Proceedings of the International Interdisciplinary Symposium on

Energy, Environment, Health and Visual Communication

INFOFEST-012

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Proceedings of the International Interdisciplinary Symposium on

Energy, Environment, Health and Visual Communication (INFOFEST-012)

Organised by

Sree Ayyappa College (TDB)
Eramallikkara

in association with

Institution of Electronics and Telecommunication Engineers (IETE)

सह वीर्यं करवावहै

and

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MESSAGE

It is indeed a special privilege and pleasure to publish this book containing proceedings relating to the Interdisciplinary International Symposium on Energy, Environment, Health and Visual Communication (INFOFEST 012) conducted on March 2023 at Sree Ayyappa College Eramellikkara managed by Travancore Devaswom Board. I am sure that the annual event bring together sharing of innovative ideas, which will eventually pave the way for advanced research and dispersal of knowledge in tune with today's times.

The pertinence of the focal themes unveils the intrinsic relationship between energy, environment, health and visual communication policies which will definitely unfold a better human environment, and a society that is conscious about energy consumption in the present scenario.

I express my sincere thanks to the resource persons for imparting their expertise to our students. My heartfelt appreciation also to the Principal, Convener, Joint Conveners, faculties, non-teaching staff and the students who framed this event and keeps it running every year since its inception.

I convey my best regards to the entire team publishing the proceedings of the Interdisciplinary International Symposium.

Adv. K Anandagopan
President
Travancore Devaswom Board

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MESSAGE

I strongly feel that conferences should be organized by educational institutions, as they play a vital role in the thought process of both teachers as well as the students. I am extremely happy that Sree Ayyappa College, Eramallikkara has continuously been organizing the International Symposium on Energy, Environment, Health and Visual Communication (INFOFEST 012), inspite of its backdrops, at such a grand level spreading over two weeks with invited talks and paper presentations from India and abroad.

I am sure that this conference will instill and ignite research culture among students. I congratulate the organisers and wish the conference a great success.

G.Sundaresan
Member
Travancore Devaswom Board

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Message

I am much happy to know that the annual interdisciplinary International Symposium on Energy Environment, Electronics, Computer Science, Financial Management and Visual Communications (INFOFEST 012) organized by Sree Ayyappa College Eramallikkara from 8th to 10th March 2023.

I am sure that the Symposium will attract academicians, Scientists, Researchers and students and it will contribute much more to the entire development of the State of Kerala. It also allows our students to participate in an international Symposium and contribute their share in the particular field.

My heartiest congratulations to the organizers of this event and I wish the Conference a great success.

Adv.S.S.Jeevan
Member
Travancore Devaswom Board

'POOVELIL', T.C. 8/839(1) HNo. 3, AE NAGAR, THIRUMALA P.O., THIRUVANANTHAPURAM - 695 006

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Friday, June 16, 2023

MESSAGE

I am happy to know that Sree Ayyappa College (TDB), Eramallikkara is organizing an International Symposium on Energy, Environment, Health and Visual Communication (INFOFEST 012), in association with the Institution of Electronics and Telecommunication Engineers (IETE), and the Internal Quality Assurance Cell (IQAC).

I am sure that this International Symposium will serve as a platform for bringing together academicians, researchers for exploring the opportunities and in improving the knowledge of the younger generation, and the student fraternity at large.

Let me express my heartfelt appreciation to all the delegates spread across the globe for their enthusiasm in coming forward to participate wholeheartedly.

Hearty congratulations to the entire Team of INFOFEST 012 for their sincere efforts in arranging one as a grand buffet of topics.

I wish the endeavor a grand success.

