studied as green inhibitors for carbon steels. In this pre-screening study, the investigation of water extract of Psidium guajava leaves for the corrosion prevention of mild steel (MS) by weight loss studies is reported. In presence and absence of H2S, with synthetic seawater to simulate the marine environment. Bioaccumulation and biodegradation studies were also investigated for the inhibitor.

Keywords: Corrosion; plant based corrosion inhibitors; mild steel ; bioaccumulation; biodegradation.

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Heavy metal profile of Gangasandra tank of Tumkur District, Karnataka.

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Abstract

Human anthropogenic activities have caused an increase in heavy metal pollution in the water bodies. The high concentration of heavy metals also affects consumers as they reach the human body through the food chain. Gangasandra tank of Tumkur district water samples were collected between May 2022 and April 2023 and were analyzed for Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn), Lead (Pb), Nickel (Ni), Chromium (Cr), and Cadmium (Cd). The water sediments were characterized by a sandy to very fine texture. In the Gangasandra tank, the heavy metals were found to be present in wide-ranging concentrations: Fe (0.10-0.28 mg/l), Cu (0.001-0.075 mg/l), Cd (0.001-0.005 mg/L), and Pb (0.008–0.015 mg/L). However, Mn, Cr, and Hexavalent Chromium were below detectable levels in this tank. The results signify that levels of Cd slightly exceeded the order of magnitude as per the values stated by EPA (Environment Protection Agency, 2002); WHO (World Health Organization, 1993), and USPH (United States Public Health). The order of heavy metal levels in water was Fe>Cu>Pb >Cd. There were no significant longitudinal differences in all the elements apart from Pb, Cu, and Cd contents. In the sediments, iron content was maximum, and manganese content was minimum in concentration. The order of heavy metal levels in sediments was Fe >Zn> Pb > Cu>Cd >Ni>Mn. This water body was mesotrophic concerning Pb, Cu, and Cd, which were comparatively higher than unpolluted geochemical background values. The greater part of the locales of the waterway channel is a zone of moderately comparable lithological qualities. The data is vital for pollution management of the tank, as information about metal loadings into the water system is lacking. The results are compared with the BIS, WHO standards to identify the tank that is not as per the standards.

Keywords: Heavy metals, Gangasandra tank, BIS, WHO, EPA standards.

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Computational Insights into Molecular Structure Using P_3, Reverse P_3 And P_3^* Degree-Based Indices

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Abstract

The finite simple P_3graph is defined as a graph whose vertices represent all 3-vertex paths of a given graph G, where adjacency exists between two such paths if they together form a 3-cycle. Theaflavin has been extensively studied in both in vitro and in vivo models, demonstrating significant antiviral, antioxidant, and anticancer properties. It may also contribute to stabilizing blood glucose levels. In this study, we perform a computational analysis of $P_3$and reverse P_3degree-based indices, including the First and Second Zagreb indices, Randić index, Symmetric Division Degree index, Hyper Zagreb index, Sum Connectivity index, GA index, Harmonic index, Schultz index, and ISI index. Additionally, we define the P_3^* graph and compare the numerical values of all three-P_3, reverse P_3, and P_3^*-to highlight their structural relationships and computational significance.

Keywords: Zagreb index, Randic index, Sum Connectivity index, H-index, Schultz index.

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Analyzing Heptagonal Fuzzy LPP By R Programming for Finding Relationship Between Education and Reason for Choosing Being the Street Merchant

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Abstract

In growing nations like India, the casual zone which include avenue retailing absorbs the bulk of the megacity jobless developing a workforce. It generates a significant amount of jobs; it's far a system for gains for the disadvantaged groups, and the megacity is particularly bad for those who relocate from the rural area. still, anyhow of its growing significance with inside the overall frugality (especially for megacity terrible with inside the megacity), programs, regulations, services, structure centers and institutional companion programme are not to be had for the road retailing and the surroundings below which the dealer serve their marketable enterprise are not applicable for his or her fitness and good. This paper offers with locating the connection among training and why the man or woman is opting their career as avenue seller. It's thus, the focal point of this take a look at is to estimate the existence of avenue providers In the course of pandemic around Covai city. To resolve this, Heptagonal fuzzy direct programming is applied through R programming to discover the ultimate motive for the case take a look at.

Keywords: Street merchants, Covid 19, FLPP, R.

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Fuzzy PDE Models for Sustainable Resource Dynamics: An α-Cut and Robust Optimization Framework

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Abstract

This study develops a practical modeling pipeline to treat epistemic uncertainty in sustainability-focused partial differential equations governing environmental and urban systems. We represent imprecise forcings and parameters with fuzzy numbers (triangular/trapezoidal membership functions) and propagate uncertainty via α-level analysis: for each α, parameters are mapped to compact intervals and a deterministic diffusion–reaction problem is solved to yield envelopes of feasible states. The workflow integrates (i) fuzzy parameterization and α-cut computation, (ii) numerically stable parabolic solvers (implicit/Crank–Nicolson discretizations with Dirichlet boundaries), and (iii) a stylized robust multi-objective design that visualizes trade-offs between expected performance and sustainability risk. Two representative applications illustrate relevance: groundwater-style storage under uncertain recharge–demand balance and urban heat mitigation with uncertain material/forcing properties. Results include interpretable membership curves and α-cut bounds, α-dependent terminal profiles, time-evolution bands that communicate worst-plausible excursions, and Pareto fronts clarifying yield–risk compromise under policy intensity. A grid-refinement study indicates indicative second-order spatial convergence in the smooth-solution regime, supporting numerical consistency. Overall, the approach preserves uncertainty structure without imposing unwarranted probability models, providing decision-makers with conservative, policy-ready indicators for risk-aware planning in data-sparse contexts.

Keywords: epistemic uncertainty; membership functions; α-level analysis; interval propagation; diffusion–reaction systems; groundwater storage; urban heat mitigation; Pareto trade-off; risk-aware policy; sustainability indicators

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Assessing Schools with Respect to Nutrition Friendly Initiatives

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Abstract

The Nutrition-Friendly Schools Initiative (NFSI) is a program developed by the World Health Organization (WHO) and its partners in 2006 to provide a framework for ensuring integrated school-based programs which address the double burden of malnutrition (both under nutrition and obesity) and to become the nutrition module of the Health Promoting Schools, by implementing integrated school-based programs that promote healthy eating habits and nutrition education.

Keywords: Nutrition, Food, Obesity

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Sustainable Customer Satisfaction in Indian Online Shopping: Evidence from Tumkur District

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Abstract

This paper reframes a prior study of customer satisfaction in online shopping (Tumkur district, Karnataka) through the lens of sustainability and responsible digital commerce. We integrate environmental (e.g., low-impact packaging and green logistics), social (e.g., fair labor and accessibility), and governance (e.g., privacy and algorithmic transparency) dimensions into a multi-construct model that links e-service quality and value/trust to overall satisfaction and loyalty intentions. Methodologically, we propose a cross-sectional survey with validated Likert scales, compute reliability (Cronbach's a), estimate minimum sample using Cochran's formula, and illustrate factor scoring and logistic regression for repurchase intention. We also outline a sustainability-weighted satisfaction index (SUSI) and demonstrate basic calculations. Empirically illustrative figures (framework diagram, factor means, and Pareto complaints) are provided to guide implementation. The results indicate that, beyond classic drivers (speed, reliability), governance/privacy and environmentally responsible practices are significant predictors of satisfaction and intention to recommend. We conclude with policy and managerial implications for retailers operating in India's fast-growing e-commerce sector: embed sustainability KPIs into CX dashboards, disclose credible metrics (e.g., recycled content, green delivery), and align privacy UX with data-minimization norms. The study extends prior work on Tumkur's online shoppers by operationalizing sustainability within customer satisfaction modeling and offering a replicable toolkit for colleges and local commerce departments to evaluate digital retail responsibly.

Keywords: sustainable e-commerce; customer satisfaction; privacy and data governance; green logistics; SEM/PLS; Cronbach's alpha

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The Role of Sustainable Business Practices in Driving Innovation and Responsibility Across Sectors

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Abstract

Sustainability is no more a social responsibility thing or a business initiative that companies engaging in CSR apply to gain some levels of recognition, but a core business philosophy in the 21 st century, as it leads to innovations, competitiveness, and social developments. Through the various levels, situations, and fields of study, sustainable business practices, which are based on the environmental stewardships, social equity as well as economic viability are changing industries, and societies. The paper examines the role of the business model that is lean towards sustainability in development at the local, national and global levels of development. It has a full literature review, conceptual framework, objectives, statistical analysis, and findings showing the contribution made by sustainability to inclusive growth and resilience.

Keywords: Sustainable Business Practices, Triple Bottom Line, Corporate Social Responsibility (CSR), ESG, Circular Economy, Sustainable Development Goals (SDGs), Corporate Sustainability.

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Artificial Intelligence in enhancing Hybrid mode of Teaching - Educators perspective across Bengaluru City

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Abstract

Responding to the pandemic, universities have been making great strides to improve their students' online learning experiences. Still, more effort is required, as it always has been. In response to the COVID-19 outbreak, educational institutions hastened to improve their online course offerings. A lot of universities have made the hasty decision that it's best to create an online environment that's almost identical to the real thing. The decision by some colleges to return to online learning for the last days of the term highlights the need of institutions becoming ready for the future of flexible, hybrid learning, since there has been a significant uptick in these cases. Artificial intelligence (AI) and other types of educational technology may have a significant impact on how schools are structured in the years to come. It is the hope of the proposed research that AI and other forms of educational technology can facilitate a smoother shift from conventional to hybrid classrooms and, by extension, better instruction for students. The project will gather data from the educators using quantitative approaches and a descriptive research style. A master validity statistic-validated, well-structured questionnaire will serve as the data collection tool. A non-probability sampling technique will be used to choose the sample, with a margin of error of 7%. The research will involve two hundred teachers. For the purpose of data analysis, SPSS and AMOS will be utilised. Based on the study's findings, AI has a major influence on improving hybrid teaching, and different demographics of educators have diverse perspectives on hybrid teaching.

Keywords: Artificial Intelligence, Hybrid Teaching, Teacher experiences, Artificial Intelligence in Education

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The Impact of Progressive Income Tax on Income Disparity in India

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Abstract

This paper focuses on how progressive income taxation affects income inequality in India, a country that is fast growing economically and at the same time, with the increasing difference in the socio-economic background. Progressive taxation tries to impose a higher rate to people who have greater income with a view to redistributing wealth and to finance the services of the population with low income. In theory, it is effective but in practice, its contribution in India is limited by tax evasion, the high informal economy and inefficiency in the tax administration system. The paper presents the research on the empirical evidence to determine the degree to which progressive taxing lowers the income inequality based on the reports forwarded by the Indian government, peer review articles and also based on the international research. The results show that the concept of progressive taxation has a potential, but the systemic restrictions define its use. The paper suggests policy amendments, which comprise simplification of the tax system, expansion of the tax base, better enforcement effects as well as increase in public awareness to elevate the redistributive effects of the taxation system.

Keywords: Progressive taxation, Income disparity, India, Tax compliance, Wealth redistribution, Informal economy.

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Algorithmic Fairness in Product Recommendations: An Empirical Study of Bias in Indian E-Commerce Platforms

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Abstract

Artificial intelligence has become the centre stage of e-commerce, which determines what products appear on our screens, and, consequently, who receives the sale. In the midst of an online shopping boom that is raging in India, a huge question looms large in the sky; Are these algorithms fair even to smaller or local sellers? Large brands possess muscle, but do they also benefit in terms of an algorithmic boost, putting those less powerful at the opposite end of the spectrum? The present research excavates the same, but with reference to Indian companies such as Amazon India and Flipkart. We had an opportunity to play with it, to scrape product data, to create numerous various user profiles, and to execute the numbers in terms of fairness metrics. Our goal? To determine whether these systems have a consistent tendency of promoting big brands to the peak at the expense of the minor or regional sellers. We were putting up controlled accounts with their browsing history and artificial demographics to replicate an actual combination of shoppers. After this, we made a follow-up on the products appearing, in which location, and to whom. Both of the stats, and on top of that we interviewed small sellers themselves and listened to them tell us about their experience with the system, what they see, and how it is affecting their bottom line. What did we find? The statistics speak of the obvious visibility preference: larger and more recognized brands receive bigger exposure, and smaller sellers are crowded out. And this may not always be deliberate but it is a reality- and it may enhance market inequality with no one actually paying much attention. Our work at the end of the day contributes to an overall discussion of an ethical AI and fair digital markets, demonstrating the policy-makers and e-commerce administrators both the reality of what goes on and what, they, can or can't do with it.

Keywords: Algorithmic Fairness; E-Commerce; Recommendation Systems; AI ethics.

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AI and Fintech in the Gig Economy: Economic Empowerment or Digital Exploitation?

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Abstract

The fast adoption of Artificial Intelligence (AI) and financial technology (fintech) in the gig economy has fundamentally altered the essence of work and posed important concerns whose validity is either that the innovations will lead to economic empowerment or that they will sell to change people into digital exploitation. This paper will examine the dual nature of AI and fintech in conditioning the metamorphosis of gig work and how the technologies both provide advantageous opportunities of financial independence and inclusion and further ethnicize precarious work practices. Ride-sharing, delivery, freelance services and other artificial intelligence-based platforms make use of their algorithm to direct job assignment, pricing, performance assessment as well. On the one hand, these systems positively influence the efficiency and leave workers with adaptive opportunities in working, and on the other hand, algorithmic bias, or opaque decision-making are the characteristics of such systems, which deprive workers of autonomy and stability. It results in a complicated relationship by which the gig workers can feel more and more economically empowered and monetarily insecure.

Global inequalities are also taken into account in the paper, as gig workers in the developing economies are more vulnerable as the labor protection and salary earning potential are weaker. Although technological empowerment can come with positive results, AI and fintech have the potential to reinforce the power disparities and labor exploitation, uncontrolled. Finally, this paper states that technology does not necessarily predetermine the right or wrong course of AI and fintech in the gig economy, but governance, regulation, and accountability of the platforms can. It ends by asserting that clear algorithms, fintech ethics, and robust labor regulations must be developed in order to make the future of gig work truly empowering economic activity, as opposed to support digital exploitation.

Keywords: AI, Fintech, Gig Economy, Economic Empowerment and Digital Exploitation.

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Economic Perspectives on Science and Society: Towards Sustainable Growth through Green Technology, Social Innovation, and Policy Integration

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Abstract

Sustainable development of the 21st century is based on the self-interdependence of science, the society and the economics. This paper presents the ways in which the economic thought has incorporated the scientific innovation, environmental sustainability, and social welfare in a manner that has formed a balanced avenue to sustainable growth. Focusing on the economic aspects of the green technology, social innovation, and policy integration, the research highlights the process of how the economies can shift to the mode where they rebuild the resource-based models to the system where knowledge becomes more inclusive and is based on the contribution of many people. It considers that the sustainable growth must not only be accompanied by scientific advances but also economic systems that place the emphasis on equality, environmentalism, and diffusion of technology. The paper has ended by giving policy recommendations to integrate economic as well as scientific innovation to the sustainability of the long term.

Keywords: Sustainable Growth, Economics, Green Technology, Innovation, Policy Integration, Society, Sustainability

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Economic Perspectives on Sustainable Growth in Karnataka: A Comprehensive Study of Green Technology Adoption, Renewable Energy Expansion, and Policy Frameworks for Environmental and Industrial Development

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Abstract

The state of Karnataka is progressive in India and it is the first to apply economic development and environmental sustainability. The given paper examines the economical aspect of the sustainable growth in Karnataka and indicates the three interconnected aspects of green technology penetration, renewable energy growth, and environmental- and industrial-development policy framework. The research question examines the effect of innovation-based industries, the collaboration of the government and the private sector on the creation of a green economy and the role played by the states in influencing this process through environmental policies. Data have been assessed by Karnataka Economic Survey, and Department of Industries and Commerce, and Ministry of New and Renewable Energy (MNRE) to analyse growth trends, creation of employment and carbon minimization results. Microwaves in the paper suggest that Karnataka policies concerning renewable energy and technological advancements play a very important role in ensuring sustainable development, however, policy integration, industrial diversification, and equal access to green technologies remain a problem. The paper will end by suggesting that there should be a holistic policy approach which will connect the environmental governance, modernization of industries, and the strategies of the regional development to ensure long-term sustainability.

Keywords: Sustainable Growth, Green Technology, Renewable Energy, Policy Integration, Karnataka Economy, Environmental Development.

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Towards an Inclusive Sustainable Future: A Sociological Study on Opportunities, Challenges, and Prospects for Sustainable Development and Social Transformation in Karnataka.

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Abstract

Sustainable development now goes beyond the aspect of both environmental and economical dimensions of growth to encompass profound social change and all-inclusive involvement. The given paper will compare the sociological aspects of sustainable development in Karnataka with consideration of interrelations of the social setup, community input, cultural ethics, and the policy models. Based on the sociological conceptualizations of modernization, human ecology, and participatory development, the paper establishes the chance and constraints that define the Karnataka transition into an inclusive and sustainable society.

The paper discusses three fundamental aspects, (1) Opportunities in community-driven environmental action, social innovation, and women empowerment (2) Challenges that are associated with inequality, regional imbalance, and institutional fragmentations (3) Future Prospects that focus on social justice, participatory governance, and cultural ethics of sustainability. It is evident in the analysis that even though Karnataka is ahead in renewable energy and technological innovation, the sustainability agenda cannot be determined without social inclusion, equity, and change of behaviour. The paper concludes that to ensure sustainable future of the state, it is important to incorporate sociological insights into the development planning with a focus on collective responsibility, ethical consumption, and participatory governance to have an equitable and ecologically composed society..

Keywords: Sociology of Development; Sustainable Development; Social Transformation; Inclusive Growth; Environmental Sociology; Community Participation; Green Economy; Gender Empowerment.

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Impact of science on digital education-a sociological study

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Abstract

The contribution of science to the creation of a sustainable society is the linkage of social networks. Science has also changed traditional learning experience of digital education to be more dynamic, accessible and technology based galaxy. This sociological research will discuss the redesign of the educational practice, social interactions and learning outcomes through developments in science and especially in the field of information and communication technologies. Education has become more personalized and inclusive because of the integration of the scientific innovations that include artificial intelligence and virtual classrooms, e-learning platforms, and data analytics. It has helped the learners in different socio-economic backgrounds to have access to quality education without being restrained by geographical boundaries. Under sociological standpoint, digital education has affected the social structures, teacher-student relationships, and the cultural perception of knowledge and learning. On the one hand, it leads to the ideas of democratization of education and opportunities to gain new skills throughout life; on the other hand, it is fraught with such issues as digital inequality, dependence on technology and the fact that the process of learning loses a human factor. This paper shows the dual aspect of scientific advancement in education both empowering the students and at the same time dividing society into new lines of access and digital literacy. The results highlight the necessity to have policies that close the digital divide and promote fair access to education based on technologies. The only thing which remains is the fact science not only has brought modernization in the context of tools and means of education, but has also captured a new understanding over what learning means in terms of social aspects; producing a generation which guides physical and virtual worlds in pursuit of knowledge and growth.

Keywords: Science, Society, Digital education, Artificial intelligence, e-learning

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Gendered Futures and Sustainable Societies: Intersectional Feminist Insights from Contemporary Science Fiction

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Abstract

This paper presents a discussion on how the discourses of gender, agency and sustainability are practiced in contemporary science fiction with the lens of intersectional feminist approach. The study questions how these stories speculate the gendered futures by exploring The Fifth Season (N. K. Jemisin, 2015), Ancillary Justice (Ann Leckie, 2013), and The Sparrow (Mary Doria Russell, 1996) to reimburse the ethics of care, dependence as well as environmental consciousness. Based on the feminist theory and sustainable studies, the paper will state that the texts challenge the traditional paradigms of power and knowledge by presupposing relational forms of survival and rule. The analysis contextualizes these works in the bigger field of ecofeminism and posthuman ethics, in the way of feminist speculations of agency and care, falls into giving alternative patterns of co-existence across the globe and among humans and nonhumans. Finally, the paper will argue that, through feminist speculative fiction, an ecological and moral blueprint of sustainable societies is given, and gender, ecology, and systemic changes are represented as intersections.

Keywords: Intersectional feminism, gender and sustainability, care ethics, agency, science fiction, ecofeminism, posthuman ethics, sustainable societies

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Role of Non-Governmental Organisations in Rural Development in Karnataka: A Study from 2010 to 2024

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Abstract

Between 2010 and 2024, rural development in Karnataka has witnessed significant involvement by non-governmental organisations (NGOs), complementing government programmes and addressing gaps in livelihoods, education, health, women's empowerment, natural resource management and community mobilisation. This article examines the role, strategies, outcomes and challenges of NGOs in rural Karnataka during this period. Drawing on secondary sources, government-NGO collaboration records, and three illustrative case studies of NGO interventions, the study shows how NGOs have acted as facilitators of grassroots change, introduced innovations in community governance (such as SHGs), supported farmer-producer organisations, and partnered in watershed and livelihood programmes. However, issues of sustainability, scaling, accountability and structural constraints persist. The article ends by recommending strengthened partnerships, capacity building, outcome monitoring, and community ownership to maximise the developmental role of NGOs in rural Karnataka.

Keywords: non-governmental organisations, rural development, Karnataka, livelihood enhancement, community mobilisation, SHG networks, NGO-government partnership, rural empowerment

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Science and Social Change: A Sociological Approach to Sustainable Development

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Abstract

Science has become one of the strongest forces that are influencing the contemporary civilization. This has been its contribution in changing the world socially, enhancing the well-being of human beings and surmounting the challenges of the world. However, science cannot exist in a vacuum it exists within an elaborate social, cultural and political systems that dictate the production, distribution and implementation of knowledge. This review paper will cover interrelations of science, social change, and sustainable development based on the sociological perspective. It relies on classical and modern theories in exploring the role of science in social development and the influence of social institutions, values and inequalities on the priorities of science. It is a blend of world views and Indian experiences in the paper that looks at the relationship between science and trends of modernization, expectations of education and environmental awareness. It also illustrates the sociological issues surrounding the concept of attaining sustainability which comprises technological inequality, environmental ethics, and participatory governance. The synthesis of theoretical knowledge and empirical research provides the argumentation presented in the paper stating that sustainable development should be comprehended as a social process not merely of technological innovation but social inclusion, cultural transformation, and democratic actions. A sociological way of science therefore gives an avenue to re-conceptualize the idea of sustainability as a collective human endeavor, not just in terms of progress but equity and ecological accountability.