PROF.(DR.)MOHANAN KUNNUMMAL

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UNIVERSITY OF KERALA
Thiruvananthapuram, Kerala, India – 695034
(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as
University of Kerala by the Kerala University Act of 1957 and presently governed by the
Kerala University Act of 1974 passed by the Kerala State Legislative Assembly)
Re-accredited by NAAC with A++ grade

MESSAGE

I am extremely happy to know that Sree Ayyappa College (TDB), Eramallikkara is going ahead in full steam and is once again continuing in its mission to be an instrument for rural youth to attain holistic development making use of ICT based education accessible to educationally underprivileged areas thereby attempting to bridge the

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digital divide by conducting a grand International Symposium on a large variety of current topics based on the theme ***Energy, Environment, Health and Visual Communication (INFOFEST 012)***, in association with the Institution of Electronics and Telecommunication Engineers (IETE), and the Internal Quality Assurance Cell (IQAC).

Having begun my teaching career from this college as Lecturer in Computer Science, I find myself privileged to pen my heartfelt wishes and appreciation for arranging such a wonderful educational extravaganza in the virtual mode, which has opened a new sphere for data mining and dissemination from experts spread across the globe without any difficulty, using latest ICT technologies in this age of inter-disciplinary studies and research.

I am sure that this event will be an ideal platform bringing together academicians, scientists, researchers, personnel from the industry and students (UG & PG) on to a common platform for information sharing and dissemination.

My sincere thanks to the resource persons and participants spread across the globe, and the organisers, my dear friends, for bringing this annual seminar to its current stature of a two weeklong international event, on a vast variety of topics from the arts, sciences, engineering, biotechnology and health to visual communication, on numerous sub-themes.

I wish the International Symposium on Energy, Environment, Health and Visual Communication, (INFOFEST 012) a grand success.

Prof (Dr) K S Anil Kumar
Registrar

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From the Principal's Desk

Greetings,

I am thrilled to welcome you to the National Conference on Energy, Environment, Health, and Visual Communication, proudly organized by Sree Ayyappa College as part of INFOFEST 012. This conference brings together distinguished professionals, researchers, and enthusiasts from diverse disciplines to explore the intricate connections between energy, environment, health, and visual communication.

At this crucial juncture in our collective journey, it is imperative that we engage in meaningful conversations and collaborative efforts to address the challenges facing our planet. This conference provides a platform for exchanging ideas, sharing knowledge, and forging new pathways towards a sustainable future.

Throughout this event, we will delve into groundbreaking research, thought-provoking discussions, and innovative solutions. Our esteemed speakers, with their wealth of expertise, will inspire us to think critically, challenge conventional wisdom, and push the boundaries of our understanding.

By fostering interdisciplinary collaborations and promoting dialogue across disciplines, we aim to create a vibrant ecosystem that nurtures the exploration of novel ideas and approaches. Our goal is to facilitate the emergence of innovative solutions that harmonize energy

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consumption, environmental stewardship, public health, and the transformative power of visual communication.

I extend my heartfelt gratitude to the organizing committee, dedicated faculty members, and enthusiastic student volunteers whose hard work and dedication have made this conference possible. Their unwavering commitment and meticulous planning have ensured that INFOFEST 012 will be an exceptional gathering of brilliant minds, fostering meaningful dialogues and forging new frontiers of knowledge.

Best regards,

Prof. (Dr.) Suresh S

PRINCIPAL& Editor-in-Chief

Invited Talk - 1

AI Tools Used in Journalism: Enhancing Efficiency and Storytelling

Dr. Nithin Kalorth
Associate Professor
Times School of Media
Bennett University
Greater Noida, Uttar Pradesh

AI tools have emerged as powerful aids in the field of journalism, revolutionizing the way news is gathered, analyzed, and presented. From natural language processing and sentiment analysis to graphic design, content creation, and data visualization, AI tools offer a wide range of functionalities that enhance journalists' efficiency and storytelling capabilities. This paper highlights some of the notable AI tools used in journalism across different areas.

Natural Language Processing (NLP):
a) Natural Language Toolkit (NLTK): A Python library widely used for text processing and analysis, providing functionalities for tokenization, stemming, and part-of-speech tagging.
b) **spaCy:** An NLP library that offers efficient text processing capabilities, including named entity recognition and syntactic parsing.