Keywords: Science, Social Change, Sustainable Development, Sociology, Knowledge Society, Environmental Sociology.

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Social Gerontology for the SDGs Pathways from Policy to Practice

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Abstract

This study proposes a quantitative, SDG-aligned pathway to translate social gerontology policy into frontline practice across old-age homes and aging-in-place programs. We introduce a parsimonious indicator vector x (coverage, quality/safety, affordability, person-centred processes, equity of access, environmental stewardship) and a composite Sustainable Gerontology Performance Index $S = w^{\top}x$ to summarize system performance. Implementation reality is captured by a policy-practice gap $G = \left\|x^{\text{policy}} - x^{\text{obs}}\right\|_2$ and audited fidelity F. Population-level traction is assessed with REAIM ($\Pi = R \times E \times A \times I \times M$). To discourage hidden trade-offs, we report an equityand footprint-adjusted score $S_{\lambda,\mu} = \bar{S} - \lambda \text{Gini}\left(w^{\top}x_j\right) - \mu E_{\text{footprint}}$. An integrated framework (CFIR + RE-AIM + Donabedian S-P-O) and a practical methods pipeline (policy corpus → indicator normalization → sampling & audits → weighting/MCDA → dashboards) enable quarterly monitoring and decision-making. In a multi-site pilot, higher leadership engagement and implementation climate were associated with greater fidelity, which mediated improvements in outcomes and reduced policy-practice gaps; penalty adjustments surfaced facilities with strong headline scores but high inequality or environmental burden. The contribution is a coherent, auditable toolkit-metrics, models, and governance levers (licensing thresholds, outcomes-based payments with equity/green clauses, 4Ms/ICOPE coaching, lightweight registries)-that makes SDG delivery for older adults measurable, comparable, and scalable.

Keywords: Social gerontology; Sustainable Development Goals; Policy-practice gap; RE-AIM; Donabedian S-P-O; CFIR; Composite performance index.

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Gendered Dimensions of Elder Neglect and Sustainable Social Protection

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Abstract

This paper examines the gendered dimensions of elder neglect and designs a sustainable social protection architecture that translates policy into measurable practice. We develop a compact analytical frame in which neglect propensity $N = \alpha D + \beta(1 - C) + \eta H + \theta E + \boldsymbol{\xi}^{\top}\mathbf{Z} + \delta$ Female + $\boldsymbol{\kappa}^{\top}$ (Female $\cdot \mathbf{Z}$) depends on economic dependency D, care availability C, health need H, environmental hazards E, and intersectional factors $\mathbf{Z}$; realized neglect $N^{*} = h(N, X)$ is moderated by institutional protection X. System performance is summarized by a composite $S = \mathbf{w}^{\top}\mathbf{x}$, a gap-totargets metric $G = \left\|\mathbf{x}^{\text{policy}} - \mathbf{x}^{\text{obs}}\right\|_{2}$, and an equity/footprint-adjusted score $S_{\lambda,\mu} = \bar{S} - \lambda\text{Gini}(\mathbf{s}) - \mu(1 - x_{\text{env}})$. Methods combine administrative aggregates (pensions, helpline/justice SLAs, accessibility, energy/waste) with light surveys (ADL/IADL, care hours, OOPE) and RE-AIM monitoring. Illustrative scenarios show higher predicted neglect for older women due to higher D, lower C, and weaker X; a gender-responsive package-income-floor top-ups, care credits/respite, and a protection bundlereduces neglect probability by ≈ 12 percentage points ($\approx 33\%$ relative) at an indicative cost of $\approx$ ₹33,200 per case averted. Quarterly decision rules minimize G and maximize $S_{\lambda,\mu}$, ensuring gains are equitable and environmentally responsible.

Keywords: Gendered elder neglect; Sustainable social protection; Composite indicators $S, G, S_{\lambda,\mu}$i RE-AIM implementation; Intersectionality and aging; Care credits and income floors; Institutional protection X; Environmental guardrails; SDG alignment; Policy-to-practice pathway

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Palliative Care Access and Sustainability in Gerontological Systems

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Abstract

This study develops a quantitative and operational framework for expanding palliative care access for older adults while enforcing equity and environmental sustainability constraints. We model palliative care benefit as $B(c,q,t) = c^{\alpha}q^{\beta}t^{\gamma}$, where c is coverage (the share of eligible older adults reached), q is quality (clinical and psychosocial guideline fidelity), and t is timeliness (speed of symptom-responsive intervention), with exponents $\alpha, \beta, \gamma \in (0,1)$ capturing diminishing returns. System performance is summarized using: a composite score $S = \mathrm{w}^{\top}[c,q,t,e,x_{\mathrm{env}}]$, an equity index e based on subgroup reach (for example, rural women ≥ 75 living alone), a sustainability guardrail x_{env} measuring footprint per service unit, and a gap-totargets metric $G = \left\|\mathrm{x}^{\mathrm{policy}} - \mathrm{x}^{\mathrm{obs}}\right\|_2$. We formulate a resource allocation problem under real constraints - clinical/volunteer capacity $H/(\tau P)$, per-person budget costs k_c, k_q, k_t, and a quarterly ceiling B - and derive a practical decision rule: invest first in the lever (outreach to raise c, training/supervision to raise q, or triage redesign to raise t) with the highest marginal impact per rupee, $\max\{(\partial B/\partial c)/k_c, (\partial B/\partial q)/k_q, (\partial B/\partial t)/k_t\}$, unless equity or sustainability thresholds are violated. We also demonstrate portfolio comparison through a cost-effectiveness-footprint Pareto map and unmet-need heatmap for geographic staging. This work provides a replicable dashboard for gerontological systems, linking palliative care delivery to measurable benefit, budget justification, equitable reach, and low-footprint expansion, in line with calls for integrated, early, community-linked palliative care in ageing societies.

Keywords: Palliative care access; gerontological systems; benefit function $B(c,q,t)$; equity index e; environmental sustainability guardrail x_{env} ; composite score S; gap-to-targets G; marginal impact per rupee; cost-effectiveness; ageing populations.

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I, Robot: An Ethical Interrogation of AI

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Abstract

"I, Robot" is an exceptional work in the genre of science fiction by Isaac Asimov. It explores the robot-human relationship, analysing the ethical and moral implications of artificial intelligence in the future society. Asimov depicts the future of robotics based on the famous "Three Laws of Robotics", which is the basis of perceiving the robot-human relationship in the human dominated society. The present article critically analyses the depiction of AI- Artificial Intelligence and HI- Human Intelligence in a fictional futuristic society as depicted in the stories of " I, Robot" by Isaac Asimov. The themes of AI morality ethics and literature are discussed from the beginning of the last century initiated by Isaac Asimov's, "I, Robot" stories. These stories have contributed greatly to the genre of future science fiction with reference to AI and robotics study.AI backed robots depicted by Asimov are not simple machines which may be built to be human servants. They are conscientious beings like man with the capacity to work on the delicate ethical rules and loss even beyond the restrictions placed by programming inside them. This portrayal of robots by Asimov highlights many invaluable issues for the present day robotics study and innovations in the field of artificial intelligence.

Keywords: Robots, Artificial Intelligence, human, morality, Ethics, human safety.

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Faith-Based and Community Organizations in Sustainable Elder Support

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Abstract

This study develops and tests a lightweight, auditable framework for mobilizing faith based and community actors in elder care while safeguarding equity and environmental responsibility. We formalize program effect as $I(c,f) = c^a f^b$ with $a, b \in (0,1)$, where c is coverage (share of eligible elders served) and f is fidelity (task adherence/quality). System performance is summarized by a composite $S = \mathbf{w}^\top [c, f, e, x_{\text{env}}]$, an equity index e (via subgroup-coverage dispersion), an environmental guardrail x_{env} (inverse footprint per service unit), and a gap-to-targets metric $G = \left\| \mathbf{x}^{\text{policy}} - \mathbf{x}^{\text{obs}} \right\|_2$. Using mixed methods and quarterly panels from representative FBCO models (urban navigator, rural day-club, multi-faith helpline), we show that small, concurrent gains in c and f compound multiplicatively to lift I, while targeted retuning of e prevents improvements from bypassing high-need subgroups. An implementable decision rulechoose the action with the largest marginal impact per rupee $\max\{(\partial I/\partial c)/k_c, (\partial I/\partial f)/k_f\}$, subject to capacity $c \leq H/(\tau P)$, equity thresholds, and sustainability guardrails-links budgets to measurable outcomes. A RE-AIM monitoring cadence and a Pareto screen for cost-impact-footprint trade-offs support quarterly course corrections. The result is a practical pathway from community assets to verified improvements in reach, quality, equity, and low-footprint delivery for older adults.

Keywords: Coverage c; Fidelity f; Equity index; Environmental guardrail x_{env}; Composite score S; Gap to targets G; RE-AIM monitoring; Task shifting; Cost-effectiveness; Pareto frontier; Implementation science; SDG alignment

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Beyond Calories: Sociological Perspectives on Malnutrition

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Abstract

The present study examines malnutrition from sociological perspectives and aims to understand its different forms and causes. By using the examples of urban food deserts, gender inequalities, and the nutritional health of indigenous communities, the author illustrates the specific nature of malnutrition and accentuates the relations to social, economic, and cultural domains. The study finds that food environments, eating habits, and health outcomes are determined by structural inequalities, power relations, and historical backgrounds. Accordingly, malnutrition can be addressed only by the means of social changes. The study provides specific implications for sociological knowledge and policy recommendations. The final part ascertains further research directions. The key conclusion is that sociology should address equity, social justice, and human rights in relation to health and well-being.

Keywords: Malnutrition, Sociology, Social Determinants of Health, Food Deserts, Gender Disparities, Indigenous Communities, Food Sovereignty, Structural Inequality, Health Equity.

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A Critique of Re-Thinking on Science and Society for the Sustainable Future

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Abstract

The paper entitled A Critique of re-thinking on Science and Society for sustainable future is an attempt to discover how science and society sustain the future. It also analyzes the nature and functions of science both in the primitive and civilized society. There is an insight into the origin and evolution of science and society and how it can become scientific society and how sustainability is connected and interwoven with them and it follows the strength of the bright future with the coordination of science. The paper also gives vivid descriptions and arguments with analyses of science and society. The paper finally tries to define how objective entity blends with subjective entity in sustaining the future.

Keywords: - Science. Society, Sustainability, development, objectivity, subjectivity, digital, device, economic, evolution, culture, harmony, logic, insight, exchange, needs, wants, progress, and objective correlativeness

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Role of Library in Education and Pedagogy for Innovative Teaching Methods: A Study

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Abstract

The role of the role of library in education is significant in the modern Era. Based on an extensive review of literature. This study examines the evolving role of libraries in promoting innovative teaching methods within India's rapidly transforming educational landscape. Evidence points to a paradigm shift that is radically altering libraries which are not just positions of usual book collections, but play a significant essential role in contemporary pedagogy. The answer to this question is supported by the analysis that provides digital learning materials such as e-books and databases, Flexible learning spaces, and access to technology facilitate the direct implementation of the student-centred methods of project-based learning, flipped-classrooms, and inquiry-based instruction. Also, they are one of the crucial equalising forces of the society because they reduce major Digital divides to an even more manageable level by offering Equitable access to mechanisms and encouraging digital literacy among the learners and the instructors. Libraries are also found to be important centres of teacher development as the study identifies libraries as resourceful centres providing training and other resources that teachers use to combine Technologies and pedagogical approaches to their practice. To ensure that India is able to carry out its educational reforms and build a culture of critical thinking and creativity engagement, it is necessary to enable the libraries through the creation of an enabler of pedagogical Innovation.

Keywords: Academic Libraries, Pedagogical Innovation, Digital Literacy, Educational Technology, Innovative Teaching Methods

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Academic Identity in the Digital Era: Exploring Profile Creation and Publication Sharing Practices

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Abstract

The overarching expansion of the digital academic services has occasioned some major changes of how scholars identify themselves professionally, disseminate their writings, and connect and collaborate dynamically in the online phase of scholarly communication. The current research focuses on the faculty members and research scholars of Karnataka State universities in order to research on how they struggle with this change.. However, this study fixes the target area in that domain by questioning them to analyse how they create an academic profile and disseminate their research outputs in the online system. The total population taken for the study is 1210 out of 6436 teachers and researchers pervading the Arts, Science, and Commerce disciplines to which the questionnaire was prescribed. Data were collected from 887 respondents through a structured questionnaire. Along with usage patterns of Academic Social Networking Sites (ASNSs), demographic factors such as gender, qualification, position, and teaching/research experience were considered for analysis. The findings reveal that 45.77% of the majority of respondents have a LinkedIn profile, and its usage has increased steadily over the last five years. Journal articles (33.4%) are the most frequently shared publications, while ResearchGate (24.2%) continues to be the most active ASNS, contributing to higher visibility for 69.10% of its users. This study confirms that ASNSs play an important role in enhancing networking and visibility of a research among the scholars.

Keywords: Academic Social Networking Sites (ASNSs); Academic Identity; Faculty and Research Scholars; Karnataka State Universities. Profile Creation; Publication Sharing, Research Visibility;

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Genetics and Human Inheritance

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Abstract

Genetics as a branch of biology is the study of the processes of heredity and variation that is how parents influence and pass their traits, characteristics to the children. The genetics science began with the classical works of Gregor Johann Mendel whose studies on pea plants brought about predictable successive patterns of inheritance. The findings of Freud and his discoveries led to the current comprehension of heredity by relying on the significance of Sutton and Boveri using the chromosomal theory of heredity to attribute these findings to the behavior of chromosomes during meiosis. On the identification of the genetic material contained in the DNA when Avery discovered it and the double helix model put forward by Watson and Crick in 1953, one could now see the molecular basis of inheritance. The information of preserving and expressing genetic facts is explained by DNA replication, transcription, and translation.

The other theory regarding variations brought by genetics is the mutation, recombination, and abnormalities brought by the chromosome, which are crucial in the evolution process and the variety of life. The past knowledge on sex determination, hereditary diseases such as Down's syndrome and haemophilia, and inheritance have contributed a lot to medicine and health awareness of the populace in humans. The Human Genome Project and biotechnology have established a new frontier which includes gene therapy, genetic counselling and DNA fingerprinting, even though such expediency has immense benefits, it has created ethical and social issues concerning genetic privacy, modification and discrimination. Thus, the science of genetics does not only help us reveal the blueprint of the life, but also shows us how to use this knowledge responsibly in good of human welfare and conservation of the biodiversity..

Keywords - Genetics, Heredity, DNA (Deoxyribonucleic Acid), Mendel's Laws of Inheritance, Chromosomal Theory, Mutation and Variation, Genetic Disorders, Human Genome Project.

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Learning From the Past: Historical Lessons for Strengthening Modern Government Policies in India

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Abstract

This research question discusses the role played by historical practices in India Strengthening Modern Government Policies. The rich and long history of India provides numerous lessons in enhancing the contemporary governance. The Indian civilization has been behind timeless concepts about leadership, accountability, social justice, and sustainability, since time immemorial, through the ancient empires, to the post-independence period. The administrative accountability, ethical leadership, and decentralized supervision of the Mauryan Empire governance model can help to highlight the significance of these concepts. Swadeshi and Nehruvian economic vision brings out the principle of moderation between self-reliance and globalization. Social change can be fuelled by movements like Bhakti and the freedom struggle which demonstrate the power of inclusion, equality, and moral reform to bring about social change. Traditional ecological practices help to realize that sustainable development is not only a matter of technology but also a matter of values and respect towards nature by the community as a whole. Lastly, the case of India where the colonial regime was replaced by that of democracy emphasizes the necessity of the institutional changes and continuity of the administrative regimes.

Through a recollection of these historical experiences, the paper submits that the provision of effective governance does not only need modern tools, but also the ability to remember history. The Indian ethical and cultural traditions can be adapted and lead to stronger institutions, equal growth, and trust in civility. Certain choices in the policies making are influenced by lessons learned during the past, but they do not imply the need to imitate the models of the past but to comprehend their principles, to implement the necessary reforms in the fast-evolving society..

Keywords: Governance, Accountability, Self-Reliance, Inclusion, Sustainability, Administrative Reform.

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Challenges in Implementation of Sustainable Development Goals (SDGs) in India and the Role of Social Work

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Abstract

The international agenda of realization of the Sustainable Development Goals (SDGs) by 2030 is a collective move towards eliminating poverty, inequality, enhancing health and education, and safeguarding the environment. India is one of the most populous countries, which is rather specific to the SDG agenda success. Nevertheless, these goals are not achieved easily by the country because it is faced with many challenges. The major obstacles are poor funding, unavailable reliable and disaggregated data, poor monitoring and socio-political complications contributing to unfair development. Social work, in this case, comes out as a key driving power in the realization of the human aspect of sustainable development.

This paper is a critical evaluation of the impediments that India has experienced in achieving SDGs and how the profession of social work based on the principles of justice, participation and empowerment can make positive contributions toward the SDG framework. Combining secondary data collected in the form of research articles, governmental and global reports, the study singled out policy application loopholes and proposed viable methods of enhancing the quality of indicators development, mobilization of resources, and participatory governance. The research finds that the inclusion of social work within the SDG implementation initiatives may enhance stronger, fairer, and sustainable societies, thus leading to national, as well as global developmental agenda..

Keywords: Sustainable Development Goals, India, Social Work, Challenges, Indicators, Community Participation, Equity, Policy Implementation, Data Gaps, Ethics.

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Design and Development of azo-Schiff base-based Cu(II), Co(II), Ni(II) metal complexes for DFT, DNA Interaction, and Pharmacological applications.

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Abstract

The creation of metal complexes [Cu(II), Co(II), and Ni(II)] using Azo Schiff base (2-methoxy-6-[(E)-({4-[(E)-phenyldiazenyl]phenyl}imino)methyl]phenol) ligand is described in the present study. This Azo Schiff base ligand was created by using an equimolar proportion of 4-diethylamino salicylaldehyde and 4-amino azo-benzene in a single-pot synthesis. Various analytical and spectroscopic methods were implemented to evaluate the developed compounds, including melting point, CHN analysis, FT-IR spectroscopy, electronic spectra, ^{1}H & ^{13}C NMR (only ligand), mass spectroscopy, and powder X-ray diffraction techniques. The Gaussian09 program of the RB3LYP at 6-311G (++, g, d, p) basis set utilized density functional theory (DFT) to get the optimal configurations of the Azo-Schiff base ligand and its metal complexes. Following that, these Cu(II), Co(II), and Ni(II) metal complexes were subjected to thermal denaturation, viscosity measurements, and UV-visible spectroscopy in order to study DNA binding with CT-DNA. The groove DNA binding mode was identified by the DNA absorption spectrum measurements, and the K_b values for the Cu(II), Co(II), and Ni(II) complexes 4.8 X 10^5 M^{-1}, 3.2 X10^5 M^{-1}, and 2.7 X 10^5 M^{-1} were discovered, respectively. DNA cleavage investigations were conducted using pUC-18 DNA, and the gel electrophoresis method was utilized to observe the process. The obtained results showed that the presence of the Azo Schiff base moiety in these complexes contributed to their good cleavage activity with pUC-18 DNA. These compounds were also the subject of pharmacological studies, such as those against pathogenic organisms and diabetes, and the results showed that metal complexes containing the Azo Schiff base moiety could be useful in biosciences and open up new avenues for contemporary research.

Keywords: Azo Schiff base; pUC-18 DNA; Optimization; DNA Binding; Anti-diabetic: anti-Bacterial.

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Sustainability through Collaboration: The Science-Society Nexus

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Abstract

In the twenty-first century, sustainability has become one of the world's top priorities. In order to promote a sustainable future, this study explores the changing relationship between scientific progress and societal involvement. It looks at how legislative frameworks, technical advancements, and group behaviour come together to address environmental issues like ecological imbalance, resource depletion, and climate change. The study emphasises the value of interdisciplinary cooperation and active community involvement in fostering resilience through data analysis and real-world experiences. The results highlight the need for inclusive governance and cultural change in addition to scientific understanding in order to achieve long-term sustainability.

Keywords: Sustainability, Climate change, Renewable energy, Green technology

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A Comprehensive Review on the Preparation, Characterization, and Applications of Nano Titanium Dioxide (TiO_2)

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Abstract

Nanoparticles have become an unavoidable element of the modern world, which is changing both science and technology by introducing its individual size-specific properties and numerous uses in medicine, energy, and the environment. The high surface to volume ratio and quantum size effects in the catalytic, optical and electrical processes in them constitute them to be invaluable in the development of the contemporary nanotechnology and material science. The nanoparticles with high surface area, variable band gap and high photocatalytic activity, titanium dioxide nanoparticles are an exemplifying molecule that can be utilized at an advanced level in the areas of energy, environmental and biomedical nanoconjugates. TiO_2 nanoparticles have become so attractive with very good physicochemical characteristics, stability in the environment, non-toxic effects and versatile functional characteristics. This paper will focus on some of the latest innovations in the manufacturing, characterization, and use of TiO_2 nanoparticles. Several preparation technologies are studied, such as sol-gel, hydrothermal, co-precipitation, and green technologies, and the main attention is paid to their influence on the particle size, shape, and formation of crystalline phases. Elucidation of structural, optical and surface properties is performed by by use of X-ray diffraction, scanning and transmission electron microscopy, UV-Vis spectroscopy, Fourier transform infrared spectroscopy and photoluminescence. Some of the uses of TiO_2 nanoparticles reviewed include photocatalysis, energy conversion, environmental treatment, antibacterial coatings, and medicine. The article presents future research directions and problem areas that could be used to increase the efficiency, stability, and sustainability of TiO_2 nanoparticles, which are the direction of nanomaterials science development.

Keywords: Titanium dioxide, nanoparticles, green synthesis, spectroscopy, photocatalysis, nanotechnology.

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Radon Concentration in Drinking Water Along Yagachi River Basin

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Abstract

In this study, the annual effective dose exposure in the Yagachi river basin and the distribution of radon activity concentration in drinking water samples are measured. Emanometry method was used to determine the radon concentration in 30 samples of drinking water. The observed radon concentration in drinking water samples ranged from 12.26 ± 0.21 to 118.56 ± 2.65 Bq l^{-1} with an geometrical mean value of 45.24 ±1.03 Bq l^{-1}. According to this study, all the drinking water samples examined had radon levels are above the USEPA's maximum contamination level of 11.1 Bq l^{-1}. The geometrical mean annual effective dose varies from 33.47 to 323.67 µSv y^{-1} with geometrical mean value of 123.52 µSv y^{-1}. Annual effective doses of 73% drinking water samples are above the recommended limit of 100 µSv y^{-1} recommended by World Health Organization.

Keywords: Radionuclides, Radon, Ingestion, Inhalation, Annual effective dose

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Phytochemical, Antioxidant and antimicrobial properties of selected ethnobotanicals from Palghar district, Maharashtra, India

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Abstract

India counts as one of the mega biodiversity hotspots in the world. It holds a huge variety of plant species. Many of those plants have really impressive medicinal qualities. Local communities in the area have known about these plants for ages. They have used them and passed down that knowledge about their medicinal uses from one generation to the next contributing to Traditional Knowledge. The old knowledge is indeed the foundation of the traditional Indian medical practices. These are Ayurveda, Siddha and Unani. Classic books such as the Charaka Samhita and the Sushruta Samhita contain the working of the plants in the treatment. They also address their role within the culture and their worth as far as drugs are concerned. The paper discusses the plants of traditional medicine in the Palghar area of India. The findings indicate ethnobotanicals that exhibit varied bioactive components that exhibit solid antioxidant activities as well as antimicrobial abilities..

Keywords: ethnobotanicals, bioactive compounds, antioxidant, antimicrobial

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Molecular docking study of Hydantoin derivatives as anti-epileptic

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Abstract

Epilepsy is a nervous disorder that is characterized by frequent seizures, and still, even with the many anti-epileptic drugs (AEDs) available, one-third of the affected individuals cannot maintain the seizures. It illustrates the necessity to find new treatment methods. In this research, an in silico method will be used to examine the anti-epileptic properties of novel compounds formed through synthesis. Imidazolidine-2,4-dione (Hydantoin) analogs are an excellent family of Nitrogenous heterocyclic compounds exhibiting a variety of pharmacological applications, some of which include antimicrobial, antidiabetic, anticancer, and antiepileptic applications. The simulations of molecular docking were done in this research to comprehend the binding affinities and binding modes of newly synthesized hydantoin derivatives with particular biological targets. Protein folds according to known bioactivities i.e., Metabotropic glutamate receptor 1 [GRM1]. AutoDock Vina was used to predict the most stable binding conformational and binding energy by energy-minimization and docking of ligands. The findings indicated that the two hydantoin analogs that are chosen have good binding affinities stabilized by hydrogen bond interactions, p-p interactions and hydrophobic contacts with active-site residues.

The computational methods of molecular docking have shown that Compound 1 and 2 have a docking score of -9.5kcal/mol thus indicating a high affinity to bind to epilepsy-related target proteins. This paper highlights the promise of synthetic drugs as new anti-epileptic drugs. The results show that the in-silico techniques can be used to fast-track the drug discovery process and generate promising lead compounds, improve their characteristics, and offer an affordable alternative to the conventional experimental methods. These observations clear the path to the emergence of new treatment interventions to epilepsy management..

Keywords: Epilepsy, molecular docking, hydantoin derivative, protein, ligand.

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Organic Chemistry and Society for a Sustainable Future

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Abstract

Organic chemistry is the key to the creation of sustainable future due to its role in overcoming the acute problems of the world like energy shortage, environmental pollution, access to healthcare and the sustainability of materials. Organic chemistry has over the decades developed out of its purely synthetic subjects to be a multidisciplinary science with connection to biology, physics, environmental science and materials technology. In the modern day, the emphasis has been on the environmentally friendly molecule, process and material design with high efficiency that produces minimal environmental effects. The focus of this evolution is now green chemistry, renewable feedstocks, and traditional and new ways of catalysis. Higher level catalytic procedures, i.e. organocatalysis, photoredox and biocatalysis, have enhanced economy of atoms and decreased dangerous wastes. Also, the field of synthesis design is undergoing artificial intelligence (AI) and automation which is causing discoveries to be faster, cleaner, and more reproducible. Making biofuels and biodegradable polymers, sustainable drugs, the application of sustainable principles to organic chemistry promises invaluable possibilities to further development of the United Nations Sustainable Development Goals (SDGs). The paper has emphasized the significant connection between organic chemistry and society with reference to green innovation, catalysis, renewable energy, and AI-driven chemical research as the key kind of enablers of a cleaner and more sustainable future.

Keywords: Organic chemistry, green chemistry, sustainability, renewable resources, catalysis, artificial intelligence, pharmaceuticals, energy

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Quantitative variations of Deacyl gymnemic acid, Gymnemagenin, and Gymnemic acid-IV in Gymnema sylvestre R.Br. from different geographical regions of Karnataka.

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Abstract

Gymnema sylvestre is a widespread potential antidiabetic medicinal plant that thrives in southern India tropical forests. *Gymnema sylvestre* was collected from various geographical locations in Karnataka. Along with soil samples, rainfall, temperature and geographical data's were collected. HPLC methods were used to analyse chemical components in the plant extract. The highest yield of chemical components viz. Deacyl Gymnemic acid, Gymnemagenin, Gymnemic acid IV were obtained by continuously heating the dried leaf in a Soxhlet system with 90% methanol. All the collected samples yielded the chemical components Deacyl Gymnemic acid, Gymnemagenin, and Gymnemic acid IV. Standard analytical methods were used to determine NPK, pH, and EC in soil samples collected from nine locations across the state. The rainfall, temperature data collected from Meteorological department, UAS, Bangalore. All nine samples were subjected to phytochemical analysis to estimate the levels of Deacyl Gymnemic acid, Gymnemagenin, and Gymnemic acid IV. The rainfall, temperature and soil characters like pH, EC, NPK were analysed and compared with the concentrations of above constituents. The percentage of Deacyl Gymnemic acid in Chitradurga 3.29, Bagalkote 1.86, Davanagere 1.47, Mysuru 1.15, Shivamogga 0.8 and Ballari 0.5, Belagavi 0.45, Chikkamagaluru 0.18, Udupi 0.08. These results clearly indicate the effect of abiotic factors. The concentrations of the phytochemical constituents indicate the Chitradurga samples shows highest in both Deacyl Gymnemic acid and Gymnemagenin.

Keywords: Gymnema sylvestre, HPLC, Deacyl Gymnemic acid, Gymnemagenin, Gymnemic acid IV, Climatic factors.

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Health risk assessment of Aldrin and Dieldrin pesticide residues in Channa sp. from Kattemalalavadi, Hunsur Taluk.

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Abstract

Current study emphasized on assessing the pesticide residue level in common edible fish *Channa sp.* followed by its health risk assessment. Kattemalalavadi of Hunsur Taluk is a remote area with intensive farming activity. Tributary of Cauvery, Lakshmana Teertha flows through Kattemalalavadi hobali encouraging fishing activities. Fishes like Tilapia, Common Carp, Rohu and *Channa* are commonly captured and sold in local markets. Agricultural rundown is adding pesticides and heavy metals to these water bodies. Hence in the current study fish *Channa* was selected to assess levels of two pesticides Aldrin and Dieldrin in muscle tissue. The data thus obtained was used for health risk assessment in random population. Pesticide analysis was done by GC-MS/MS, using FSSAI Manual test method. Details about fish consumption was collected using Questionnaire with a sample size of 200 to assess the health risk, EDI, Hazard quotient (HI) and Cancer risk. Hazard quotient and cancer risk value for both Aldrin and dieldrin in *Channa sp,* is found to be within low risk level at thirty four gram per day consumption rate in the study area.

Keywords: Aldrin, Dieldrin, Estimated Daily Intake, Cancer Risk

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Fungal enzymes in Bioremediation of rice industry wastes

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Abstract

Rice husk, a by-product of the rice milling industry, accounts for about 20% of the whole rice. However, the amount of rice husk available is farin excess of any local uses and, thus, has posed disposal problems. Rice husk was chosen to be applied as a precursor material due to its granular structure, insolubility in water, chemical stability, high mechanical strength and its local availability at almost no cost. They are mainly lignocellulosic in nature and offer as suitable substrates for bioreactors. White-rot fungi, Aspergilus flavus, Aspergillus niger, Aspergillus fumigatus, Rhizopus microsporus and Mucor pusillus are the fungi which normally produce enzymes and these enzymes possess lignocellulose degrading properties. Lignocellulose degradation during fermentation is mediated by extracellular enzymes comprising carbohydrases and lignin modifying enzymes (LME) and a variety of other enzymes. Other components of plant like cellulose and hemicellulose are also metabolized by fungi. Once such enzymes become available they can be employed to treat the rice industry wastes. This study will provide an opportunity to harness the ability of fungi to develop biotechnologies for waste remediation.

Keywords: Aspergillus niger, biodegradation, cellulase activity, Fungi species, Rice husk, Reducing sugar, Cellulase Degradation.

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Assessment of Zooplankton diversity in Hiremagaluru Lake, Chikkamagaluru, Karnataka, India

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Abstract

Zooplankton community is cosmopolitan in nature and they inhabit all freshwater habitats of the world. Zooplankton is a diverse group of heterotrophic organisms that consume phytoplankton and transfer energy to higher trophic levels. In fresh water ecosystem, they form an essential component of the food web serving as primary source of nutrition for fish population. The present study focuses on the Zooplankton diversity of Hiremagaluru Lake in Chikkamagaluru, carried out from February 2024 to February 2025. During the study period, a total of 28 species belonging to 24 genera were recorded, including 14 species (50%) of Cladocera, 8 species (28%) of Rotifera, 3 species (11%) of Copepoda and 3 species (11 %) of Protozoa. Among these Cladocerans dominated the Zooplankton population followed by Rotifers, Copepods and Protozoa. High population densities were observed during the summer and pre monsoon seasons, the abundance and diversity of zooplankton serve as important ecological indicators, reflecting environmental changes and overall ecosystem health. Zooplankton diversity in Hiremagaluru Lake increased during the pre-monsoon season with rising temperatures, indicating a significant influence of temperature on community composition. Continuous monitoring of zooplankton biodiversity is essential for assessing water quality and fishery productivity, emphasizing the need for conservation and sustainable management under changing climatic conditions.

Keywords*:* Magadi Lake, Zooplankton, Diversity, Climate change, Cladocera. Rotifera.

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Ichthyofaunal Diversity of Markonahalli Reservoir, Tumkur District, Karnataka

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Abstract

Reservoirs are the chief source for inland fisheries and irrigation. Study of fish diversity is one of the main aspects for sustainable management of reservoir. Markonahalli reservoir is an important source for drinking water and irrigation to Mandya and Tumkur District of the state and also promoting for the fishing. Investigation of diversity of fishes were conducted at Markonahalli Reservoir, Tumkur District for a period of one year from March 2024 to February 2025. A total 16 species of fishes belonging to 5 orders and 7 families are reported. Among these, cyprinifomes was found dominant with represented by 1 family with 7 genera and 7 species. Orders siluriformes has 3 families – bagridae (1species), clariidae (1species), siluridae (2 genera; 2 species) and anabantiforms has 1 family channidae with 1 genus , 2 species. order cichilformes has 1 family with 1genus, 2 species. Osteoglossiformes has 1 family notopteridae with 1 genus and 1 species. This study on fish diversity of Markonahalli reservoir would help to explore the present fish species of Markonahalli reservoir. It also indicates that reservoir water suitable for fish culture and presence of various aquatic organisms.

Keywords - Markonahalli Reservoir, fish diversity, Cypriniformes.

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Equations that Shape Tomorrow: Mathematical Pathways to Sustainability

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Abstract

This study shows how a small, transparent toolkit of equations can guide real sustainability choices. Starting from stock–flow balances, capacity-limited growth, and linear programs, it builds auditable models with clearly stated assumptions and units. Two case studies demonstrate the approach. First, a village-scale energy plan targeting 10,000 kWh per month is solved as a least-cost mix of solar and wind under capacity and yield assumptions; the optimal plan uses 89 solar panels and 10 wind turbines, with calculations and feasible-region geometry presented for reproducibility. Second, a freight-allocation problem with a 1,200-ton demand and an 18,000 kg CO_2 cap is cast as a two-variable LP; the cost-minimizing solution ships 900 tons by rail and 300 tons by truck, meeting the emissions constraint while exposing which limits bind. The study also foregrounds practical risksaging data, simplifying assumptions, and computational burdenand proposes “uncertainty-first” reruns, hybrid physics-plus-learning corrections, staged (low-regret) capacity additions, and fully reproducible bundles (inputs, script, figures). Overall, the contribution is a decision-oriented template: write balances explicitly, state capacities and trade-offs openly, and keep the math inspectable so that improved local data can directly translate into better, fairer plans.

Keywords: mathematical modeling; sustainability; linear programming; optimization; differential equations; renewable energy planning; supply-chain emissions; uncertainty analysis; decision support; reproducibility.

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Carbon-Aware Edge AI Scheduling for Sustainable Smart Campuses

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Abstract

This study presents a carbon-aware scheduling framework for edge-centric AI workloads in a smart-campus setting. We formalize a multi-objective problem that minimizes energy use and carbon-weighted energy while satisfying latency service-level agreements through joint control of dynamic voltage/frequency scaling (DVFS), task placement across heterogeneous edge clusters and cloud, temporal deferral of non-urgent jobs, and adaptive model selection. A tractable decomposition combines convex deferral (water-filling over time-varying grid-intensity), min-cost flow for placement on a time-expanded graph with carbonized edge weights, DVFS tuning under queue-stability constraints, and a contextual bandit for model choice. Queueing performance is modeled with M/M/1 response times to enforce utilization caps and SLA feasibility. In a day-long synthetic campus case study with diurnal arrivals and carbon cycles, the proposed controller achieves ≈31% average energy reduction relative to a greedy low-latency baseline, with single-digit to tens-of-milliseconds latency penalties for interactive tasks; larger savings accrue for deferrable analytics via demand shaping. Ablations indicate DVFS and deferral deliver the largest gains, while model selection contributes incremental savings without harming accuracy targets. We discuss deployment guidance, limitations (forecast error, burstiness, hardware heterogeneity), and future directions including robust/MPC extensions and integration with campus microgrids. The results demonstrate that principled, carbon-aware control can materially improve sustainability without sacrificing user experience.

Keywords: carbon-aware scheduling; edge inference; DVFS; temporal deferral; model cascades; M/M/1 response time; min-cost flow; multi-objective optimization; demand shaping; sustainable computing

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Analytical Solutions of Heat Transfer in Phase Change problems - Review Analysis

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Abstract

Transient heat transfer problems described by non-linear partial differential equations along with the moving interface conditions are special type of boundary value problems known as moving boundary problems or Stefan Problems. Freezing/melting problems are referred as Stefan problems, as these problems are first encountered by Physician Joseph Stefan and proposed a model for the polar ice-melting problem. The essential feature of a system undergoing phase change is that a moving interface exists separating two regions of different thermo -physical properties at which energy is absorbed or released, separating the two phases. The objective of this paper is to get mathematical understanding of the heat and mass transfer of the phase change problems with unknown free boundaries and solutions for different type of Stefan problems through research article review analysis. This study gives a clear picture on mathematical modelling of phase change problems with different solution techniques to quantify the process to predict the evolution of the temperature field in the material, the amount of energy used and stored, the interface location and thickness, the interface velocity, final time of freezing and analysis of phase change processes at the macroscopic level.

Keywords: Moving Boundary problems, interface, boundary conditions, heat transfer.

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Leveraging Artificial Intelligence (AI) and Machine Learning (ML) in Women's Access to Healthcare in Rural India

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Abstract

Women's healthcare necessitates comprehensive approaches to address unique and ubiquitous health related issues pertaining to women including nutritional, reproductive, mental, and chronic diseases. On the other hand, rural healthcare must overcome tangible and intangible barriers such as geographic isolation, poor physical and digital infrastructure, shortage of healthcare professionals in underserved areas, and policy paralysis. Artificial Intelligence and Machine Learning have revolutionized the healthcare paradigm through developments such as deep learning enabled medical imaging and diagnostics, predictive analytics, drug discovery, real time monitoring of disease surveillance, precision and personalized medicines, robotic surgery, robotic neurorehabilitation, etc. However, the benefits of these breakthroughs are mostly being received by the advanced societies; the greater rural masses still expect miracles of trickle-down effect. The healthcare issues and challenges pertaining to women are peculiar and needs special focus of researchers, particularly in low resource settings like rural India. Nevertheless, the researchers have long started exploring Artificial Intelligence and Machine Learning based solutions to problems related to women's healthcare and rural healthcare. In this article, focusing on the challenges, approaches and significances, we review the state of the art of Artificial Intelligence and Machine Learning in women's healthcare that carries significant potential for implementation in rural healthcare system in India.

Keywords: artificial intelligence, machine learning, clinical AI, women's healthcare, rural healthcare, maternal healthcare

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A Conceptual Study on Work Life Balance Among Women Entrepreneurs: Strategies and Challenges

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Abstract

Balancing of Work and Life in Women Entrepreneurs: Strategies and Problems of the Pursuit of Entrepreneurship Industry is quite a specific subject since it is the aspect that appears to pose a challenge to women who want to achieve balance between work and life. The point that is critical in this paper is the work life balance of women entrepreneurs and how they go about handling the dual role of owning a business and maintaining their personal lives, family, caring and measuring up to the expectations of the society. In a review of the current literature and case studies, the paper has established the main challenges that women entrepreneurs have encountered which include time management, role conflict and pressures in the society. It also analyzes the mental and emotional burden of such difficulties, how such imbalance would result in burnout and decreased productivity of the business. The paper also explores the tactics that have been used by successful female entrepreneurs including being able to utilize flexible working schedules, outsourcing services, setting limits and find support via mentorship and networks. It also goes as far as exploring how socio-cultural elements and local policies make these issues worse or better. The results of this paper are supposed to contribute to the further understanding of the work-life balance impacting the success and well-being of women in the entrepreneurial sphere and provide the policy-makers, supporting organizations and aspiring women entrepreneurs with insight as to how to establish sustainable work-life balance..

Keywords: Women entrepreneurs, Strategies, Challenges

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Harnessing Solar Power: A Sustainable Energy Solution for the Future - An Analytical Study of Customer Adoption Factors

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Abstract

This paper will examine the aspects that were decisive in customer adoption of solar energy in making it a crucial element of a sustainable and resilient energy future. With the growing effects of climate change and the fact that the resources of fossil fuels are diminishing, solar energy is seen to present a clean and renewable power source that can help reduce environmental degradation, increase energy security and lead to economic growth. The paper discusses the advantages of solar energy in environmental and economical terms, including the dilemma preventing the wide use of solar energy such as the high initial cost of the system, lack of infrastructure, and policy obstacle. In a multivariate analysis (MANOVA) of demographic information, the statistically significant effect on consumer attitudes toward the adoption of solar energy production was detected in terms of age and geography location while gender and education have minimum influence. The learnings provide policy advice to policy-makers and other stakeholders interested in aligning solar programs with particular clientele. The results stress that specific information campaigns, incentives, and reform of the policy should be used to speed up the process of transition to solar power and achieve its potential as the foundation of sustainable development in the whole world..

Keywords: Solar energy, renewable energy, sustainability, environmental impact, customer adoption.

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Green Finance and Investment Trends in India: Opportunities and Challenges

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Abstract

Green finance has become an important tool of ensuring sustainable growth and addressing the issue of climate change. In India, the increasing interest of renewable energy, low-carbon infrastructure and ESG compliances have increased the urgency of green investment mechanisms. The paper examines the potentials and limitations of green finance in India by predominantly surveying 120 investors, bankers and business people in Bengaluru. The results are that the level of awareness and desire to invest in green financial instruments like ESG funds and green bonds is increasing. Not all problems, though, The issues of low awareness of retail investors, the absence of standardized policies, poor financial incentives become obstacles to massive adoption. Another important point as pointed out in the study is that institutional investors express more certainty in green investments than individual investors. It is concluded in the paper that enhanced regulation, transparency, and ensuring that the practice of green finance is implemented in India as one of the major banks and investment practices need strengthening to help the country in its shift to sustainable economic future. The research is relevant to the knowledge of the ability of green finance to create equilibrium between economic growth and the environment.

Keywords: Green Finance, Sustainable Investment, Green Bonds, ESG, Ethical Banking, India

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Data privacy in social media marketing while buying subscription services

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Abstract

Therefore, there are numerous applications of social media or networking platforms in a business, and companies have started depending on this user data in performing a marketing policy for their specific subscription services. But there goes a whirlpool or maze in information privacy, transparency, and security. End consumers are becoming more cautious about the sharing and storing of personal data reasons vis-a-mines; hence, awareness of privacy issues is on the rise. The research mainly looked into how privacy concerns affect the behavior of the user in social media marketing, especially touching on subscription services. According to their Research, analysts collected responses from 250 participants to illustrate the relationship of data privacy concerns to consumer trust. It's about their study that mostly is very critical to and demanded by users for more clear explanations of data abuse from platforms. Along with that, transparency in regard to information security of financial transactions, states clear policies in terms of privacy, as well as those contact with regulatory compliance, have importance for consumer trust. The survey has analyzed the possibilities of privacy regulations, for example, GDPR, in shaping consumer behavior. Based on this result, the business firms are availed recommendations for improvement of privacy measures and trust, thus enhancing subscription adoption rates.