Sentiment Analysis:
a) VADER (Valence Aware Dictionary and sentiment Reasoner): A popular tool for sentiment analysis, utilizing a pre-trained lexicon to determine the sentiment expressed in text.

Graphic Design:
a) Adobe Sensei: An AI framework by Adobe, providing various AI-powered features for graphic designers, such as content-aware cropping, automated font matching, and intelligent image resizing.
b) Autodesk's Dreamcatcher: A generative design tool that employs AI algorithms to automatically generate design options based on specified parameters.

Content Creation:
a) GPT-3 (Generative Pre-trained Transformer 3): A state-of-the-art language model capable of generating human-like text, enabling journalists to automate content creation tasks, draft news articles, or summarize lengthy reports.

Data Visualization:
a) Tableau: A leading data visualization platform that utilizes AI algorithms to automatically identify patterns, trends, and anomalies in data, facilitating the creation of dynamic visualizations.
b) Power BI: A comprehensive business intelligence tool that offers AI-driven features for data visualization, including automatic chart recommendations and smart data labeling.

AI tools have become indispensable for journalists, offering immense value across various aspects of journalism. From analyzing text and gauging sentiment to automating content creation and enhancing data visualization, AI tools enable journalists to streamline their workflows, gain valuable insights, and deliver impactful stories to their audiences. Embracing these AI tools can empower journalists to navigate the evolving media landscape with greater efficiency and creativity.

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Invited Talk - 2

Applications of Light in Medicine

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Translational Healthcare Technologies
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United Kingdom

Light has a wide range of applications in medicine, from diagnostics to therapy. In this field, light is used in various forms such as visible light, ultraviolet light, and infrared light. The applications of light in medicine are numerous and can be broadly categorized into diagnostic and therapeutic uses. In therapy, light is used to treat various medical conditions. Application of ultrafast laser in tissue resection explained in the first part of this talk. In diagnostics, light is used in various imaging techniques. Design and development of a Frugal fluorescence bacterial imaging device explained in the second part of this talk.

The main topic of discussion was the development of a new and improved surgical method for tissues that emphasizes the need to minimize thermal damage. The proposed solution involves the use of an ultrashort pulse picosecond laser. Additionally, the talk delved into the potential use of hollow core negative curvature fibers to deliver ultrashort laser pulses, which could enable minimally invasive endoscopic procedures in the future.Ultrashort pulse lasers offer great promise for tissue resection with exceptional precision and minimal thermal damage. Surgery in the bowel requires high precision and minimal necrotic tissue to avoid severe complications such as perforation. The deployment of ultrashort lasers in minimally invasive or endoscopic procedures has been hindered by the lack of suitable optical fibres for high peak powers. However, recent developments of hollow core micro structured fibres provide potential for delivery of such pulses throughout the body.

Optical imaging modalities have been used extensively in medical research for the diagnosis of microbial infection. Fluorescence based imaging has been an emerging methodology to diagnose bacterial infections in commercial and research fields. The quality of fluorescence imaging can be largely determined by the fluorophore, filters and detector used and the optical sectioning of the imaging setup. Recent developments have enabled the use of single board computers to power fluorescence imaging devices. Used in conjunction with specific imaging agents ("smart probes"), this produces a low cost, highly effective, specific and robust package for the detection of bacteria. We demonstrate a proof-of-concept fluorescence imaging system for the detection of bacteria including gram-negatives: Pseudomonas aeruginosa, Escherichia coli and gram positive: Staphylococcus aureus. 470 and 590 nm LEDs were used to illuminate samples labelled with bespoke fluorescent molecules specific to gram type. In addition, this device has been designed to capture wide field white light images for the rapid assessment of sample morphology and identification of bacteria which have not been stained with the gram specific "smart probe". The aim of this proof-of-concept work is to translate this principle into an economical point-of-care testing device as an alternative to current high-priced microscopic bacterial imaging devices without compromising imaging quality.