Keywords: Media, Network, Marketing

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The Impact of Green Finance on Economic Growth: Evidence from Emerging Economies

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Abstract

This paper explores how green finance is important towards enhancing economic development in the emerging economies. Green finance Financial flows, finance instruments and policies that are focused on low-carbon activities, climate resilient, and environmental sustainable activities, have been enjoying an upward trend as nations seek to balance between growth and sustainability. The article utilizes recent empirical literature and four demonstrative case-studies within Brazil, India, Indonesia and South Africa to examine how green finance may facilitate the growth of GDP, the main issues that are encountered by green-finance-growth nexus in the emerging markets, and provides recommendations to the policymakers to enhance the green-finance-growth nexus. The results suggest that green finance is a positive contribution towards economic growth through mobilisation of investment in renewable energy, energy-efficiency, as well as reduction of long-term environmental-risk-premia. Nonetheless, the size and consistency of the effect is significantly differentiated among nations, based on the quality of institutions, the depth of the financial marketing and regulation.. The article concludes with policy recommendations aimed at scaling green finance in emerging economies while safeguarding growth and sustainability.

Keywords: Green finance; Economic growth; Emerging economies; Green bonds; Sustainable investment; Renewable energy; Financial development; Institutional quality.

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Prevalence and Determinants of Substance Abuse among Indian Adolescents: A Review

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Abstract

This article explores the effects of substance misuse among adolescents in India. Substance abuse is an area of growing concern having a direct impact on the health of the people as well as an indirect impact on the social and economic status of the country. Over the time, substances are used in an unhealthy way to respond to various stress and anxiety among the people. Substance use among adolescents has been widely documented across the country. Numerous researchers have carried out different aspects of substance use such as initiation, prevention or intervention, pattern and prevalence, effects and implications and, knowledge- attitude mapping. etc. However, it is observed most of the studies focus on tobacco and alcohol use and: There is limited evidence on the extent of use of other substances among adolescents.

Keywords: Substance Abuse, Adolescents, Pattern, Prevalence

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Narrating Dalit Experience: Kusumabale as a Representation of Marginalised Voices

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Abstract

Devanur Mahadeva's *Kusumabale* stands as a powerful literary articulation of the Dalit experience in postcolonial India, foregrounding the silenced narratives of the marginalized. The novel challenges dominant socio-cultural structures by centering the lived realities, mythic retellings, and spiritual resilience of Dalit communities. Kusumabale offers more than a social protest with its non-linear narration approach that causes the storytelling to merge with the folk traditions, the folk idiom, and the symbolic recreation of the folk traditions, making it a reclamation of culture. This paper will discuss how the story by Mahadeva reinvents the politics of representation by bringing back to voice those who have traditionally been left voiceless and turned the text into a zone of resistance and asserting identities. It also questions the points of caste, linguistic and gender intersection in this text which influence the content and the style of Dalit writing.

Using thematic analysis and three main examples of stories inter-caste romance and honour killing, oral traditions and collective voice, and asserting the Dalit identity, this thesis examines how Kusumabale narrates the real marginalised experience and rebuilds the social reality. The article, as well, also focuses on how it has influenced the contemporary reader as well as various issues of Dalit representation that are ongoing as well as potential remedies in achieving balanced visibility to the story, and how the entire article has serious implications to the present-day society. The results confirm that Kusumabale is not merely a masterpiece of literature but it is a moral and political commentary on the state of the human being.

Keywords: Dalit literature, caste oppression, marginalised voices, *Kusumabale*, inter-caste narrative, folk tradition, resistance, Dalit subjectivity

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Open Access Books

Skill Training and Job Creation: A Study of PMKVY Implementation in Karnataka

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[2]Associate Professor – Commerce, GCW – Mandya.

Abstract

This paper presents a research question on the efficiency of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) to improve the employment of the youth in Karnataka. The paper presents findings on unequal regional participation rates, gender effectiveness as well as training-to-placement efficacy paths between Phases 1.0, 2.0 and 3.0 using both a primary survey data on 740 beneficiaries and secondary data on NSDC, PLFS, KSDC and district levels. Even though over 9.8 lakh people have been trained up to PMKVY in Karnataka, the outcomes of employment opportunities have been mixed with variance in employment success across the districts having a significant difference. The results provide far-reaching bottlenecks such as the disparities in training infrastructure, imbalanced sectoral orientation and forever failures in matching skills provision and the labour demand.

Keywords: PMKVY, focus, Challanges

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Open Access Books

Science as a Social Institution: Sociological Reflections on Sustainability and Development

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Abstract

In this review article, the authors attempt to examine the imperative relationship between science as a social institution and two of the main issues of concern in the global arena: sustainability and development. Science is viewed as objective search after knowledge; it is essentially rooted in the social structure as being independent of political, economical and cultural factors; in terms of institutional organization such as funding systems, the direction of research, peer review, and the power that the experts have in determining the direction of technological and theoretical development that may be relevant to the environmental and developmental problems. Based on certain major sociological views, such as the SSK, the modernization theory, and the critical theory, amongst others, clarity is created in conceptualizing the science, social institution, sustainability, and development. In a literature review, it is indicated that there is conflict between positivist belief in technological fixes, which mostly arise through institutional science and the call by sociologists to take an entire and equitable approach combined with locally suitable solution(s). The essence of reflection asserts that inclusive sustainability and development cannot happen without taking a step towards eliminating the reliance on science as a rudimentary source of technical remedies and rendering it socially accountable. In this regard, it says, democratic nationalization of science, insensitivity to indigenous and local knowledge, and a critical judgment of how institutional science both supports and challenges the current system of power and maintains practices and inequalities that are unsustainable and embedded in the world will become pivotal. Appendix B: Conclusion The distinctive feature of the conclusion is the invitation to a reform of sociological agenda renewed and applied to challenge the institutional structure of the science as a proposal of a more reasonable and sustainable future of all people.

Keywords: Science as a social institution, Sustainability, Development, Technological Fixes, Social accountability, Knowledge systems, Power structures, Sociological Agenda.

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Unlocking India's Renewable Energy potential: Challenges and Opportunities

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Abstract

With climate change and energy insecurity being experienced in the world, renewable energy has now become a mile-stone of sustainable development. Nevertheless, technological, economic, policy, and social problems do not go away in the transition to renewables. In this paper we will discuss the two aspects of the issue of renewable energy its vast potential and its layers of complications in the world trends and using India with its case studies. This research based on the large-scale and decentralized renewable projects, such as Bhadla, Pavagada, Rewa, and Kurnool solar parks, and microgrid projects in Dharnai and Indira Nagar can determine the strategic pathways to inclusive and resilient societies in the future, as well as the necessary resolutions to fulfill the goals of these initiatives. It was seen in the analysis that the transformative potential of renewable energy could be greatly contributed through the integration of policies, innovative financing, community engagement, and even the use of technology.

Keywords: climate change, energy, renewable.

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Reconceiving Science through a Feminine Perspective: Ethical Narration in Amruta Patil's Kari and Ram Devineni's Priya's Mirror

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Abstract

The current paper will discuss how science is reinvented into an ethical and relational discipline in Amruta Patil's Kari and Ram Devineni in Priya's Mirror in both India comics and graphic stories. These writings describe feminist epistemology based on care, empathy and sustainability and enter past the traditional vision of science as mastery of technology. In the study Patil and Devineni suggest that scientific discourse can be converted into a concept of moral and cultural reflection and dwelling upon ecofeminist, feminist studies in science and ethics of care.

In Kari, Amruta Patil combines the visuals of the rotting, the body and its inner parts to bring life into the city of Mumbai. Assimilating environmental consciousness with emotional strength, the odd and brooding gaze of the lead character transforms scientific observation to the gesture of kindliness and sympathy. A combination of digital innovation and mythic symbolism namely the use of augmented reality and survivor testimony allows Devineni to acquire a participatory storytelling in Priya Mirror, becoming a medium of empathy and group therapy.

The essay shows how the both the stories have substituted patriarchal logic of domination with feminist ethic of interdependence by taking a close look at the text and image.. Uniting logic, compassion and creativity, the comics medium itself emerges as an instrument of ethical science communication. Ultimately, *Kari* and *Priya's Mirror* envision a sustainable future in which knowledge is defined not by control or hierarchy but by the capacity to coexist responsibly within the web of life.

Keywords: Indian comics, feminist science studies, ethics of care, sustainability and digital empathy

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Cinema for sustainability: Santali Cinema shaping culture, awareness and community futures in east Singhbhum

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Abstract

This research shows how Santali-language films are becoming a tool for protecting culture and creating social awareness. It places this development within the broader idea of people, planet, and prosperity. The study looks at how Santali films are made and shown in local areas of East Singhbhum, Jharkhand. While many studies focus on cinema's artistic or cultural aspects, this paper takes a different approach. It uses a simple, literature-based qualitative method to highlight social and environmental issues affecting tribal and rural communities. Findings suggest that despite low-budget production and distribution constraints, these films carve out arenas for dialogue in villages and fairs, strengthen pride in the language and invite reflection on sustainable livelihoods and forest-ecosystem relationships as shown on screen. This paper will argue that Santali cinema in East Singhbhum has its potential to be used as an instrument of social change, education, and sustainable development, and calls for policy support, open-data archiving of films, and inclusive screening strategies to widen its impact.

Keywords: Santali cinema; cultural preservation; social awareness; East Singhbhum; sustainability; indigenous media

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Science meets Society: Pioneering a Sustainable world

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Abstract

The concept of sustainability is now considered as one of the most topical global issues of the 21 st century. This paper will explore the changing dynamics between the development of science and the society to create a sustainable future. It discusses the coming together of problem-solving technological advances, policy-making, and the masses on such issues as climate change, resource loss, and ecological unbalance. Through the data analysis and the examples that are provided, the study emphasizes the need to collaborate with other disciplines and engage in community activities with the aim of creating resilience. The results highlight that scientific knowledge should be supported by the inclusion of governance and cultural change in order to bring long-term sustainability.

Keywords : Sustainability, Climate change, Renewable energy, Green technology

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Biogenic Synthesis of Cd/Gd Co-Doped Strontium Ferrite Nanoparticles: A Sustainable Approach for Enhanced Photocatalytic Degradation of Industrial Dyes

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Abstract

In this work, Cd1-xGdxSryFe2O4 (x = 0.0–1, y = 0.00–0.15) spinel ferrite nanoparticles were synthesized via a green co-precipitation method using Datura metel leaf extract as a bio template and capping agent. The resulting nanoparticles were characterized by PXRD, SEM, TEM, EDS, FTIR, photoluminescence, and UV–Vis spectroscopy to elucidate their structure, morphology, and optical properties. All samples formed a highly crystalline spinel phase with average crystallite sizes of ~11–20 nm and tunable optical band gaps (4.17–4.21 eV). Photocatalytic tests under 400 W visible-light irradiation showed efficient degradation of a mixed dye solution containing Rhodamine B and sulfadiazine. Among the compositions tested, Cd0.4Gd0.6Sr0.09Fe2O4 achieved the highest dye-removal efficiency (~80.9% for sulfadiazine and 55.0% for Rhodamine B after 180 min). Kinetic analysis indicated that the degradation followed a Langmuir–Hinshelwood model. The enhanced photocatalytic activity is attributed to the optimized band gap, efficient charge separation, and high surface area resulting from Cd/Gd co-doping. These findings demonstrate the potential of Cd/Gd co-doped SrFe2O4 nanoparticles for environmentally friendly wastewater treatment. Future work will focus on improving catalyst stability and recyclability for practical applications.

Keywords: Cd/Gd co-doping; spinel ferrite; photocatalysis; XRD; dye degradation.

DeepScience
Open Access Books

Synthesis, Crystal growth, characterization and non-linear optical properties of new chalcone derivative containing thiophene moiety for optical device applications.

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Abstract

A new organic non linear optical (NLO) chalcone derivative- 1-(5-chlorothiophene-2-yl)-3-(4-bromophenyl) prop-2-en-1-one (5CT4BP) single crystal was grown by slow evaporation technique and characterized by CHN analysis, FTIR and H^1 NMR. The thermal stability of the grown crystals was determined using DSC-TGA. The optical absorption spectrum was recorded using UV-Vis-NIR spectrophotometer and the band gap was calculated. The grown crystals were characterised for their second harmonic generation (SHG) efficiency of the crystals obtained by classical powder technique and was found to be 0.18 times that of urea. The third order nonlinear optical parameters such as nonlinear optical susceptibility, nonlinear refractive index and nonlinear absorption coefficient were determined by employing the Z-scan technique. The nonlinearity exhibited by this crystal was exploited for studying its optical limiting behaviour.

Keywords: 1-(5-chlorothiophene-2-yl)-3-(4-bromophenyl) prop-2-en-1-one (5CT4BP), slow evaporation technique, second harmonic generation, z-scan technique, optical limiting.

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Zinc-Based Metal Organic Frameworks: Synthesis and Biological Applications

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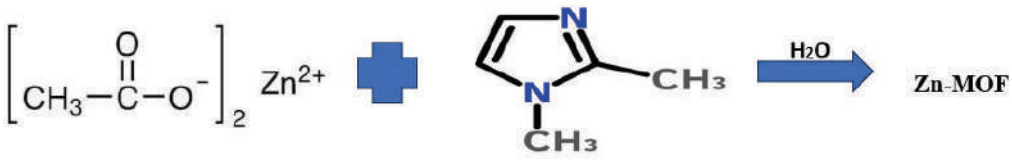
Abstract

Metal-organic frameworks (MOFs) are under the spotlight of current research due to their facile preparation techniques and vast applications in many fields. MOFs are porous, crystalline, three-dimensional polymer networks made up of metal ions and organic ligands. The pores in MOFs are stable and can be refilled with other compounds, making them useful for storing gases like hydrogen and carbon dioxide. In this study, hydrothermal synthesis of zinc-based MOF using 1,2-dimethylimidazole and zinc acetate was reported. The Synthesized MOFs were structurally, vibrationally, morphologically, elemental, and optically confirmed by several analytical methods, such as XRD, FT-IR, SEM, EDAX and UV-DRS.



Zinc acetate 1,2 dimethyl imidazole

The Zn-MOF shows maximum absorption at 291 and 210 nm, with bandgap values of 5.90 and 4.26 eV, respectively. Among the six microorganisms tested, Zn-MOF showed significant activity against E. Coli (240 µg/ml), followed by Bacillus subtilis (360 µg/ml). The investigation of the anti-angiogenic activity of Zn-MOF showed a significant reduction in capillary proliferation around the zone of application of the Zn-MOF-loaded discs compared to the site where only saline solution was applied. The results indicate Zn-MOF has a potent antiangiogenic effect in vivo.

Keywords: MOF, hydrothermal, E.Coli, Bacillus subtilis, anti-angiogenic activity.

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Floristic Diversity/Diversity of Phenerogams in and around GFGC Campus

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Abstract

Vegetation in and around college campus is the result of interaction of various climatic and edaphic factors. In course of plant succession, most species compete with each other to establish on unoccupied places. Subsequently, some species become dominant and others with their lower phytosociological eminence or abolished from the community. As the plants act as natural filters by absorbing pollutants and releasing oxygen their by provide cleaner and healthier air in the campus. Considering the importance of plants, the present investigation was undertaken by quadrats to study and document species diversity of phenerogams in and around the college campus. In the present investigation 140 species representing 129 genera belonging to 90 families were recorded in the study area. Among them 84 families, 120 genera and 125 species are dicotyledons. Monocotyledons represent 3 families, 5 genera and 11 species whereas 3 families, 4 genera and 4 species were Gymnosperms. The study reveals there are 33 tree species, 35 shrubs, 13 climbers, 14 prostrate herbs and 44 herbaceous species. The heights IVI found in Cissus *quadrangularis* (IVI-87.48), *Centella asiatica* (IVI-31.82), *Dracaena trifaciata* (IVI-66.26) and *Syyzygium cumini* (IVI-24.29) respectively among Climbers, herbs, Shrubs and trees. The study flound that tha maorit of the plants recorded from the campus area have medicinal value.

Keywords: Phenerogams, Dicotyledons, IVI, Monocotyledons, Tumkur.

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Open Access Books

A Study on the Impact of AI in Recruitment with Reference to the Banking Sector in India

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Abstract

Artificial Intelligence (AI) is transforming Indian banking recruitment functions at a breakneck speed, bringing with it unprecedented efficiency, precision, and objectivity. This research examines how prominent Indian banks are using AI-based tools like automated resume filtering, Chabot's, and predictive analytics to optimize talent sourcing, minimize time-to-hire, and improve candidate experience. The paper will employ extensive secondary research in the shape of industry books and case studies to discuss the benefits of AI in ensuring faster and data-driven hiring choices that drive organizational goals. Besides this, this paper discusses issues such as leading banks such as risks of algorithmic bias, threats of compliance, and lack of skills among HR professionals needed to deal with AI systems on the ethical front. In order to minimize prejudice and offer equal employment opportunities, life-changing impact of AI demands constant upskilling and application of ethical values. HDFC bank and ICICI bank are suitable to make a successful deployment of AI to recruitment with evidence of the reduction of costs of doing business as well as improved employee retention. However, in the use of AI recruitment tools, the twins approach that is an implementation of technical innovation but with human intervention is necessary to ensure fairness and equity. The implications of this study are good advice to HR managers in the banking industry seeking to redefine the concept of recruitment in the digitalization period without undermining the ethical and workplace diversity..

Keywords: Artificial intelligence, recruitment, employee retention, technology

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Open Access Books

Customized Training Programs and Its Impact on Employee Participation

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Abstract

Customized training programs are becoming a cornerstone of modern workforce development, which is an indication of the increasing demand of learning, which is personalized and is interrogated in the context of individual needs, competencies, and aspirations. The customized training as opposed to the traditional models of one-size-fits-all puts emphasis on aligning the learning material with the present role of employees, future career objectives and their learning styles. Not only this method will make training more relevant and efficient, but the participation of employees will be affected greatly. Whenever the employees believe that training is directly related to their professional development, there is a high likelihood of them putting effort, remaining motivated, and having a positive attitude towards their organization.

Training customization gives employees freedom in which they can opt to follow learning paths that best suit their strength and overcome their weaknesses. It also upholds inclusiveness in the light of diversity in terms of backgrounds, styles of learning and ambitions in the work force. This ownership gives the employees a sense of ownership hence enhancing accountability and also strengthening the relationship between the employees and the organization. Moreover, tailor training instills confidence since the employees have the opportunity to acquire skills, which are relevant to the job and which they can apply immediately, in addition to equipping them to execute their future positions.

On the organizational level, these programs will lead to increased retention and loyalty rates due to the elimination of skills imbalance, unproductiveness and removal of stagnation and reinforcement of the long-term commitment to employee success. They also promote teamwork, team identity, and team development among teams, which has an effect of improving the workplace culture. After all, the tailor-made training makes both the employees and the organization develop in a win-win-win relationship that ensures a highly qualified, motivated, and active workforce.

Keywords: Customized Training, Employee Participation, Autonomy, Retention, Skill Development and Inclusivity.

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A Novel Performance-Optimized Chaotic Mapping Technique for Secure and Compressed Image Transmission

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Abstract

Secure communication and computing is the vital requirement of the day as global networks and information systems are expanding like the big bang theory of the universe. People have started treating information as an asset. The information asset needs to be secured from attacks. Everything in the world is being upgraded to electronic communication and this requires protection against data fraud. Information has chosen different media like text, image, audio, video and multimedia for its existence.

Cryptography is the science which provides techniques for securing information over network. Network security is the process of taking physical and software measures to protect underlying infrastructure. This paper introduces cryptography, chaotic cryptography, its computational power in image security. It proposes new sealion algorithm to increase the computational power of cryptographic algorithms. It also verifies the efficiency of proposed algorithm against benchmarks set for the security of images over network.

Keywords: *Cryptography, network, Communication*

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Seaweed Diversity along the Southern Kerala Coast: A Comparative Study from Kovalam and Ernakulam

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Abstract

Seaweeds, or marine macroalgae, are primitive, non-flowering photosynthetic organisms that inhabit intertidal and subtidal zones and constitute an important renewable marine resource. This study explored the diversity of seaweeds and the physicochemical characteristics of coastal waters in Kovalam (Hawaii) and Ernakulam (Nayarambalam and Kuzhupilli), Kerala. Eight seaweed samples were collected from rocky intertidal substrata across these locations, with only two species documented from the Ernakulam region. Among the collected specimens, *Ulva fasciata* Delile, *Caulerpa peltata* J.V. Lamouroux, and *Chaetomorphaantennina*Kützing were identified as green algae, while *Gracilariacorticata* J. Agardh, *Hypnea bullata* Kundu & Patel, and *Asparagopsistaxiformis* belonged to the red algae. The other two, Scytotaxisiphonlomentaria J. Agardh and Sargassum wightii (Greville) J. Agardh were brown algae that were found in Kovalam only. Two species of green algae that were observed in the Ernakulam coastal waters were Ulva fasciata Delile and ChaetomorphaantenninaKutzing. Ecological assessment of seven significant physicochemical parameters (pH, total dissolved solids, salinity, temperature, dissolved oxygen, nitrate and phosphate) indicated a slight alkalinity and warm salty waters with high dissolved solids, which contributes to supporting different macroalgal communities.

Keywords: *Seaweeds, Physio chemical parameters, Kerala, Kovalam, Ernakulam Coastal water*

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Cardioprotective and thrombolytic activities of Trigonella foenum-graecum and Holoptelea integrifolia leaf extracts

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Abstract

This study systematically evaluates the cardioprotective potential of *Trigonella foenum-graecum* (Fabaceae) and *Holoptelea integrifolia* (Ulmaceae) through biochemical and phytochemical analysis of their bioactive compounds. Leaf extracts were obtained from shade-dried, powdered plant materials using ethanol and water solvents. Thrombolytic activity was assessed using a clot dissolution assay with human blood clots treated by varying extract concentrations. Streptokinase and normal saline served as positive and negative controls, respectively. Clot lysis was quantified gravimetrically, revealing concentration-dependent thrombolytic effects. Maximum clot lysis reached approximately 41.7% (aqueous) and 32% (ethanolic) for *T. foenum-graecum*, and 54.3% (aqueous) and 52.5% (ethanolic) for H. integrifolia, relative to 100% activity by streptokinase. GC-MS profiling identified major phytoconstituents including phytol, squalene, tocopherols, fatty-acid esters, sitosterol, and amyrins, consistent with known bioactive lipophilic fractions. The thrombolytic potential likely results from synergistic action among ω-3 fatty acid esters, antioxidant terpenoids, triterpenoids/sterols, and vitamin E homologues. These findings highlight the therapeutic promise of these plants as natural anticoagulant and thrombolytic agents with potential applications in cardiovascular health.