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Invited Talk - 3

Ecology and Literature: An Interdisciplinary Approach

K Samuel Moses Srinivas
Assistant Professor
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Chennai – Tamil Nadu

Ecocriticism is an interdisciplinary study interconnecting ecology and literature. It seeks to analyse the relationship between culture and nature and proposes how one cannot live without the other. Ecocriticism as a literary criticism has come to prominence since the 1990s. It is one of the most sought-after scholarships in the field of literature. It follows Barry Commoner's first law of Ecology, "everything is connected to everything else." The main objective of Ecocriticism is to supersede anthropocentrism with biocentrism.

The word Ecocriticism was coined by William Rueckert in 1976. He defines ecocriticism as "an application of ecology and ecological concepts to the study of literary texts." Cheryl Glotfelty, a literary scholar, on the other hand defines ecocriticism as the "study of the relationship between literature and the physical environment." Both these definitions are cornerstones of ecocriticism.

Ecocriticism delineates environmental crises as the by-product of culture. It also aims at reforming the ethical systems by widening its scope from anthropocentrism to biocentrism. It poses questions such as:
How is nature represented in this text?
What role does the physical setting play in the plot of the novel?
Do men write about nature differently than women?

Some of the concepts that are part of ecocriticism include Deep Ecology, symbiosis, bioregionalism, ecofeminism, nativism, tinai-poetics, ecophobia, etc.

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Invited Talk - 4

Information Theory

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The revolution of computers and communication systems in the 1960's brought it with a demand from the private sector for means to protect information in digital form and to provide security services. Beginning with the work of Feistel at IBM in the early 1970's and reaching the highest in 1977 with the adoption as a U.S. federal information processing standard for encrypting unclassified information, (DES) the digital encryption standard in the most wellknown cryptographic mechanism in history. The most striking development in the history of cryptography came in 1976 when Whitfield Diffe and Martin E.Hellman published paper, "New directions in cryptography".

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Invited Talk - 5

Nanobiophotonics

Dr. M S Swapna,
Laboratory of Environmental and Life Sciences
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The evolution of new scientific disciplines combining the features from their forerunners is an ongoing process. With the invention of lasers and data acquisition systems, the 19th century witnessed the birth of Photonics, followed by a new offspring – Biophotonics, which is the fusion of biology and photonics. When Photonics employ photons with a wide range of applications in various areas of science, Biophotonics make use of these photons to explore the biological systems, and finally,Nanophotonics narrows down its applicability to nanoscale regime opening a new pathway to understanding the nature and natural phenomenon for the advancement in science and technology for the betterment of human life and existence. The combination of the three fields – Photonics, Biophotonics, and Nanophotonics – called Nanobiophotonics, can contribute significantly to enrich the merged fields. Nanobiophotonics is the emerging interdisciplinary branch of applied science, where the principles and techniques in Nanoscience and Nanotechnology, Biology, and Photonics find interrelated applications. The present work attempts to explore some of the fruitful applications of soot, which is rich in various allotropes of carbon like graphene, carbon nanotubes, fullerenes, amorphous carbon, and graphite. The role of soot in seed germination and the energy transport mechanism in leaves are unveiled using a nondestructive laser-induced thermal lens technique suggesting its potential Nanobiophotonic applications. The potential of soot for making inks/paints are also elucidated.

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Invited Talk - 6

Natural Language Processing in Healthcare

Dr. Anoop VS
School of Digital Sciences, Kerala University of Digital Sciences, Innovation and Technology, Thiruvananthapuram, India

Natural Language Processing is a subfield of artificial intelligence that deals with making computers understand and process human language. Right from the conceptual experiment called the Turing test to the most celebrated ChatGPT, artificial intelligence has undergone many transformations, so as natural language processing. We have evolved from a stage where people found that talking to a computer in the human language would be a scientific dream to the cognitive virtual agents that generate human-like responses. Today, artificial intelligence applications are visible in any field, from education to rocket science. Healthcare is one such area that got heavily disrupted by artificial intelligence and natural language processing. It is estimated that the global spending on natural language processing in healthcare is 3.7 billion, with a compound annual growth rate of 20.5%. Natural language processing helps medical practitioners streamline workflows, improve predictive analytics and reduce administrative burden. It also helps medical practitioners save time by automatically extracting the data they need within medical records. Natural language processing primarily operates on the unstructured data, interprets large volumes of data, and generates actionable insights. The major use cases of natural language processing in healthcare are (a) NLP for electronic health records that includes the extraction of keywords and named entities from documents such as radiology reports and case histories, (b) Speech recognition that helps doctors and other clinicians to dictate patient notes thereby reducing the workload significantly (c) Predictive analytics that helps identify patients facing a greater risk of health disparities and provide an additional level of surveillance (d) Biomedical NLP tasks such as biomedical relation extraction, drug-drug interaction extraction (e) Cognitive virtual agents in healthcare that designed to assist patients and avoid issues that may arise during normal business hours, such as waiting on hold for a long time or scheduling appointments. Even though these use cases, if implemented properly, may add greater value to the healthcare domain, several challenges co-exist. The first challenge is the data available for building such intelligent applications, which may be difficult for poor-resource languages. The non-availability of proper standardization of reporting and evaluation workbench is also a major challenge for implementing NLP in healthcare. Since healthcare is highly regulated and sensitive, the privacy and confidentiality of the data is also a major concern for healthcare researchers. Besides these challenges, healthcare natural language processing is making significant advances the recent past that may create more accessible and affordable healthcare services for the patients.

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Invited Talk - 7

Taxonomy: Is it dead or alive?

Dr Ajith Ashokan
Department of Biological Sciences,
University of Missouri – St. Louis, MO 63121

More than fifteen years ago, while doing my bachelor's, I heard that biological (animal, plant, fungus, and other organisms) taxonomy (henceforth, taxonomy) was a dead or dried branch of science (or art) with little research left to do. From a worldly perspective, this seems too absurd, and if we take a moment to appreciate taxonomy, we know that the relevance of this science is more now than ever before. A proper taxonomy is mandated for most biological studies; erroneous taxonomy can present concerns that stunt the growth of most life science research. We must agree that the qualified practitioners of taxonomy are declining due to the impression already being passed to students when they are seeking a career in science. Taxonomy has severely transformed as a field of life science, and its modern avatar (phylogenetic systematics) is profoundly established on interdisciplinary approaches. Finally, my humble request to the current faculty across science colleges and institutions in India is to train their students to appreciate the importance of taxonomy (or phylogenetic systematics) and teach them how effective it is to be integrative and collaborative in scientific research.

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Invited Talk - 8

Strategic Business Environment

Dr. Harikumar
Professor
Department of Commerce,
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Thiruvananthapuram, Kerala

The Strategic Business Environment plays a crucial role in shaping the success and sustainability of organizations in today's dynamic and complex global landscape. This abstract provides an overview of the strategic business environment, highlighting its significance, essential elements, and impact on organizational decision-making and competitiveness. It also explores the dynamic nature of the business environment and the importance of strategic adaptation for long-term success. The strategic business environment encompasses various external factors influencing an organization's operations, performance, and strategic choices. These factors include economic conditions, technological advancements, political and legal regulations, social and cultural trends, and competitive forces. Understanding and effectively responding to these factors are fundamental to formulating and implementing successful strategies. Organizations face numerous challenges and opportunities in today's rapidly changing business landscape. Economic globalization has expanded markets and intensified competition, demanding organizations to innovate and adapt continually. Technological advancements have revolutionized industries, creating new opportunities for growth and disrupting traditional business models. Additionally, political and legal developments, such as regulatory changes and shifts in trade policies, can significantly impact business operations and market dynamics. Organizations need to adopt a strategic mindset that emphasizes agility, foresight, and adaptability to navigate this complex environment. A comprehensive business environment analysis must inform strategic decision-making processes, including rigorous market research, competitor analysis, and trend forecasting. By closely monitoring changes and trends, organizations can proactively identify opportunities and threats, enabling them to make informed strategic choices and gain a competitive advantage. Furthermore, strategic business environment analysis should not be limited to external factors alone. Internal factors, such as organizational culture, resources, capabilities, and leadership, are vital in shaping strategic direction. A thorough understanding of an organization's internal strengths and weaknesses can help identify areas for improvement and guide strategic decision-making processes. In conclusion, the strategic business environment presents challenges and opportunities for organizations. Organizations must proactively monitor and adapt to external and internal factors to thrive in this dynamic landscape, leveraging them to develop innovative strategies. By embracing a strategic mindset and integrating environment analysis into their decision-making processes, organizations can enhance their competitiveness, seize opportunities, and achieve sustainable growth in an ever-evolving business environment.