Keywords- *Trigonella foenum-graecum, Holoptelea integrifolia, thrombolytic activity, bioactive compounds, cardiovascular protection*

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Color tuning in Eu^{2+} doped Barium Silicate Nanophosphor: A facile Combustion Synthesis for Display Device Applications

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Abstract

Combustion synthesis method was used to prepare Europium doped Barium silicate nanophosphors. The crystalline structure from PXRD profiles showed that the fabricated sample have orthorhombic phase [JCPDS Card No. 78-1371] with a face group Pb nm- 62, with no variation in the diffraction profiles because of the inclusion of the Eu^{2+} ions. The images are regular and irregular shapes with smooth surface were observed from SEM. The photometric spectra were studied for optimized nanophosphor displays green emission at ~ 505 nm due to the presence of Eu^{2+} ions corresponds to 5D0→7F2 transition. The CIE arrangement was green spread, which are basically near to the standard characteristics and Correlated Color Temperature (CCT) was acquired 12236K. These outcomes showed that the fabricated NPs can be viably utilized as green color part in the fabrication of white light emitting diodes.

Keywords- nanophosphors, synthesis method, images.

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Open Access Books

Digital Divide – A Study

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Abstract

Max weber-Inequality is more complex than just class or economics. Inequality persists because it is embedded in social, economic, and political hierarchies. He said society is divided by three dimensions like class, status and power. Inequality makes social distant between and among individuals as well as social groups. In the modern scenario science and technology creates opportunities for everyone in general but for someone in particular. Somebody has suffered to utilize the opportunity based on region, class, caste, age etc.

Keywords- Inequality. social groups.

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Green Banking Practices and Their Role in Promoting Sustainable Development in Indian Financial Sector

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Abstract

Green banking represents a new trend of adopting sustainability into the banking field with the focus to address environmental issues and implement more environmentally friendly financial activities. This paper discusses the uptake and effectiveness of green banking in India through primary data obtained through conducting an interview on 100 bank customers and 25 bank employees. The study is mixed-method, as it applies the surveys, interviews, and observations as the means of assessing customer awareness, usage patterns, and difficulties in implementing green banking. It has been found out that 70 percent of customers have heard of the simplest forms of green banking such as paperless banking and e-statements, but merely 45 per cent make effective use of them, meaning the need to increase the intensity of awareness campaigns and incentives. The use of renewable energy loans and green credit policies are taking off but as these are not very common, there is limited knowledge and availability. The research determines that there are substantial obstacles which include the financial factors, technological and unwillingness on the side of the customer especially in the rural regions. Existing studies revealed through statistical and content analysis the importance of digital platform, customer education and government incentives as a way to support sustainable banking practices. It has been advised that working together among the banks, customers, and policymakers is necessary to increase the green projects and that the financial operations should be geared towards that of sustainability. This study highlights the potential green banking has in creating a transformative change in the conservation of the environment and economic growth in India.

Keywords: Green Banking, Sustainable Finance, Environmental Conservation, Customer Awareness, Renewable Energy Loans, Digital Banke.

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A Study on Future of Supply Chain in India: Challenges, Trends, and Prospects

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Abstract

India's logistics and supply chain sector—valued at over USD 435 billion in 2023—is on the verge of transformation due to national policy reforms, technology integration, and e-commerce growth. This paper analyses India's supply-chain challenges, trends, and prospects using secondary data from government and industry reports. Findings indicate that while India's logistics performance index improved from 3.18 (2018) to 3.4 (2023), the logistics cost remains high at 13–14% of GDP, compared with 8–9% in developed economies. Key growth drivers include digitization, cold chain investments, and sustainability initiatives. The study concludes with evidence-based recommendations for improving India's logistics competitiveness and reducing costs.

Keywords: Supply chain, logistics, India, National Logistics Policy, PM GatiShakti, cold chain, sustainability, digitization

DeepScience
Open Access Books

A Study on the Impact of Artificial Intelligence in Higher Education: An Empirical Study

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Abstract

This is empirical research that investigates the complex nature of the effects of Artificial Intelligence (AI) on tertiary education, and more so, on the Indian universities. Based on the mixed-method approach, 200 students and faculty members in various institutions were used to collect data to measure AI adoption, attitudes, and academic performance. The paper shows that AI technologies are tremendously effective in increasing student engagement, personal learning, and administrative efficiency, which promote more accessible and flexible education. It also raises the aspect of better academic performance, especially with the use of automated grading and virtual classroom, and research aid by AI. Nevertheless, the inquiry reveals obstacles like the issues of privacy of data and a possibility of plagiarism alongside psychological effects of excessive dependence on the AI systems. The reaction of faculty and students shows that there is a great requirement to support this institutionally, such as AI literacy courses and explicit ethics. The results highlight a moderate combination of AI and humanistic pedagogy to make education sustainable and meaningful. In the current literature with the growing interest in AI in education, the study adds empirical research to the area of Indian higher education by highlighting opportunities and barriers to effective implementation of AI. The findings promote strategic plans promoting responsible use of AI and uphold academic integrity and inclusivity in dynamic learning online.

Keywords: Artificial Intelligence, Higher Education, Adaptive Learning, Student Engagement, Educational Technology, AI Adoption.

DeepScience
Open Access Books

A study on impact of international tariffs on cottage industries: with reference to Karnataka state

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Abstract

This paper discusses how the international tariffs, and particularly recent U.S. import duties trickle down to Karnataka's cottage industries that consist of handicrafts, textiles and small scales manufacturing sectors (MSME). These are sectors vital to rural employment and culture preservation." The study focuses on the impact of tariff changes on export orders, production, income and employment. Using secondary sources, and institutional reports, the paper assesses tariff-induced trade challenges, policy government policy responses, and prospects for thriving.

Keywords: Tariffs, cottage industries, global trade, policy

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The Influence of Artificial Intelligence on Business: Performance, Mechanisms and Managerial Implications

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Abstract

Artificial intelligence (AI) is reshaping business functions from marketing and customer service to product development and operations. While practitioner surveys report rapidly rising adoption and measurable benefits, academic evidence shows heterogeneous outcomes driven by complementarities, organizational readiness, and adoption timing. This paper synthesizes recent evidence and proposes a compact empirical strategy to measure how firm-level AI intensity affects performance, which mechanisms mediate effects (automation, augmentation, innovation), and which firm characteristics moderate outcomes (data maturity, industry task content). Using a continuous composite measure of AI intensity (text disclosures, AI-related patents, job-skill signals, and survey indicators) applied to panel firm financials, the proposed identification strategy combines firm and year fixed effects, event-style difference-in-differences, and instrumental variables to address selection and endogeneity. The paper expects positive medium-run effects on profitability and productivity for firms that combine AI with complementary investments and highlights short-run adjustment costs for others. Managerial recommendations include investing in data infrastructure, governance, and rescaling to capture AI value.

Keywords: Artificial Intelligence, Business, Mechanism, investments

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Fintech, Payment Systems and Financial Inclusion Post-COVID in India

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Abstract

This paper analyses how fintech and modern payment systems have accelerated financial inclusion in India after the COVID-19 shock. We synthesize secondary data from central banks, government programs, industry reports and recent empirical studies to measure changes in account ownership, payments behaviour, credit access and usage intensity across urban-rural and gender groups. Key findings: real-time rails (UPI) and digital public infrastructure drove massive transaction adoption; usage—more than mere access—was the primary channel by which inclusion deepened; and fintech innovations (payments, micro-credit, supply-chain finance, and digital ID-linked services) materially reduced frictions for previously excluded groups. The paper ends with policy and
research recommendations to convert access gains into resilient financial participation.

Keywords: Fintech, payments, UPI, financial inclusion, PMJDY, India, post-COVID, digital public infrastructure

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FinTech and AgriTech: Revolutionising Agriculture through Financial Innovation

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Abstract

The intersection of Financial Technology (FinTech) and Agricultural Technology (AgriTech), collectively termed Agri-FinTech, is transforming agricultural practices, particularly in developing economies. This paper explores how Agri-FinTech addresses longstanding challenges in agricultural finance such as limited access to formal credit, high-interest informal loans, and financial exclusion. It examines digital innovations including AI-powered lending, block chain, and digital payments, and assesses their impact on stakeholders such as farmers, financial institutions, and consumers. Through case studies of innovative startups and government initiatives, this paper underscores the potential of Agri-FinTech in creating a more inclusive, transparent, and efficient agricultural ecosystem.

Keywords: FinTech, Agri Tech, Government, Farmers, finance, consumers

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An Exploration of Alice Munro's ‘Run Away’ and ‘The View from the Castle Rock’ from an Ecological Perspective

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Abstract

Ecofeminism is a feminist and ecological philosophy and movement. It claims patriarchal institutions, which have traditionally repressed women and nature, dominate both. Ecofeminists believe patriarchal capitalism is the main cause of environmental degradation. Ecofeminism, according to UK academic Professor Mary Mellor, links environmental maltreatment with women’s marginalization. This movement mixes feminist and ecological elements while criticizing both. Ecofeminism arose to overcome the feminist and ecological movements' shortcomings. The multifaceted relationship between women and nature is the crucial aspect in understanding the concept of ecofeminism. The marginalization and segregation of women and nature as "others" can be attributed to the prevalence of value dualisms and hierarchies. It is possible to examine Alice Munro’s narratives through the lens of ecofeminism as most of them contain ecofeminist elements in them. Despite Munro's lack of explicit discussion on political causes such as environmental issues, feminism, and animal rights within her literary works, a thorough analysis of her body of work suggests otherwise. Munro has consistently contested any classification beyond that of an autobiographical and regionalist author. Ecofeminist philosophy can be used to evaluate the tales in the two collections, “Run Away" and “The View from Castle Rock" by Alice Munro. Like all her tales, these tales also frequently include ecofeminist ideas. All accounts show subjugation of women and the environment, which fits ecofeminism.

Keywords: Ecology, Canada, Feminism, Emotion, Alice Munro, Short Stories,

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The Interrelationship Between Education and Economic Development: An Analysis of Investment Patterns

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Abstract

Education plays a vital role in human capital formation and economic growth. This study examines the relationship between educational investment, enrolment, and human capital development in India and Karnataka using data from 2000–2021 and a primary survey in Mysuru. Results show a strong positive correlation between government expenditure and enrolment, though gender and income disparities persist. Wealth and parental education significantly influence academic success. The study recommends increasing education spending, promoting gender equity, and enhancing quality through inclusive policies and public–private collaboration. Education must be treated as an investment for sustainable development.

Keywords: Education investment, Human capital, Economic growth, Enrolment, Gender disparity, Karnataka, India.

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Integrating Sustainability into Banking: A Study of Green Banking Strategies Adopted by the State Bank of India

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Abstract

Sustainable practices refer to the adoption of strategies and actions that satisfy current needs without jeopardizing the ability of future generations to meet theirs. These practices integrate environmental, social, and economic dimensions to ensure long-term development and balance. By embracing sustainability, institutions can address major global issues such as climate change, resource exhaustion, and social inequality, while also promoting stable economic growth and resilience. In the banking sector, sustainable practices involve incorporating Environmental, Social, and Governance (ESG) parameters into operations, thereby adding a third dimension—impact—to the conventional focus on risk and return. This alignment ensures that financial performance supports both societal and environmental well-being. Green banking practices are initiatives undertaken by banks to advance environmental sustainability without compromising profitability. Such practices seek to minimize the carbon footprint of banking operations, promote eco-friendly projects, and encourage customers to adopt sustainable choices. Through the promotion of Green Banking, financial institutions leverage technology and environmentally responsible behavior to support conservation initiatives while simultaneously reducing operational costs. The State Bank of India (SBI) has been at the forefront of implementing green banking initiatives aimed at minimizing its environmental impact and supporting national sustainability goals. These initiatives not only enhance operational efficiency but also contribute to broader efforts in combating climate change. Hence, this study seeks to examine the green banking initiatives undertaken by SBI and assess their role in promoting environmental sustainability.

Keywords: Green Banking, Green Initiatives, State Bank of India, Sustainability.

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Green Banking Initiatives in India: Towards a Sustainable Financial Ecosystem

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Abstract

Green banking refers to environmentally responsible banking practices that promote sustainable economic growth while minimizing the ecological footprint of banking operations. In India, the concept of green banking has gained importance as financial institutions are increasingly recognizing their role in addressing environmental and social challenges. This article explores the evolution, significance, and implementation of green banking initiatives in India. It discusses major policies, programs, and contributions of leading banks, the role of the Reserve Bank of India (RBI), challenges faced in mainstreaming green banking, and future prospects for sustainable finance.

Keywords: Green Banking, Sustainable Finance, Environmental Responsibility, Renewable Energy, RBI, ESG, India, Financial Inclusion

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An overview of the National Defence Force and Peace Corps established in the Mysore State during World War II

(ಎರಡನೆಯ ಮಹಾಯುದ್ಧ ಕಾಲದ ಮೈಸೂರು ಸಂಸ್ಥಾನದಲ್ಲಿ ಸ್ಥಾಪನೆಯಾದ ರಾಷ್ಟ್ರೀಯ ರಕ್ಷಣಾ ಬಲ ಮತ್ತು ಶಾಂತಿದಳದ ಒಂದು ಅವಲೋಕನ)

Lakshmirangaiah K

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Abstract

The Second World War was a devastating war the world has never seen. The entire world was engulfed in the agony of this devastating war and the series of sufferings it endured are described in detail. During the World War I that lasted from 1939 to 1945, India, as a colonial nation of the British, was directly and indirectly involved in the war waged in their interests, and had to suffer the same hardships as all the nations of the world. The British contributed an enormous amount of human and financial resources to the war.

Keywords: World War, colonial nation, National Defence

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Impact of Inflation on Investment with Special Reference to Gold and Silver

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Abstract

This paper examines how inflation affects investment decisions with particular focus on two precious metals: gold and silver. The study reviews theoretical mechanisms (store-of-value, real return erosion, monetary policy response), surveys empirical evidence from cross-country and time-series studies, and discusses practical portfolio implications for investors and policymakers. While many studies find that gold (and to a lesser extent silver) can act as a partial hedge against inflation in certain periods, the literature shows that the relationship is time-varying, regime-dependent, and affected by other determinants such as interest rates, currency movements and industrial demand. The paper concludes with recommendations for asset allocation under inflationary scenarios and areas for future research.

Keywords: Inflation, Gold, Silver, Inflation hedge, Portfolio diversification, Precious metals, Monetary policy.

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Contextualising Dream and Disintegration of Human in Nathanael West's *Miss Lonelyhearts*

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Abstract

This essay addresses different themes which have the capacity to cause both men and women to suffer from a variety of ailments in Nathanael West's *Miss Lonelyhearts*. A young newspaperman who writes a lonelyhearts column is the subject of the story. The anonymous reporter's obsession is the inability to ease the readers' pain when they come to him for guidance. Without the ethereal cloak of art, culture, or religion, the hero adopts a harsh, pragmatic, and mocking view of the world. His death is monstrously ironic. The incident reveals his self-deception, shattering his dream. A dead world that cannot be brought to life is evoked by the novel's recurring theme of death. Based on his portrayal of the characters, West should not be considered a misogynist because he understands and forgives the people in the novel. They are all a part of the human misery that the West deeply empathises with.

Keywords: Humanity, Pain, Society, Victim, Dream

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Green-emitting Tb^{3+} activated $Sr_9Al_6O_{18}$ phosphor: Application towards w-LEDs and latent fingerprint visualization

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Abstract

The development of narrow-band green-emitting phosphors is essential for improving the overall performance of white light-emitting diodes (w-LEDs). In this study, a series of terbium (Tb $^{3+}$) doped Sr9Al6O18 (SAO) green phosphors were successfully synthesized using a solution combustion method.

Notably, the SAO: Tb^{3+} phosphors exhibited a distinct green emission peak at 543 nm, attributed to the 5 D 4 → 7 F 5 transition when excited at 251 nm. Concentration quenching was observed at an optimal doping level of x = 5 mol %. The color purity (CP) correlated color temperature (CCT). The synthesized phosphor was further utilized to fabricate a w-LED, which exhibited cool white light with a high color rendering index (CRI) of 88 and a CCT of 5382 K. In addition to its lighting applications, the SAO: $5Tb^{3+}$ phosphor was explored for forensic fingerprint (FP) visualization. Given the challenges associated with visualizing latent fingerprints (LFPs) that are invisible to the naked eye, this study proposed a fluorescence-based approach for high-resolution FP imaging. A novel FP fluorescence contrast quantification strategy was introduced, considering both fluorescence intensity and colorimetric parameters through photoluminescence (PL) spectroscopy. This method effectively quantified FPs deposited on various substrates, even in the presence of fluorescence interference, and demonstrated superior sensitivity and accuracy compared to standard phosphors. Overall, the developed fluorescence contrast enhancement approach offers a reliable method for advanced forensic analysis and FP identification.

Keywords: Solution combustion, Phosphor, Photoluminescence, Thermal stability, Fingerprint.

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Frequency-Dependent AC Conductivity and Dielectric Studies of PPy/WO_3 Nanocomposites

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Abstract

In the present work, oxidative polymerization was used to synthesize PPy/WO_3 nanocomposites (5–15 % WO_3) in order to connect structure with dielectric–impedance behavior. A crystalline WO_3 matrix with an amorphous PPy matrix is seen in XRD; the average crystallite size is found ~ 20-40 nm. In accordance with Koops' model and Maxwell-Wagner-Sillars polarization, ε′ and ε″ fall monotonically with frequency, and the highest dielectric constant, ε′ , is 14.3 for the 5% WO_3 nanocomposite. While mid-range WO_3 form interface-rich networks that optimize low-frequency permittivity. The conductivity is increases with an increase in frequency for all PPy-WO_3 nanocomposites, and according to Jonscher's law, ac conductivity shows a decreasing trend with WO_3 concentration hopping and tunneling along PPy–WO_3 contacts. Modulus analysis reveals non-Debye relaxations whose times change with oxide content. Compressed semicircles that shrink with WO_3 and the analogous equivalent circuit, Rs–(Rct‖CPE), are visible in Nyquist spectra, indicating decreased charge-transfer resistance. Conductivity, relaxation, and polarization show good behavior for 5% WO_3 and are suitable for next-generation electronic and dielectric device applications.

Keywords: Polypyrrole, tungsten oxide, AC conductivity, dielectric studies.

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Review of Indoor, outdoor ^{222}Rn exposure assessment and modelling

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Abstract

In view of this, Indoor as well as outdoor radon concentration measurement has been carried out in specific residential and schools located in Mandya, Karnataka using well known SSNTD technique. The indoor radon level is predicted in the same selected dwellings using the suitable model which is based on the mass balance equation and the results are compared with the measured values. Annual mean values of ^{222}Rn in selected houses and schools were found to be19.68 Bq m^{-3} respectively. Annual mean values in some other survey for ^{222}Rn and ^{220}Rn concentrations was found to be 22.4 and 24.1 Bq m^{-3} respectively. The total annual effective dose received by the general public due to radon and thoron is found to be 1.1 mSv y^{-1}, which is close to the Indian average value of 1.11 mSv y^{-1}. The doses to different organs and tissues were calculated using the ICRP model of the respiratory tract and inter comparison was discussed. It can be seen that the larger fraction of the dose is delivered to lungs (69 %) and Extra thoracic region (31 %) of the body. The average measured outdoor radon concentrations during spring, summer, autumn and winter are 9.2, 6.1, 8.7 and 13.8 Bq m^{-3} respectively.

Keywords: ^{222}Rn; SSNTD, Dosimetry**,** Indoor, Radon, Thoron, Effective dose, Modeling

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Characterization and Adsorption Studies of Activated Carbon Derived from Wood Apple Fruit Shell

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Abstract

As industrial growth continues, environmental and water pollution have become significant concerns, requiring effective treatment solutions. Adsorption is an economical and practical method for removing dyes from textile wastewater, emphasizing the importance of selecting a sustainable, low-cost adsorbent. For this purpose, wood apple fruit shell (WFS), an agro-waste not used for fodder or manure and locally abundant, was selected as a raw material. The raw material was chemically activated with a non-toxic activating agent, acetic acid, to produce activated carbon (WFS-AC) for the removal of dyes such as malachite green and indigo carmine. The surface area, total pore volume, pore size distribution, and mean pore diameter of the activated carbon were characterized using the BET method. The highest BET surface area and total pore volume recorded were 439.04 m^2/g and 0.2257 cc/g at 450°C carbonization and an impregnation ratio of 7.0. The surface functional groups and the nature of the activated carbon were analyzed via FTIR and XRD, respectively. SEM analysis revealed a highly porous structure. The effects of contact time, dye volume, pH, and adsorbent dose on adsorption capacity were evaluated. The study shows that the maximum adsorption efficiency of malachite green and indigo carmine on activated carbon (WFS-AC) was 80% (dye concentration = 0.4 mg, contact time = 360 mins, pH = 6) and 55.75% (dye concentration = 0.32 mg, contact time = 510 mins, pH = 6), respectively. The adsorption process was pH-dependent, with the maximum adsorption of malachite green at pH 10 and of indigo carmine at pH 2. The findings indicate that a non-toxic acetic acid can serve effectively as an activating agent without compromising performance. Therefore, it is a suitable, non-toxic, inexpensive activating agent that significantly influences the pore structure of the activated carbon, making it an efficient adsorbent.

Keywords: Activated carbon, Adsorption, Acetic acid, Wood apple fruit shell, surface area.

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Topological Characterization of Silicon Carbide $Si_2C_3 - I[p,q]$Using M-Polynomial Techniques

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Abstract

Silicon possesses several advantages over other semiconductor materials. It is inexpensive, non-toxic, widely abundantly available and benefits from industrial experience in its purification, device fabrication, and large-scale manufacturing. It serves as the foundation of most modern electronic devices. In graph theory, we can be represented as a graph, where atoms correspond to vertices and chemical bonds to edges. In mathematical chemistry, molecular descriptors, particularly degree-based topological indices, play a significant role. In this study, we derive closed-form expressions for selected degree-based topological indices of double silicon carbide and strong double Silicon carbide using M-Polynomial Techniques. Further, we compare the numerical values of these degree-based topological indices and visualize their variations using Python-based graphical analysis, highlighting their structural relationships and potential significance.