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The Effectiveness of Green Marketing Strategies on Consumer Behavior

Ms. Sweta Pandey[1] and Mrs. Smriti Agrawal[2]
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***Abstract*— Consumer marketers have a responsibility to not just respond to the growing environmental consciousness but to take the initiative in environmental programmes "Green marketing" is developing as one of the key corporate strategies of the future. Inrecent years, green marketing has become increasingly popular as consumers become more environmentally conscious. This concept has created an opportunity to remarket and package existing products that already follow these rules. Additionally, the growth of green marketing has provided businesses with the opportunity to co-brand their commodities under several product lines, lauding some for their eco-friendliness while ignoring others. This study aims to explore the effectiveness of green marketing strategies on consumer behavior. This research measures consumers' attitudes towards green marketing, their willingness to pay a premium for environmentally friendly products, and their purchasing behavior. The results how that while consumers have a positive attitude towards green marketing, their willingness to pay a premium for green products is influenced by various factors such as their income level, education, and environmental awareness. In addition, the study finds that green marketing strategies such as eco-labeling and environmental claims on packaging have a significant impact on consumers' purchasing behavior. The findings of this study provide useful insights for companies to develop effective green marketing strategies that resonate with consumers and promote sustainable consumption. The target market for "green consumers," or those who care about the environment and let it influence their purchasing decisions, has increased, according tothe study. The paper also examines the present trends of green marketing in India, describes the reasons why companies are adopting it, and discusses the future of green marketing, concluding that green marketing is something that will continue to grow in both practise and demand.**

***Index Terms*— Green Marketing, Green Product, Recyclable, Environmentally safe, Consumer Attitudes, Eco Friendly.**

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The Conceptual Foundation of Green Marketing

Dr. Sajoy PB
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***Abstract*— Green marketing, which emerged in the late 1980s, has undergone a three-stage evolution process. These stages are ecological green marketing, environmental green marketing, and sustainable green marketing. Currently, the term green marketing encompasses a broad range of marketing activities carried out by business organizations to sell environmentally friendly products. These products cause minimal damage to the environment and promote sustainable development. To meet the requirements of green marketing, the traditional 4P's of marketing have been appropriately modified. This modification ensures that businesses can effectively market green products.**

There are several positive reasons like social responsibility, competition, government regulations, opportunities and cost reduction that attract business organisations to adopt green marketing and green products. Business organisations around the world including India have adopted several unique green marketing strategies to promote their green products. However, some business organizations also adopt green washing strategies by which conventional products are camouflaged as green products by using various green marketing strategies.

Green marketing does pose several challenges to business organisations which choose to adoptit. Nevertheless, green marketing a same thod of marketing green products has come of age and will survive for a long time to come, due to the various advantages/benefits it offers to both business organisations and customers.