Keywords: Zagreb index, Randic index, symmetric division index, forgotten index, redefined Zagreb index.

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Enhancement of Energy Efficiency for Decarbonization in the Indian Manufacturing Sector: A Review

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Abstract

Primary energy consumption doubled since the 2000s, between 440 and 880 million TOE. It is projected to double within the next 20 years, reaching approximately 1,900 million TOE, and to reach 1,500 million TOE by 2030. It is anticipated to double over the next 20 years to around 1,900 million TOE, and by 2030, it will reach 1,500 million TOE. The manufacturing sector in India uses the most energy. Energy use in the global industrial sector accounts for one-third of total consumption, according to a review of energy analysis. So that effort has been made to improve the energy efficiency (EE) of the industry to enhance performance. Energy efficiency means using less energy to do an identical task while lowering energy costs and emissions. A key component of the all-encompassing plan to decarbonize industrial operations is energy efficiency. This research intends to investigate the most current systematic literature evaluations on energy efficiency in the industrial sector that were published between 2017 and 2023, taking into account this vast amount of information. The current study creates and establishes six distinct groups that reflect the state of the field's research after conducting qualitative and topical evaluation: Energy Conservation and Innovation, Energy Diagnostics, Energy Monitoring, and Energy Optimization. It consists of the automated and comprehensive formulation of measures for energy efficiency utilizing energy efficiency analysis, broad and flexible modeling of consumption of energy at various production stages to determine technological efficiency possibilities, and the comprehensive evaluation and sorting method taking into account the relationships among methods.

Keywords: Energy efficiency, Systematic literature review, Manufacturing sector.

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Advancing Sustainability through the Synergy of Science, Society and Commerce

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Abstract

A sustainable future is largely shaped by the nexus of science, society, and business. Commerce needs to be in line with scientific advancements and social values as the world economy shifts toward sustainability. This article examines how scientific developments such as environmental biotechnology, digital transformation, and renewable energy are influencing sustainable business practices. Additionally, it looks at how corporate social responsibility (CSR), ethical consumerism, and public awareness are changing the business environment. The study emphasizes how science and society may work together to build resilient, inclusive, and ecologically responsible commerce.

Keywords: Science and Society, Sustainable Development, Green Commerce, Corporate Social Responsibility, Circular Economy, Sustainable Innovation

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Open Access Books

The Role of Green Investment in Long-Term GDP Growth

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Abstract

Green investment has become one of the defining economic strategies of the 21st century. Asclimate change accelerates and global economies transition toward low-carbon systems, investments in renewable energy, green infrastructure, clean technologies, and environmental resilience increasingly shape national and global economic trajectories. This research article examines how green investment affects long-term GDP growth through the channels of innovation, productivity enhancement, job creation, structural transformation, capital deepening, and climate resilience. The article synthesizes cross-country empirical evidence, economic theories, and contemporary global trends from 2020–2025. It concludes that green investment is not only a climate necessity but a potent economic growth engine—particularly when supported by effective policy, strong institutions, and sustainable financing mechanisms.

Keywords: Green Investment, GDP Growth, Renewable Energy, Sustainable Development, Innovation, Productivity, Climate Policy, Economic Resilience.

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Effect of Mobile Payment Options on Customer Satisfaction in Indian E-Commerce

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Abstract

The rapid digital transformation in India's retail sector has accelerated the adoption of mobile payment systems such as UPI, digital wallets, and integrated payment gateways. This paper examines the impact of mobile payment options on customer satisfaction in Indian e-commerce. With the growth of digital literacy, affordable smartphones, and the "Digital India" initiative, mobile payment platforms have become essential to the online shopping experience. The study analyzes how convenience, transaction security, speed, and payment diversity influence consumer satisfaction. Four case studies—Amazon India, Flipkart, Paytm Mall, and Myntra—illustrate how varying payment strategies affect customer loyalty and trust. Findings indicate that seamless and secure mobile payment experiences significantly enhance satisfaction, while payment failures, refund delays, and limited interoperability remain key challenges. The paper concludes that mobile payment innovations will continue to shape customer expectations and competitive advantage in India's e-commerce ecosystem.

Keywords: Mobile Payments, E-Commerce, Customer Satisfaction, UPI, Digital Wallets, India, Consumer Behaviour, Fintech

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Integrating Environmental, Social, and Governance (ESG) Frameworks into Creative Industry Management: A Sustainable Governance Perspective on the Indian Film Sector

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Abstract

The global creative industries, particularly the film sector, are increasingly required to align with sustainable and ethically responsible practices. This study explores the integration of Environmental, Social, and Governance (ESG) frameworks within the management of the Indian film industry through the lens of sustainable governance. As a major cultural and economic force, the Indian film sector's project-based structure has historically externalized environmental and social costs, posing serious sustainability challenges. Adopting a qualitative, desk-based approach, this research synthesizes secondary data from academic sources, policy documents, and industry reports to assess the current level of ESG awareness and implementation. The findings indicate a notable gap between intention and action—marked by limited awareness, fragmented practices, and weak governance mechanisms. The study critically examines how governance structures in financing, contracting, and accountability influence environmental responsibility and social inclusion. In response, it proposes a structured governance framework that embeds ESG principles throughout the film production value chain. The study concludes that strong governance is the cornerstone for achieving sustainability, positioning the Indian film industry as a potential global exemplar of responsible creative enterprise.

Keywords: ESG, Sustainable Governance, Creative Industries, Indian Film Industry, Sustainability, Management Framework, Corporate Responsibility.

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Interpreting the Urban Black Box: A Spatio - Temporal XAI Framework for Causal Feature Attribution in Smart City Prediction Models

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Abstract

Interpreting the Urban Black Box, the proliferation of sensors and Internet of Things (IoT) infrastructure in Smart Cities has enabled the development of highly accurate Spatio-Temporal Data Mining models, often relying on deep learning architectures like Graph Neural Networks (GNNs), for tasks such as traffic prediction, crime forecasting, and resource management. Despite their high predictive performance, these models remain "black boxes," hindering their adoption by urban planners and emergency services who require transparency and justification for critical operational decisions. This paper addresses the critical need for Explainable AI (XAI) in the urban domain by proposing a novel Spatio-Temporal XAI (ST-XAI) Framework designed for Causal Feature Attribution. Our framework leverages a modified version of SHapley Additive exPlanations (SHAP) combined with the inherent spatial and temporal structure of the data to provide granular, instance-based explanations.

The proposed methodology focuses on Temporal Attribution: Quantifying the specific influence of various look-back time windows (e.g., data from the last hour vs. data from 24 hours ago) on the current prediction. Spatial Attribution: Identifying and weighting the contributing influence of specific geographic nodes, links, or neighboring zones within the network structure. Causal Inference: Moving beyond mere correlation by prioritizing features that exhibit a strong, temporally preceding impact, providing a more actionable justification for the prediction. The results illustrate that our framework not only validates model efficacy but also acts as a vital debugging tool for city engineers, transforming black-box predictions into accountable and actionable urban intelligence.

Keywords: Explainable AI (XAI), Spatio-Temporal Data Mining, Smart Cities, Graph Neural Networks (GNNs), Deep Learning, IoT.

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The Interrelationship between Literature and Science

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Abstract

The relationship between literature and science has been a dynamic and evolving dialogue that has shaped human understanding of reality, imagination, and progress. While science seeks to explain the universe through observation, experimentation, and logic, literature interprets and reimagines the human experience of these discoveries through narrative, metaphor, and emotion. This paper explores the profound interconnection between the two disciplines, emphasizing how literature has reflected, critiqued, and inspired scientific innovation, and how science, in turn, has influenced literary imagination. Through a detailed review of existing scholarship and four case studies—from Mary Shelley's *Frankenstein* to contemporary science fiction—the paper demonstrates that literature and science are not dichotomous fields but rather complementary lenses through which humanity examines truth and possibility. The discussion further investigates the challenges of integrating scientific literacy into literary study and vice versa, proposing interdisciplinary frameworks for holistic intellectual development in the modern era.

Keywords: Literature, Science, Interdisciplinary, Scientific Imagination, Cultural Discourse, Science Fiction, Humanism, Knowledge Integration

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Role of Artificial Intelligence (AI) in the Future of Library Services: Special reference to Emerging Tools

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Abstract

Artificial Intelligence (AI) is revolutionizing every domain of human knowledge and practice, including library and information services. Modern libraries are increasingly leveraging AI-based tools to improve efficiency, provide personalized services, and enhance access to information. This paper explores the transformative role of AI in the future of library services, focusing on intelligent information retrieval, automated cataloguing, predictive analytics, chatbots, and semantic search technologies. It also highlights key AI tools and systems that empower librarians and researchers to manage and deliver information more effectively in the digital age.

Keywords: Artificial Intelligence, Library Services, Machine Learning, Chatbots, Information Retrieval, Digital Libraries

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Going green – A step towards Sustainability

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Abstract

The gravity and immediacy of environment issues like global warming and climate change has put not only the planet's health but also the long-term viability of business across industries at stake (2). It progressively crucial for businesses to green especially if they want to keep up with consumer demand and the global initiative to alleviate climate change (1). By embracing sustainable practices and strategies, companies can significantly reduce their environmental footprint and contribute to a healthier planet (2). Therefore, going green serves as a vital strategy for companies and industries to reduce environmental harm and drive long-term resilience. This article aims to evaluate the impact of green practices and explores how leading corporations like Tesla, Patagonia, Google, Unilever, and IKEA are implementing green initiatives that contribute to sustainable environment. By the means of statistical analysis of environmental performance metrics, profitability trends, and sustainability investment data, this study presents evidence that businesses which implement going green not only benefit the plane but also yields positive economic returns.

Keywords: Green Practices, sustainable development.

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A Conceptual study around Science and Literature

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Abstract

The relationship between science and literature has evolved through centuries, forming a unique intersection between rational thought and creative imagination. This paper aims to explore the conceptual connection between these two domains, focusing on how scientific ideas influence literary expression and how literature, in turn, shapes the humanistic understanding of science.

Keywords: Science, Literature, Interdisciplinary Studies, Humanism, Creativity, Rationality.

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Science and Literature

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Abstract

Science and literature are distinct fields that can both illuminate our understanding of the world. Though use different methods and focuses science prioritizes objective observation and analysis of the natural world , while literature explores human experiences thorough subjective language and narrative. Science and literature also have a deeply interconnected relationship, as scientific advancements can inspire literary works and literary techniques like metaphors and storytelling have been to communicate scientific ideas throughout history.

Keywords: Science- Systematic study.

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Dietary and clinical assessment of magnesium status among women of Urban Bangalore

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Abstract

Magnesium is a vital mineral responsible for muscle and nerve activity, heart rhythm, bone strength, and energy metabolism. The symptoms of deficiency of magnesium include fatigue, muscle cramps, numbness, dizziness, joint pain, and lowered immunity. In spite of its significant role, a significant percentage of the population in both developed and developing country suffers from magnesium deficiency. Women during periods of hormonal imbalance are at higher risk of magnesium deficiency. But there is a lack of data on magnesium status across different age groups, gender and geographical areas. So, the present study aimed at assessing the magnesium status of women in urban Bangalore

A questionnaire consisting of questions on general information, dietary intake, clinical symptoms of magnesium deficiency was used for collecting data. Women aged 40 to 65 years across five regions of Bangalore—North, South, East, West, and Central were included in the study after taking written informed consent (N=500). Magnesium intake was assessed using 24 hour dietary recall and food frequency questionnaire. Clinical assessment was done keeping in mind the specific signs and symptoms of Mg deficiency as reported by the subjects.

Dietary assessments revealed that average intake of energy, protein, calcium, and magnesium were below the Recommended Dietary Allowance (RDA). Magnesium deficiency ranged from 17 per cent to 62 per cent below RDA values. Although there is a wide variation in the prevalence of magnesium specific deficiency symptoms, nearly 10 per cent of the subjects reported common symptoms of deficiency such as joint pain, hair loss, high blood pressure, and muscle cramp/ spasms. Biochemical assessment is needed to understand the severity of the deficiency.

Keywords: Clinical symptoms, Dietary magnesium intake, Magnesium rich foods, Frequency of consumption, awareness of deficiency.

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Synthesis and characterisation of Quinoline-Fused-Trizolo- derivatives and its In-Vitro Bioactivity study

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Abstract

The design and synthesis of triazole–quinoline hybrids have emerged as a promising approach in heterocyclic chemistry due to their wide-ranging pharmacological and physicochemical properties. In the present study, we report an efficient synthetic strategy for the preparation of 1,2,3-triazole-functionalized quinoline derivatives employing a copper(I)-catalyzed azide–alkyne cycloaddition (CuAAC) reaction. The route involves the initial formation of 2-chloroquinoline via a Vilsmeier–Haack reaction from the corresponding anilide, followed by nucleophilic substitution with propargylamine to afford the alkyne-functionalized quinoline intermediate. Subsequent "click" cycloaddition with various aromatic or aliphatic azides under mild reaction conditions yielded the desired triazole-linked quinoline conjugates in excellent yields and high regioselectivity. The developed method offers several advantages, including operational simplicity, short reaction times, and the use of environmentally benign solvents. Structural elucidation of the synthesized compounds was accomplished by FTIR, ^1H NMR, ^13C NMR, and mass spectral analyses, confirming the formation of the triazole linkage at the C-2 position of the quinoline core. The electronic and steric effects of different substituents on the reaction efficiency were also investigated. Preliminary biological evaluation indicated that several derivatives exhibit promising antimicrobial and cytotoxic profiles. The synthetic methodology described herein represents a practical and general approach for the construction of novel triazole–quinoline hybrids with potential applications in medicinal and materials chemistry.

Keywords: Triazole–quinoline hybrid; CuAAC; Click chemistry; Quinoline derivatives; Heterocyclic synthesis; Regioselectivity.

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A review on Mathematical Modeling for Sustaining Traffic Flow in Urban Areas

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Abstract

Urban areas as we know has high density of traffic flow,usually monitored by the traffics signals,well fledged roads, fly overs and under passes which have eased the traffic flow for a greater extend in the urban areas. The traffic flow has significant impact in the process of urbanization, Mathematical modeling on traffic flow has provided many advantages for sustaining the traffic flow, such as analysing the flow of traffic, predicting the traffic flow, enhancing the efficiency of transportation to name a few. This paper reviews the different Mathematical modeling used for sustaining the traffic flow in the urban setup. Further it gives an insight on recent progress made in sustaining the traffic flow in urban areas. We conclude the paper by spotting the current challenges such as real time adaptation calibration of models *etc*. and suggest the direction for developing environment friendly traffic systems through Mathematical Modelling.

Keywords: Mathematical modeling, traffic flow, urban areas, sustaining.

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The Transformative Impact of Science: Advancing Society, Health, and Human Progress

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Abstract

Science has been the principal driver of transformational change across societies. From elevating standards of living through industrial and technological advances to revolutionizing health outcomes via biomedical discoveries, scientific inquiry underpins progress. This paper reviews the multifaceted impact of science on society, public health, economic development, education, and ethical considerations. It synthesizes historical trends, contemporary examples, and emerging frontiers such as artificial intelligence, genetic engineering, and climate science. The discussion emphasizes how evidence- based policy, interdisciplinary collaboration, and equitable access to scientific benefits determine whether science fulfills its promise for human progress. Finally, the paper suggests strategies to maximize positive outcomes while mitigating risks.

Keywords: Science Policy, Public Health, Technological Innovation, Ethics, Sustainable Development, AI.

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Technological Innovations in Karnataka

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Abstract

Sustainable development in India has increasingly relied on scientific and technological innovations to achieve balanced economic growth, social inclusion, and environmental conservation. Karnataka, as one of India's most technologically advanced states, presents a unique case of innovation-led development. The state has achieved a real Gross State Domestic Product (GSDP) growth rate of 10.2% in 2023–24, led by its thriving IT, biotechnology, and renewable energy sectors. This paper analyzes the economic, social, and environmental dynamics of sustainable development in Karnataka using recent statistical data. It highlights initiatives such as the Karnataka Renewable Energy Policy, Smart Cities Mission, and Skill Development Policy 2025–32. Findings show that while Karnataka ranks 5th in India with an SDG Index score of 75, challenges remain in bridging regional disparities and ensuring equitable access to technology. The paper concludes that sustained investment in R&D, green innovation, and inclusive digital growth are key to achieving long-term sustainability in Karnataka.

Keywords: Sustainable Development, Science and Technology, Karnataka Economy

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Explainable AI (XAI) for Data Mining

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Abstract

We present the Data mining and AI have moved from simple, interpretable models (like linear regression, small decision trees) to complex, high-accuracy models (Deep Neural Networks, Ensemble Methods) in this paper. These are often opaque, making it impossible for humans to understand their decision-making process. As AI is deployed in high-stakes fields (e.g., healthcare, finance, legal systems), the inability to explain a decision (e.g., "Why was this loan denied?") creates ethical, legal, and operational risks.

Keywords: Datamining, explainable AI (XAI)

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Socio-Political Nuances of Indian Society in Upamanyu Chatterjee's *The Last Burden*

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Abstract

This paper attempts to explore how Upamanyu Chatterjee's *The Last Burden* (1994) express most comprehensively the intimate social awareness of the society in which Indians are born and evolve with its problematic religious and cultural conditions. In this novel, he examines the negative aspects of kinship and familial bonds. It tells the narrative of a middle-class Hindu Brahmin family growing up in a seaside town. The family consists of the father, Shyamananda, the mother, Urmila, and their two sons, Burfi and Jamun. The most compelling feature of the novel is its examination of the emotional turmoil and interdependent relationships that exist among contemporary Indian households. In this novel, Chatterjee explores the enigmatic inner workings of the human mind and outlines the complicated issues of the modern Indian society. He demonstrates how multiculturalism and multilingualism benefit India. While blending the political, historical, and social upheavals with individual and cultural components, he has detachedly painted the socio-political and cultural struggle of the 1950s.

Keywords: Multilingualism, Society, Religion, Multiculturalism, Family, Culture

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Examining the Impact of Digital Banking on the Performance of Micro, Small and Medium Enterprises (MSMEs) in Karnataka

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Abstract

This study investigates the impact of digital banking on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Karnataka, with emphasis on adoption levels, financial outcomes, and factors influencing effective utilization. The findings indicate that digital banking adoption among MSMEs has increased steadily, with approximately 72% of enterprises using services such as online payments, mobile banking, and digital credit facilities. MSMEs adopting digital banking reported significant improvements in financial performance, including an 18–22% rise in revenue, a 15% reduction in operational costs, and notably faster loan approvals compared to non-users.

The study further identifies trust, digital literacy, and technological readiness as key determinants of successful digital banking usage, each showing strong positive correlations with adoption levels and efficiency gains. Despite these benefits, challenges persist in the form of limited awareness, inadequate infrastructure, and concerns regarding security. These gaps highlight the need for enhanced digital literacy initiatives and strengthened system safeguards to ensure effective and safe usage.

Overall, the research concludes that digital banking plays a pivotal role in enhancing MSME growth, financial transparency, and operational efficiency, thereby contributing significantly to the competitiveness and long-term sustainability of MSMEs in Karnataka.

Keywords: Digital Banking, MSME Performance, Adoption Factors

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Greenwashing: Identifying False ESG Claims in Corporate Disclosures

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Abstract

As Environmental, Social, and Governance (ESG) considerations gain prominence in investment decisions, corporate strategy, and consumer behaviour, companies increasingly publish sustainability reports and ESG disclosures. However, the rapid rise of reporting has also brought a significant challenge—Greenwashing, the deliberate or unintentional misrepresentation of sustainability performance. This article examines the concept of greenwashing, its forms, drivers, indicators, and consequences. It also explores global examples, regulatory responses, and practical frameworks for identifying false ESG claims. The aim is to help investors, regulators, and stakeholders distinguish authentic sustainability efforts from misleading claims.

Keywords: Governance (ESG), sustainability reports, Greenwashing.

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Impact of GST 2.0 Reforms on the Indian Economy

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Abstract

The 2025 "GST 2.0" reforms represent the most significant overhaul of India's Goods and Services Tax regime since its introduction in 2017. The reform simplifies the earlier multi-slab structure (0%, 5%, 12%, 18%, 28% + cess) into essentially two principal slabs of 5% and 18%, with a 40% demerit rate for select sin and luxury goods, while maintaining a few special rates such as 0% and 3% for specific items.

This paper examines the anticipated and early observed impact of GST 2.0 on growth, inflation, sectoral performance, household welfare, fiscal stability, and federal relations. Using secondary data from government factsheets, think-tank reports, and early academic assessments, the study finds that GST 2.0 is likely to reduce tax incidence for most households, stimulate consumption in key sectors such as FMCG, automobiles, housing, healthcare and insurance, while imposing higher burdens on sin and luxury goods. However, the reform also raises concerns over medium-term fiscal risks for the Centre and states, inverted duty structures in specific niches, and the need for robust anti-profiteering and dispute-resolution mechanisms. The paper concludes that the net impact of GST 2.0 is growth-positive and welfare-enhancing, but its long-term success will depend on careful calibration of rates, timely refunds, and cooperative federalism.

Keywords: GST, Indian economy, reforms

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Urban Planning and Spatial Transformation in Bengaluru City: An Historical Study

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Abstract

Karnataka's urban expansion is at a crossroads, as towns with populations of less than one lakh emerge as wealth creators. Urban planning and spatial transformation is an interdisciplinary discipline that investigates how cities and other human settlements evolve over time, with a focus on physical layout and its social, economic, and environmental implications. It entails studying the evolution of urban structures, land use, and public places in order to increase quality of life while also promoting sustainability, efficiency, and resilience. The research paper objectives are urban planning and spatial transformation in Bengaluru.

Keywords: Urban Planning, Spatial Transformation and Economic Growth of Bengaluru

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Artificial Intelligence and Indigenous Knowledge Integration: A Case Study of Tumkur District's Traditional Practices

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Abstract

This chapter explores the rich indigenous knowledge systems of Tumkur district, Karnataka, encompassing traditional practices in agriculture, medicine, folk arts, and community governance. It highlights the crucial role of local communities such as Lingayats, Vokkaligas, and Scheduled Tribes in preserving this heritage. With rapid technological advancements, Artificial Intelligence (AI) emerges as a transformative tool capable of enhancing the documentation, preservation, and application of indigenous knowledge. The study examines various AI technologies—such as machine learning, natural language processing, and data analytics—and their relevance in digitizing oral histories, predicting agricultural cycles, and preserving local dialects. Ten case studies from Tumkur illustrate practical instances of integrating AI with traditional wisdom, including efforts to digitize medicinal practices and empower local farmers through AI-based forecasting. The chapter also addresses challenges related to data ownership, digital access, and cultural sensitivity, advocating for participatory and ethical approaches. Policy recommendations emphasize the role of academic institutions, Panchayats, and community-led initiatives in fostering digital inclusion and capacity-building. Overall, this study envisions a harmonious integration of AI and indigenous knowledge that supports sustainable development, cultural resilience, and rural empowerment in Tumkur.

Keywords: Indigenous Knowledge, Artificial Intelligence, Traditional Agriculture, Digital Preservation, Tumkur District

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India's E-government and its function in contemporary a theoretical overview of governance

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Abstract

In India, e-governance has become an essential instrument for improving citizen-government relations and modernizing government operations. This essay offers a conceptual overview of e-government in India, examining its important projects, historical evolution, and influence on contemporary governance. E-governance is the use of information and communication technology to provide government services, guaranteeing efficiency, accountability, and openness in public administration. The development of e-governance in India can be traced back to early initiatives like pilot projects and major programs like Digital India and the major e-Governance Plan. The study looks at how e-government improves citizen participation in governance, accountability, and openness. It explores the notable advancements in administrative effectiveness and service delivery that led to improved governance results. Furthermore, the importance of e-governance in empowering citizens by expanding their access to services and information is emphasized. The digital gap, cyber security worries, infrastructural problems, and opposition to change are some of the obstacles that India's e-government must overcome despite its achievements. These obstacles make it more difficult to implement e-governance successfully, especially in underserved and rural areas. The study demonstrates the usefulness of e-governance through case studies of successful initiatives such as the E-District initiative and state-level programs. The future of e-governance in India is examined in the paper's conclusion, with a focus on the potential of cutting-edge technologies like AI, Block chain, and IoT. Additionally, it offers policy suggestions for resolving current issues and guaranteeing the long-term expansion of e-governance in the nation.

Keywords: E-governance, Digital India, Cyber-security, Transparency, Information and Communication Technology

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Modelling Leaf Area Index and Biomass for Evaluating Carbon Stocks in Community Forests

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Abstract

Community-managed forests play a vital role in climate regulation, yet their carbon stocks are rarely quantified using simple, field-based methods that local stakeholders can apply. This study develops and applies a modelling framework that links Leaf Area Index (LAI), above-ground biomass, and carbon stocks in a stratified community forest comprising dense, moderately dense, and open stands. Data were collected from 12 permanent sample plots (4 per stratum). Within each plot, tree diameter and height were measured to estimate above-ground biomass using established allometric equations, while LAI was obtained from ground-based canopy measurements. Plot-level LAI ranged from 1.55 to 5.10 (mean 3.19), above-ground biomass from 74.8 to 229.4 t ha-1 (mean 145.6tha-1), and above-ground carbon stocks from 35.2 to 107.8tCha-1 (mean 68.4tCha-1). Dense stands exhibited the highest LAI and carbon stocks, followed by moderately dense and open stands. A simple linear model, AGBha=14.78+40.99×LAI, explained 98% of the variation in plot-level biomass (R^2=0.98, RMSE =6.44tha-1), with a corresponding linear relationship for carbon stocks. These results show that LAI is a robust predictor of above-ground carbon in community forests and can be used for rapid, low-cost assessment. The framework provides a mathematically transparent and operational tool that can be integrated into community-based monitoring and sustainable forest management.

Keywords*:* Leaf Area Index (LAI); Above-ground biomass; Carbon stocks; Community forests; Allometric equations; LAI-biomass modelling; Sustainable Forest management.

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Effect of low energy oxygen ion beam irradiation on Structural and Electrical properties of PEDOT: PSS Thin films and PEDOT: PSS/TiO_2 Nanocomposites

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Abstract

Poly(3,4-ethylenedioxithiophene): Poly (styrene sulfonate) (PEDOT: PSS), is one of the promising conducting polymers. Its conductivity is generally around 1 S/cm, which severely limits its use in many of the applications. An ion irradiation plays an important role to modify the properties of the polymers. When ion beam irradiates the PEDOT: PSS film, the bond breaking, re-arrangement of polymer structure modifies the structural and electrical properties of the PEDOT: PSS. In the present study, an attempt is made to enhance the conductivity of PEDOT: PSS thin films and PEDOT: PSS/TiO_2 nanocomposites by low energy oxygen ion irradiation. The effect of low energy oxygen ion beam irradiation on structural and electrical properties of PEDOT: PSS thin films and PEDOT: PSS/TiO_2 thin films were studied by FTIR, XRD, SEM and conductivity using Vander pau method. The conductivity of PEDOT: PSS thin films increase for low fluency ion beam irradiation on PEDOT: PSS thin films and decreases for higher fluency.

Keywords: Vander pau method, energy oxygen, nanocomposites, ion irradiation.

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Fuzzy Multi-Criteria Physics Models for Siting Solar Parks in Semi-Arid Regions

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Abstract

Utility-scale solar park siting in semi-arid regions requires balancing physics-driven energy yield with engineering, environmental, and operations constraints under substantial uncertainty. This paper presents a transparent fuzzy multi-criteria framework that (i) maps raw criteria to physically motivated desirability memberships-monotone linear functions for benefit/cost attributes (global horizontal irradiance, slope, grid distance, water distance, dust days, protected-area buffer, land-use suitability) and a bell-shaped (Gaussian-like) function for module-temperature effects-(ii) derives criterion weights using fuzzy AHP from linguistic pairwise judgements, and (iii) aggregates via a TOPSIS-like closeness measure in the desirability space. A realistic 12- site semi-arid screening dataset is used to demonstrate the workflow. The resulting normalized weights emphasize energy yield (GHI, 0.377) and host-land compatibility (land-use, 0.132; temperature, 0.115), while accounting for terrain (slope, 0.092), network access (grid distance, 0.081), O&M logistics (water distance, 0.052; dust days, 0.058), and biodiversity safeguards (protected buffer, 0.092). The final closeness coefficients rank sites S12, S10, and S 02 as top candidates, driven by high irradiance ($\geq$6.2kWhm-2 day -1), gentle slopes (<3%), reasonable grid proximity, suitable land cover, and adequate environmental buffers. Sensitivity checks indicate ranking stability under modest weight perturbations, reflecting strong physical signal in the data. The framework is minimal, auditable, and readily swappable with GIS-derived layers, making it suitable for early-stage planning, stakeholder dialogue, and policy screening in semiarid contexts.

Keywords: Fuzzy multi-criteria decision making; fuzzy AHP; fuzzy-TOPSIS; physics informed membership; solar park siting; semi-arid regions; global horizontal irradiance (GHI); temperature effect; dust/soiling; land-use suitability; protected-area buffer; grid proximity.

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Productivity and Carbon Footprint Analysis of Organic Vs. Conventional Agroforestry Systems

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Abstract

This study compares productivity and carbon performance of organic agroforestry (ORG-AF) and conventional agroforestry (CON-AF) using paired plots under similar soil and climatic conditions. Six pairs of 0.25 ha plots were monitored for three years. System productivity was calculated as the sum of all marketable crop and tree products per hectare, while carbon stocks were derived from tree and crop biomass and soil organic carbon (0-30 cm). Life cycle inventories of all inputs and field operations were compiled to estimate greenhouse gas emissions and carbon footprints per hectare and per kilogram of product.

CON-AF achieved higher system yields (mean 5,808 kgha-1) than ORG-AF (mean 5,017 kgha-1), a difference of about 16%. In contrast, tree biomass increment was greater in organic plots (3.55tha-1yr-1) than in conventional plots (2.55tha-1yr-1), and soil carbon increased faster in ORG-AF (0.43tCha-1yr-1) than in CON-AF (0.16tCha-1yr-1). Total annual carbon stock change averaged 2.09tCha-1yr-1 in ORG-AF and 1.36tCha-1yr-1 in CON-AF. Area-based carbon footprints were 2,950 and 4,150 kgCO2-eq ha-1yr-1 for organic and conventional systems, respectively, while product-based footprints were 0.59 and 0.71 kgCO2-eq kg-1. Both systems acted as net carbon sinks, but net carbon balance was much higher in ORG-AF (4.7vs.0.8tCO2-eq ha-1yr-1). The results show that organic agroforestry can maintain high productivity while substantially improving carbon efficiency and climate mitigation potential.

Keywords: Organic agroforestry; Conventional agroforestry; Productivity; Carbon footprint; Carbon stocks; Net carbon balance; Climate-smart agriculture.

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Fragmentary View of Self in Thomas Wolfe's Look Homeward, Angel

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Abstract

The purpose of the paper is to demonstrate the value of an analysis of a fragmentary view of self in Thomas Wolfe's Look Homeward, Angel. The first few years of the protagonist Eugene Gant's life are the focus of the novel, and these years are followed by a near-literal weaving. Apart from the religious order, it includes every experience that the apprentice hero typically goes through. The narrative depicts Eugene Gant's struggle as a young man to support himself from his surroundings, especially to escape his domineering mother. He experiences friction with his siblings during his canonical childhood. The study's structural representations pinpoint the individuals that Wolfe related with during his early years and whose characteristics gave him the fundamental framework for self-construal. His self-perception can be divided into two categories: elaborated and undeveloped. Wolfe's description of his adolescence demonstrated this, even as he became more self-centred.

Keywords*:* Self, Conflict, Adolescence, Experience, Society

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Study On Prevalence of Uropathogenic Bacteria in Urine Samples of Patients with Urinary Tract Infection

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Abstract

Urinary tract infection is a commonest infection among women. Despite treatment with antibiotics, UTI is often recurrent. Objective of current study is to check occurrence of uropathogenic bacteria in urine specimens of patients with early symptoms of urinary tract infection. In this study total 237 urine samples were analyzed for occurrence of uropathogenic bacteria. From these urine samples, 164 samples were found to be positive for presence of uropathogenic bacteria. Total positivity rate of samples for uropathogenic bacteria is 69.20 % (164/237). Most of samples having mono-bacterial infection. Positivity rate of male is 53.13 % (34/64) and for female is 75.14% (130/173). Among female patients' pregnant patients have higher positivity rate -77.96% (46/59) compared to non-pregnant female patients- 70.17 % (80/119). Highest positivity rate is reported in old age patients- 100 % positivity reported in 71-80 years and 81-90 years patients. Least positivity (69.15 %) reported in patients with age group 21-30 years. Gram negative bacteria are predominant uropathogen in current study. 73.89 % uropathogenic bacteria are gram negative and 26.11 % are gram positive. E. coli is predominant uropathogenic bacteria (24.5 %) followed by Proteus spp. (16.5 %), S. aureus (11.8 %), Klebsiella spp. (8.4 %), Enterococcus spp. (8.0 %), Enterobacter spp. (4.2 %) and Pseudomonas spp. (2.5 %). Isolates of uropathogenic bacteria are identified based on morphological, biochemical and cultural characteristics.

Keywords: UTI, uropathogen, E. coli, Klebsiella spp. Proteus spp.

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Economic Growth, Education Spending, and Higher Education Enrolment: A Time-Series Investigation of Human Capital Formation in India and Karnataka

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Abstract

This chapter examines the relationship between economic growth, public expenditure on education and higher education enrolment as a process of human capital formation in India and Karnataka. Using annual time-series data for the period 2000–01 to 2020–21, Gross Domestic Product (GDP) and Gross State Domestic Product (GSDP) are treated as proxies for the wealth of the nation and the state, while alternative measures of public education outlays (central, state and overall expenditure on education) capture investment in education. Enrolment in higher education—disaggregated by gender at the all-India level—serves as an indicator of human capital formation. The study employs compound annual growth rates to analyse long-run trends, Augmented Dickey–Fuller tests to verify stationarity and Johansen co-integration techniques to explore long-run equilibrium relationships between educational spending and enrolment. Results for India show that education expenditure has grown at a slightly higher pace than GDP, indicating a strengthening fiscal commitment to human capital. Higher education enrolment has expanded significantly, with female enrolment growing faster than male enrolment, signalling progress toward gender inclusivity. All key variables are integrated of order one, justifying the use of co-integration analysis, which confirms a stable long-run relationship between expenditure on education and total higher education enrolment. The Karnataka analysis, based on analogous variables, complements the national perspective by highlighting state-level patterns in the linkage between economic growth, education financing and human capital formation. Policy suggestions emphasise enhanced public investment, gender-focused interventions, regional equity and quality improvements in higher education to sustain inclusive growth.

Keywords: Human capital formation; Economic growth; Education expenditure; Higher education enrolment; Time-series analysis; Johansen co-integration; India; Karnataka.

DeepScience
Open Access Books

Pricing as a Key Factor Used By Online Wholesaler and Retailers to Attract Online Consumers – A Study With Reference to Retail Industry in Bangalore Rural and Urban

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Abstract

The aim of this article is to emphasize the significance of pricing strategy in the online retail sector, and its effect on consumer behaviour. The aim is to test the relationship between online retailers' pricing strategies and customers' repurchase intentions in this context. Based on previous research, a questionnaire was designed and distributed to a sample of online respondents. This study adds to the literature by identifying and evaluating consumer loyalty and the repurchase intent influenced by pricing strategies' adopted by selected online retailers.

Keywords: Pricing strategy, online retailers, online customers, Customer loyalty, repurchase intention.

DeepScience
Open Access Books

Recent Developments in Financial Literacy in India

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Abstract

Financial literacy has become a foundational requirement for inclusive economic development in India. In the past decade, India has made remarkable progress in expanding access to financial services, driven by digital infrastructure, fintech innovation, and policy interventions. However, the effective use of financial services is contingent upon adequate financial literacy. This paper examines recent developments in India's financial literacy landscape since 2020, focusing on government policy, regulatory efforts by the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI), digital literacy initiatives, and community-focused programs. Despite improvements in outreach and the introduction of structured national frameworks, India continues to face significant challenges, including low baseline financial knowledge, gender and regional disparities, and the risks associated with digital financial fraud. The paper concludes by recommending strategies to strengthen behavioural outcomes, improve financial resilience, and integrate digital safety into literacy programs.

Keywords: Financial literacy, community-focused, financial fraud, disparities.

DeepScience
Open Access Books

Bio-Mediated Combustion Synthesis And Photoluminescence Studies of Y_2O_3 : Tm^{3+} Nanoscale Superstructures

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Abstract

Y_2O_3:Tm^{3+} (5mol %) nanoscale superstructure was prepared using *Mimosa pudica* plant extract as a fuel and nitrate source as a precursors. The sample was characterized by advanced characterization techniques. The PXRD data shows the formation of single phase, cubic structure of Y_2O_3 with crystallite sizes ~35 nm. PL emission spectra show the blue light emission under the excitation wavelength of 358 nm. The major emission peak of Tm^{3+} was at 453 nm and two very weak peaks were observed at ~ 474 nm, corresponding to the transitions of $^1D_2 \rightarrow {}^3F_4$ and $^1G_4 \rightarrow {}^3H_6$, respectively. The estimated CIE chromaticity co-ordinate was very close to the national television standard committee value of blue emission. Correlated color temperature was found to be ~ 4000 K as a result the present phosphor was potential to be used for warm white light emitting display applications.

Keywords: Y_2O_3:Tm^{3+}; Superstructures; *Mimosa pudica;* Photoluminescence

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Open Access Books

Issues and Challenges Before Higher Educational Sector in India

Manjunatha R[1], Syed Akram Ali[2]

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Government First Grade College, Tumakur-572102
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Abstract

Higher education system plays an important role for the country's overall development which includes industrial, social, economic etc. Indian higher education system is third largest in the world. The role of Indian higher educational institutes such as colleges and universities in the present time is to provide quality based education in the field of education, research etc to empower youth for self-sustainability. This paper includes the key challenges that India is currently facing in higher education and also includes some initiatives taken by the Government to meet those challenges.

Keywords: Higher Education, Empower, Self Sustainability. Challenges.

DeepScience
Open Access Books

The Impact of Progressive Income Tax on Income Disparity in India

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Abstract

This paper examines the influence of progressive income taxation on income disparity in India, a nation experiencing rapid economic growth alongside widening socio-economic disparities. Progressive taxation is designed to levy higher rates on individuals with higher incomes, aiming to redistribute wealth and fund public services for lower-income groups. While theoretically effective, its practical impact in India is constrained by tax evasion, a large informal economy, and structural inefficiencies within the tax administration system. This study reviews empirical evidence from Indian government reports, peer-reviewed journals, and international studies to assess the extent to which progressive taxation reduces income disparity. The findings indicate that while progressive taxation has potential, systemic challenges limit its effectiveness. The study proposes policy reforms, including tax simplification, broadening the tax base, improving enforcement, and raising public awareness to enhance the redistributive impact of the tax system.

Keywords: Progressive taxation, Income disparity, India, Tax compliance, Wealth redistribution, Informal economy.

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Open Access Books

Integrative Biomathematics-Weaving Genetics, Quantum Physics, AI and Ecology for a Sustainable Civilization

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Abstract

This chapter develops an integrative bio-mathematical perspective that weaves together genetics, quantum physics, artificial intelligence and ecology in the context of science and society for a sustainable future. Starting from molecular innovations such as CRISPR gene editing, human genome mapping, mRNA vaccines and microbe-based technologies, we formulate simple dynamical and probabilistic models that illuminate how small changes at the genetic or microbial level can have large-scale impacts on health and food security. We then connect these ideas to quantum technologies and gravitational-wave interferometry, showing how strain, signal-to-noise ratios and entanglement inequalities extend classical physics into regimes where geometry, information and measurement are inseparable. On the socio-digital side, we introduce conceptual models for AI-influenced learning performance, privacy-risk scoring and AI-aware assessment to highlight how artificial intelligence can either strengthen or erode critical thinking and academic integrity. At the ecological scale, predator-prey dynamics, resource-harvest equations and SDG indicator state vectors are used to capture feedback, saturation effects and tipping points in agro-ecosystems and global sustainability pathways. Throughout, graphs, fuzzy multi-criteria decision-making and unified dynamical-systems formulations are used as common mathematical "threads" linking these domains. The chapter concludes that sustainable civilization can be understood as steering coupled genetic, technological, economic and ecological systems along trajectories that respect planetary limits while enhancing human wellbeing, and that cultivating mathematically literate, ethically grounded "prepared minds" is essential for guiding powerful new technologies towards just and resilient futures.

Keywords: Integrative biomathematics; CRISPR gene editing; mRNA vaccines; quantum technologies; gravitational waves; artificial intelligence and education; ecological and resource dynamics; Sustainable Development Goals (SDGs).

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Open Access Books

Abraham Kovoor: Influence and Inspiration of Scientific Thinking

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Abstract (Kannada Translated to English)

Abraham T. Kovoor is one of the foremost rationalist scientists of modern India. He believed only in scientific truths and devoted his entire life to propagating them among the public. He not only rejected superstitions, but also severely criticised them and uncompromisingly opposed every form of exploitation carried out in the name of religion. Stating that "I was born through the natural biological union of my parents, not through any pre-ordained event," Kovoor insisted that human beings should commit themselves to scientific thinking rather than to sectarian identities of religion, caste or creed. Born on 10 April 1898 near Kottayam in Kerala as the son of Rev. Kovoor Ipe Thoma, a priest, he received his early education in Kottayam and later studied at Bangabasi College in Calcutta. After obtaining a Master's degree in Botany, he briefly worked as a junior professor in Kerala and then spent the rest of his life in Sri Lanka, where he strengthened the rationalist and scientific temper movement. This article highlights how Kovoor's life and ideas have exerted a strong influence and provided inspiration for the growth of scientific thinking in Indian society.

Keywords: Abraham T. Kovoor; scientific thinking; rationalism; anti-superstition; religious exploitation; scientific temper.

DeepScience
Open Access Books

An Overview of the National Defence Force and Peace Corps Established in the Mysore Princely State During the Second World War

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Abstract (Kannada Translated to English)

The Second World War was one of the most destructive wars humanity has ever witnessed. The whole world was engulfed in the agony of this war, and history records in detail the long chain of sufferings it brought. During this war, which lasted from 1939 to 1945, India, as a British colony, was directly and indirectly drawn into a conflict fought in the interests of the colonial power and consequently had to endure hardships similar to those faced by other nations. The British mobilised enormous human and financial resources for the war effort. As the war situation worsened, various defence acts were enforced. Japan rapidly seized British colonial possessions in Asia, capturing Singapore, Malaya, Burma and Rangoon, and advanced swiftly towards India. This created an atmosphere of fear everywhere; terrified by the threat of Japanese air raids, people began to leave the cities. In this critical context, to allay public anxiety, the Government of India ordered the organisation of a "National War Front" defence force in all regions. Accordingly, National Defence Forces were established throughout the country, and in the Mysore princely state as well. In Mysore, these forces and peace units helped to reduce public fear, instilled courage in people to face a possible enemy invasion, and encouraged cooperation with war-related activities. Discussions on the creation of these forces took place extensively in the Representative Assembly and the Legislative Council of Mysore. This article provides an overview of the establishment and role of the National Defence Force and Peace Corps in Mysore during the Second World War.

Keywords: Second World War; Mysore princely state; National Defence Force; Peace Corps; National War Front; Japanese invasion scare; defence policy.

DeepScience
Open Access Books

Karmayogi Sir M. Visvesvaraya

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Abstract (Kannada Translated to English)

Through his efficiency, selflessness, confidence and tireless hard work, Sir M. Visvesvaraya emerged as a *karmayogi* engineer who gave clear direction to India's industrial development. His ancestors were from Mokshagundam village in Andhra Pradesh; the family later migrated to Mysore and settled at Muddenahalli near Chikkaballapur. Born on 27 August 1860, Visvesvaraya completed his primary and secondary education at Chikkaballapur, passed his B.A. in Bengaluru, and then finished his engineering studies in Pune before joining the Bombay Government service as an Assistant Engineer. Owing to his technical brilliance he soon rose to positions of major responsibility; in 1911 he was awarded the title CIE and in 1915 KCIE, and thus honoured as "Sir". Later, independent India conferred on him the highest civilian award, the "Bharat Ratna", recognising him as one of the country's foremost technological nation-builders. Many universities from Calcutta to Mysore honoured this great personality with honorary doctorates. He served for a long time as adviser and director to the Tata Company and the Indian Institute of Science, Bengaluru, and as an honorary member of various engineering institutions.

Keywords: Sir M. Visvesvaraya; engineering achievements; industrial development; Bharat Ratna; Muddenahalli; Mysore State.

DeepScience
Open Access Books

God and Demon in the Light of Psychology

Rangadhamaiah

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Abstract (Kannada Translated to English)

Science is the systematic study of specific objects and phenomena. Psychology, as the scientific study of mind and behaviour, examines the relationships between inner and outer pressures, environment, emotions, thoughts and actions of living beings. The human being is not only a social animal but also a deeply emotional one; therefore, he interprets life's ups and downs through feelings of fear and devotion, and imagines them in the form of gods and demons. When these beliefs are positive, they can support both the individual and society; when they become negative, however, they give rise to superstition, exploitation, disorder and confusion. The ideas of God and demon, which have no parallel in other species, have enabled oppressor–oppressed structures to take root in society. Psychology provides scientific explanations for the two major patterns through which such beliefs appear in society. Viewed from this angle, the real nature and consequences of these religious imaginations become clearly visible.

Keywords: Psychology; concepts of God and demon; fear and devotion; superstition; social exploitation; human behaviour.

DeepScience
Open Access Books

International Perspective within the Framework of the Constitution of India

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Abstract (Kannada Translated to English)

Article 51 of the Constitution of India declares that the State shall endeavour to promote international peace, security and mutual cooperation, and it thereby lays down the constitutional framework for India's foreign policy and international relations. International relations have existed from the time of the ancient Greek city-states and the eras of the *Ramayana* and *Mahabharata*; they include not only war, but also peace, treaties and cooperation. The Peace of Westphalia of 1648, the rise of the League of Nations, and the American, French and Russian Revolutions together provided a global foundation for human rights and the rule of law.

During British colonial rule in India (1858–1947), the pressure of such international developments led to a series of constitutional measures such as the Regulating Act of 1773, the Charter Act of 1853, the Morley–Minto Reforms of 1909 and the Government of India Act of 1935. In the aftermath of the two World Wars and under the impact of anti-colonial movements, India attained independence, and the Constitution that came into force on 26 January 1950 formally accepted international principles of human rights, peace and cooperation. This article reviews how these principles have guided the shaping of the Constitution of India and the evolution of its foreign policy.

Keywords: Constitution of India; Article 51; international relations; foreign policy; human rights; Peace of Westphalia; World Wars; British colonial rule.

DeepScience
Open Access Books

Gunḍu Groves and the Banyan Tree: Historical and Spiritual Pillars of Biodiversity Conservation in Karnataka

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Abstract (Kannada Translated to English)

In Karnataka, sacred groves locally known as *gundu thopu* function as community-protected nature sanctuaries sustained for centuries through spiritual devotion and traditional ecological knowledge. Often centred around iconic trees such as the banyan (*Ficus benghalensis*), these groves act as powerful symbols of cultural identity and ecological stewardship. This paper explores the historical evolution of sacred groves in Karnataka, the spiritual and mythological significance of the banyan tree, and the ways in which these elements together conserve rich biodiversity and vital ecosystem services in landscapes increasingly shaped by human pressures. By analysing their roles in micro-climate regulation, water retention and habitat protection, the study highlights how customary beliefs intersect with modern conservation principles and suggests policy and community-based strategies to strengthen sacred groves as living models of biodiversity conservation.

Keywords: Sacred groves; *gundu thopu*; banyan tree; biodiversity conservation; traditional ecological knowledge; Karnataka.

DeepScience
Open Access Books

The Universal Form of the Environment as Seen by Tejasvi as an Environmentalist

Jalajakshi

Guest Faculty, Government First Grade College, Tumakuru

Abstract (Kannada Translated to English)

K. P. Poornachandra Tejasvi, who said, "My relationship with the forest is as mysterious as my relationship with my family," is a literary–scientific mind who views the environment not merely as a subject but as an integral part of life. While Kuvempu revered nature in a devotional mode, Tejasvi approached it as an environmentalist driven by scientific curiosity. In a rapidly changing era, he explains the interrelationship between nature, animals and human beings through the concepts of "becoming" and "being". In his writings, forests, rain, rivers, insects and plants all come alive like characters, creating a unique blend where scientific experience is transformed into aesthetic experience.

This article examines how Tejasvi perceives the environment in its "cosmic form" through selected stories from *Parisara Da Kathe*, *Moolike Balliya Sutta* and the collections *Vismaya* 1, 2 and 3. His ability to present subtle scientific ideas in simple language to common readers strengthens both environmental awareness and scientific discipline. Tejasvi's perspective—"We are not separate from nature; we are a part of it"—powerfully articulates the environmental ethics necessary for building a truly civilised society.

Keywords: K. P. Poornachandra Tejasvi; environmental literature; scientific temper; *Parisara Da Kathe*; *Vismaya* story collections; environmental awareness.

DeepScience
Open Access Books

K. Rangayyaangar: A Distinguished Freedom Fighter of Tumakuru District

Vimalakshi D.

Research Scholar, Department of Studies and Research in History and Archaeology, Tumkur University, Tumakuru – 572103

Abstract (Kannada Translated to English)

Tumakuru district played a notable role in India's freedom struggle, and among its prominent leaders was K. Rangayyaangar. Born in 1881 at Kadaba village in Gubbi taluk, he was a renowned lawyer, the first elected President of Tumakuru Municipality, and a key district-level Congress leader. He served as a member of the Mysore Representative Assembly, founded the Tumakuru District Congress Committee, and used the newspaper *Mysore Chronicle* to disseminate nationalist ideas. Through his active involvement in the Swadeshi and Khadi movements, cow-protection campaigns, prohibition and anti-liquor agitations, foreign cloth bonfires, tax-refusal and the "Mysore Chalo" movement, he helped kindle patriotism and a sense of nationalism among the people. Enduring arrests and imprisonment, he significantly contributed both to the achievement of self-rule and to monitoring the functioning of the responsible government thereafter. His political and social services occupy a lasting place in the history of the freedom movement in Tumakuru.

Keywords: Tumakuru district; K. Rangayyaangar; freedom struggle; Khadi and Swadeshi; prohibition movement; Mysore Chalo movement; cow protection; Congress activities.

DeepScience
Open Access Books

Genetics and Human Heritage

Malleshappa T. S.

Government First Grade College, Tumakuru

Abstract (Kannada Translated to English)

Genetics and human heritage together explore how genes and culture interact in shaping human evolution. This field examines patterns of heredity, genetic variation, migration, and cultural practices, and how these factors influence inherited traits across generations. Genetics studies genes, their variations and the resulting physical, intellectual, and behavioural features of individuals. Although every organism receives certain characteristics from its parents, the expression of these traits is further modified by environmental conditions and cultural influences. Thus, biological evolution and cultural evolution are not isolated processes but deeply interdependent, and genetics helps us to understand this dynamic relationship between inheritance, environment, and culture.

Keywords: Genetics; human heritage; genes; culture; heredity; human evolution.

SESSION CHAIRS – SSSF 2025

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Faculty, Department of Visual Communication, Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Dr. Markala Karthik (Code: 3NS3)
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Best Paper Presentation Awards

This is to certify that the below author is awarded the ***Best Paper Award*** *at the One-Day National Conference* ***SSSF-2025 — Science and Society for Sustainable Future****, held on* ***14 November 2025*** *at* ***GFGC, Tumkur****. In association with Karnataka Science & Technology Academy (KSTA), Government of Karnataka.*

Online-02 (T2, 5, 10)

Suchitra Boxi
Research Scholar, Department of Studies in Botany, Davangere University, Davanagere - 577 007
Davangere University, Davanagere, Karnataka, India
Paper Title: Quantitative variations of Deacyl gymnemic acid, Gymnemagenin, and Gymnemic acid-IV in Gymnema sylvestre R.Br. from different geographical regions of Karnataka.

Kavitha
Research Scholar, Department of Zoology
Mangalore University, Mangalore, Karnataka, India
Paper Title: Health risk assessment of Aldrin and Dieldrin pesticide residues in Channa sp. from Kattemalalavadi, Hunsur Taluk.

Dharmvir Asaram Chouhan
Research Scholar
Laxminarayan Innovation Technological University, Nagpur, India
Paper Title: Study on Prevalence of Uropathogenic Bacteria in Urine Samples of Patients with Urinary Tract Infection.

Dr. Rashmi Turamari
Associate Professor
Government First Grade College for Women, Dharwad, Karnataka, India
Paper Title: Science meets Society: Pioneering a Sustainable world

Online-01 (T6, 7, 8)

Asha R Nair
Research Scholar, Department of Commerce
Sri Ramakrishna College of Arts and Science for Women, Coimbatore, Tamilnadu, India
Paper Title: Harnessing solar power: Sustainable energy solution for the future – An analytical study of customer adoption factors.

Deepa S V
Associate Professor of Sociology
Government First Grade College, Yelahanka, Bengaluru
Paper Title: Science as a Social Institution: Sociological Reflections on Sustainability and Development.

Shyam Kumar
Research Scholar, Department of Journalism and Mass Communication
Arka Jain University, Jharkhand, India
Paper Title: Cinema for sustainability: Santali Cinema shaping culture, awareness and community futures in East Singhbhum.

Online-03 (T1, 3, 5)

Sandeep K M
Research Scholar, Department of Studies in Physics
Davangere University, Davanagere, Karnataka, India
Paper Title: Frequency-Dependent AC Conductivity and Dielectric Studies of PPy/WO_3 Nanocomposites.

Roopa J
Assistant Professor, Department of Physical Sciences and Mathematics
St. Francis de Sales College (Autonomous), Karnataka, India
Paper Title: Topological Characterization of Silicon Carbide Si_2C_3 – I[p,q] Using M-Polynomial Techniques.

Hridayjyoti Deka
Research Scholar, Department of Information Technology
Assam Skill University, Assam, India
Paper Title: Leveraging Artificial Intelligence (AI) and Machine Learning (ML) in Women's Access to Healthcare in Rural India.

Offline – Science

Saniya Shahana Firdaus
MSc- Nutrition and Dietetics
Smt. VHD Central Institute of Home Science, Maharani Cluster University, Bangalore
Paper Title: Assessing Schools with Respect to Nutrition Friendly Initiatives.

Vyshnavi M S
DOSR in Chemistry, II MSc Student,
University College of Science, Tumkur, Karnataka, India
Paper Title: Zinc based metal organic frameworks: Synthesis and biological application.

Offline – Commerce, Management and Humanities

Dr. Shivanna T. S (Shivanna Thimlapur)
Lecturer of Kannada, Government First Grade College, Tumakuru
Paper Title: ಅಬ್ರಹಾಂ ಕೋವೂರ್ : ವೈಜ್ಞಾನಿಕ ಚಿಂತನೆಗಳ ಪ್ರಭಾವ ಮತ್ತು ಪ್ರೇರಣೆ.

Paper Title: Abraham Kovoor: Influence and Inspiration of Scientific Thinking

Ravikumar K
Assistant Professor, Department of Sociology
Government First Grade College, Kunigal – 572130, Affiliated to Tumkur University, Tumakuru
Paper Title: Science and Social Change: A Sociological Approach to Sustainable Development.

Aswathanarayana A
Assistant Professor of Commerce
Government First Grade College, Kodihalli, Karnataka, India
Paper Title: Algorithmic Fairness in Product Recommendations: An Empirical Study of Bias in Indian E-Commerce Platforms.

Offline – Host College

Dayagunesha M
Research Scholar and Librarian, Department of Studies and Research in Library and Information Science
Tumakuru University and Government First Grade College, Tumakuru
Paper Title: Academic Identity in the Digital Era: Exploring Profile Creation and Publication Sharing Practices.

Poster Presentation

P. K. Anuradha
Research Scholar, Department of Physics
Tumkur University, Tumkur, Karnataka, India
Paper Title: Nd^{3+} doped V_2O_5 nanoparticles for photocatalytic applications.

Ramya S V
Research Scholar, Department of Studies and Research in Zoology
Tumkur University, Tumkur – 572103, India
Paper Title: Diversity of Zooplankton in Arakere Lake, Tumkur District, Karnataka.

Jaswanth Vamshi S M
III BSc – ZC
Government First Grade College, Tumkur – 572102, India
Paper Title: Dopamine dynamics and types of addiction.

Harshita P L
II B.Sc. (CBZ)
Government First Grade College, Tumkur – 572102, India
Paper Title: The hidden costs of colour.

Poster Presentation – Host College

R. Arunakumar
Research Scholar, Department of Physics
University College of Science, Tumkur University, Karnataka, India
Paper Title: Ce^{3+} doped $Y_4Al_2O_9$ phosphors for supercapacitors, photocatalysis, and antidiabetic applications.

Committees of SSSF-2025

Committees constituted for the smooth conduction of One Day **National Conference on "Science and Society for Sustainable Future (SSSF-2025)'** on 14th November 2025 in our college in association with Karnataka Science and Technology Academy, Bengaluru.

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Publication Coordinator	**Jagadeesha K C** Department of Mathematics, GFGC, Tumkur
Publication Co-coordinator	**Akshatha Chandra** Department of Zoology, GFGC, Tumkur

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SSSF-2025 — Programme Report

National Conference: Science & Society for Sustainable Future-2025

Date: 14 November 2025 (Hybrid) • **Venue:** Government First Grade College, Tumkur, Karnataka

In association with: Karnataka Science & Technology Academy (KSTA), Department of Science & Technology, Government of Karnataka

SSSF-2025 was a one-day, hybrid national conference hosted by the Department of Science, Government First Grade College, Tumkur, in association with the Karnataka Science & Technology Academy (KSTA), to connect rigorous science with societal needs under the theme **"Science & Society for Sustainable Future."** The program combined an inaugural with keynote addresses and book-of-abstracts release, followed by parallel online and on-campus technical sessions spanning physical and life sciences, biomathematics and computing, engineering and technology, nursing and medical sciences, commerce/management/ESG, humanities/education, media & LIS, physical education, and a focused Kannada track. With YouTube Live/Meet access, careful session moderation, and clear post-conference publication pathways (peer-reviewed journals, edited book chapters with DOI, and index-targeted venues), the event foregrounded quality, ethics, reproducibility, bilingual communication, and practical impact-turning research into ideas that can be taught, piloted, and implemented for the public good.

1) Overview

The Department of Science, GFGC Tumkur, hosted SSSF-2025 to bridge rigorous science with societal impact across disciplines. The event ran in **hybrid mode** with parallel **offline halls** and **online streaming (YouTube Live + Google Meet)** for broad access. The **Book of Abstracts (ISBN)** compiling all accepted abstracts (online & offline tracks) was released during the inaugural.

2) Participation snapshot

- **Online student participants: 1,061**
- **Offline student participants: 318**
- **Spot registrations (delegates): 43**
- **Online paper presenters: 87**
- **Offline paper presenters: 60**

3) Inaugural session (10:00–11:40 AM)

As per the published programme, the inaugural opened with Invocation and Naadageethe, followed by a Welcome by Dr. F. T. Z. Jabeen (Organising Secretary). Introductory Remarks were delivered by Prof. A. H. Rajasab (Chairman, KSTA), setting the conference context. Prof. Ramakrishna Reddy K (Joint Director, DCE, GoK) performed the Inauguration and delivered the Inaugural Address. The Book of Abstracts was released by the dignitaries. The session then featured a Keynote Address by Dr. Shubha V (Former Distinguished Scientist, CSIR, GoI), followed by guest addresses from Prof. Sharath Ananthamurthy (Vice-Chancellor, Kuvempu University) and Dr. Sudhir H. Ranganath (HoD, Chemical Engineering, SIT, Tumkur). Presidential address by Prof. Vasantha T D (Principal, GFGC Tumkur), Vote of Thanks: Dinesh V (Assoc. Professor of Physics, GFGC) Program handled by Dr. Anasuya K V. (IQAC Coordinator), Presence Dr. Yogeesh N (Conference Co-ordinator) and Dr. Renukaprasad B R (Staff Secretary).

Streaming & links (as announced in schedule): YouTube Live and Google Meet links were shared for real-time access to the inaugural and online tracks.

4) Keynotes & invited addresses

- **Dr. Shubha V** - Keynote during the inaugural (onsite).
- **Prof. Sharath Ananthamurthy** -Guest address following keynote (onsite).
- **Dr. Sudhir H. Ranganath** - Guest address (onsite).
- **Dr. P. William (Director-Research, School of Engineering & Technology)** - **Keynote delivered online** during technical sessions (as per invitation and online track plan).

(Speakers and their designations as featured on the official invitation.)

5) Technical sessions (12:00 Noon onwards)

After the tea break, **parallel online and offline paper presentations** began as per the circulated schedules. Presentations spanned the conference tracks across Physical Sciences; Life/Chemical/Environmental Sciences; Mathematics, **Biomathematics**, Statistics & Computing; Engineering & Technology; Nursing & Medical Sciences; Commerce/Management/ESG; Humanities/Social Sciences/Education; Media/Communication & Library-Information Science; Physical Education & Well-being; and a **Kannada** track aligned to science and sustainability.

6) Awards

- **Best Paper Presentation Awards — Online: 10**
- **Best Paper Presentation Awards — Offline: 6**

- **Best Poster Presentation Awards — Online: 5**

(Track-wise lists maintained by the Awards Committee; announcements shared in group/website post-event.)

7) Publications outcome (post-review)

Following similarity checks and reviewer recommendations, the following were selected for publication pathways:

- **Peer-reviewed journals: 75** papers
- **Scopus-indexed venues: 11** papers
- **Web of Science venues:** B**2** papers
- **Edited Book Chapters (with DOI): 31** chapters
- **Kannada papers:** B**9**
- **All accepted abstracts:** archived in the **ISBN Book of Abstracts** (official record both Hard book and Online)

(Final assignments communicated to authors via email with venue-wise guidelines, templates, and timelines.)

8) Media & access

- **YouTube Live** was provided for online participants throughout the inaugural and select sessions; recordings and photo gallery links were circulated to participants' groups.
- **Google Meet** hosted the interactive online technical tracks with Session Chairs moderating Q&A.

9) Organisation & support

- **Host:** Department of Science, Government First Grade College, Tumkur
- **Collaboration: Karnataka Science & Technology Academy (KSTA), DST, Government of Karnataka**
- **Leadership:** Chief Patron & Principal - **Prof. Vasantha T. D.**; Organising Secretary - **Dr. F. T. Z. Jabeen**; Conference Coordinator - **Dr. Yogeesh N**
- **Session Chairs, Reviewers, Advisory Boards, Volunteers, ICT/AV, Hospitality, Security, Housekeeping, Accounts** - ensured smooth registration, time-keeping, AV support, and participant services across hybrid modes.

10) Key outcomes & impact

- **Scale & reach:** Over **1,400+** attendees across online/offline modes, with strong undergraduate engagement and national speaker participation.
- **Interdisciplinarity:** Robust participation across sciences, engineering, health, management/ESG, humanities, media/LIS, physical education, and **Kannada scholarship**, reflecting the "Science × Society" mandate.
- **Publication pipeline:** Clear, quality-linked pathways to journals, edited volumes (with DOI), and index-targeted venues; **ISBN abstract book** completed and released on the day.
- **Capacity building:** Student exposure to research presentation norms, session moderation, and scholarly ethics (similarity thresholds, data/code availability, responsible AI use).
- **Public communication:** Bilingual messaging and open streaming enhanced inclusivity and community outreach.

11) Acknowledgements

The Organising Committee thanks **KSTA** for guidance and collaboration; dignitaries and keynote/invited speakers for their time and insight; **Session Chairs** for rigorous moderation; all **authors, presenters, and participants** for their scholarly contributions; and the **GFGC Tumkur students, Teaching, non-teaching, administrative and technical teams** for seamless execution.

In conclusion, SSSF-2025 successfully demonstrated how rigorous, ethical, and inclusive science can meaningfully serve society. Across a large hybrid audience, high-quality keynotes and well-moderated technical sessions produced constructive dialogue, strong student engagement, and clear pathways from research to publication (journals, edited chapters, index-targeted venues) alongside an ISBN abstract record. The bilingual, multi-disciplinary format spanning physical and life sciences, biomathematics and computing, engineering, health, management/ESG, humanities, media/LIS, and Kannada scholarship-deepened collaboration and improved reproducibility, translation, and public communication. The conference leaves a practical legacy: new networks, datasets and tools to refine, pilot projects to scale, and a shared commitment to carry **Science × Society = Sustainable Future** into classrooms, laboratories, industries, and policy.

For Short Conference Video-→ **https://youtu.be/hnWjFWnt9SA**

Thank you All-Team SSSF 2025

Vasantha T D, Yogeesh N, K C Jagadeesha, and Aisha Siddekha Editors

Science and Society for Sustainable Future 2025

We are pleased to present the Book of Abstracts for the One-Day National Conference Science & Society for Sustainable Future (SSSF-2025), hosted by the Department of Science, Government First Grade College, Tumkur, in association with the Karnataka Science & Technology Academy (KSTA), Department of Science & Technology, Government of Karnataka. This volume reflects our shared conviction that rigorous, ethical, and inclusive science must translate into measurable benefit for society-across education, health, environment, energy, economy, governance, and culture.

The submissions gathered here span physical and life sciences; green chemistry and environmental studies; mathematics, biomathematics, statistics and computing; engineering and technology; nursing and medical sciences; commerce, management and ESG; humanities, social sciences and education; media and communication; library and information science; physical education and well-being; and a dedicated stream in Kannada aligned to science and sustainability. It is purposeful because sustainability futures requires transdisciplinary, believable, reproducible analysis, and understandable communications with the wider audience.

DeepScience