***Index Terms*— Green Marketing; Green Washing; Green Products; Green Marketing Mix.**

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Consumer Behavior and Perception Towards Fast Moving Consumer Goods: A Study of Rural Consumers in Udupi District

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***Abstract*— Fast moving consumers' goods or consumer packaged goods have its presence in everyone's day to-day life. These products include non-durables such as soap, shampoo, toiletries, cosmetics, food items, pharmaceuticals, consumer electronics etc. This product operates at low profit margin. Indian FMCG sector is the major contributor to Indian economy. FMCG sector in India is witnessing tremendous growth over the years. India is having a vast untapped rural market, increasing literacy, income level and life style in increasing awareness among rural customers. It is creating ample opportunity for investment in rural sector. Rural areas of Udupi city had been selected for the sample study because this city has comparatively better infrastructure and a wide rural area, which is very essential for the development of rural market. The selection of sample is random. Out of the large number of villages, 100 consumers have been selected for the study. Questionnaire was distributed to the rural consumers. Simple percentage of analysis was done and conclusion is drawn. The study concludes that to achieve the objectives of the rural market development, the government and private agencies have to focus on the improvement of all the problematic areas of rural marketing and should find proper scientific solution to address the same efforts must be taken to rejuvenate the marketing of rural products**

***Index Terms*— Packaged goods, consumer electronics, non-durables, untapped rural market, scientific solution.**

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Invisible Bank-The Future Banking

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***Abstract*— Technology is literally changing the way we do everything. By 2030, technology will drive a fundamental shift in banking. It can move from being hidden to completely invisible. This Invisible Bank will be buried within a broader, more digital, connected way of life.**

Consumers will interact with a personal digital assistant; No longer do you have to search your wallet for cash. The app knows who you are and the entire transaction happens in the background, without further input on the part of the rider or the driver. Payment is embedded in the experience as part of the natural flow, so you don't have to think about it. We've called ours EVA, Enlightened Virtual Assistant.

Building an invisible future Technology is an unstoppable driving force in society. Banking is only 10% through its journey of change. In reality we can only guess what that change will look like by 2030. The Invisible Bank is one such possible future – but there are other equally probable and alternative scenarios. The Invisible Bank has its roots in technology which is already in the labs of banks today. Some is even live – APIs, cloud-based services, artificial intelligence and mass personalisation are the building blocks of tomorrow. But these technologies are being used in the peripheral systems rather than the core.

A real shift in banking would require building out core platforms from scratch – and few banking CEOs have the risk appetite for that. In the meantime, dear bank, could you stop asking me to write down my address on every paper application process you put me through? Wouldn't that be a good start?

***Index Terms*— Technology, invisible bank, banking.**

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Automatic Tuberculosis Detection in CXR using CNN

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***Abstract*— In most regions of the world, tuberculosis (TB) is classified as a malignant infectious disease that can be fatal. Using advanced tools and technology, automatic analysis and classification of chest X-rays (CXRs) into TB and non-TB can be a reliable alternative to the subjective assessment performed by healthcare professionals. Thus, in the study, we propose an automatic TB detection system using advanced deep learning (DL) models. A significant portion of a CXR image is dark, providing no information for diagnosis and potentially confusing DL models. Therefore, in the proposed system, we use sophisticated segmentation networks to extract the region of interest from multimedia CXRs. Then, segmented images are fed into the DL models. For the subjective assessment, we use explainable artificial intelligence to visualize TB-infected parts of the lung. We use different convolutional neural network (CNN) models in our experiments and compare their classification performance using three publicly available CXR datasets. EfficientNetB3, one of the CNN models, achieves the highest accuracy of 99.1%, with a receiver operating characteristic of 99.9%, and an average accuracy of 98.7%. Experiment results confirm that using segmented lung CXR images produces better performance than does using raw lung CXR images.**

***Index Terms*— Tuberculosis detection. Deep learning. Convolution Networks Chest X-Ray Image segmentation**

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Haizimen Center
[Online Juveniles Service Web Application]

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***Abstract*— This is designed for anyone looking for a deeper understanding of how Lagrange multipliers are used in building up the model for support vector machines (SVMs). SVMs were initially designed to solve binary classification problems and later extended and applied to regression and unsupervised learning. They have shown their success in solving many complex machine learning classification problems.**

***Index Terms*—Optimization, Lagrange, Method, KKT, Classic-Lagrangians, Optimization problems**

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Ayur Arogya
[Online Healthcare Service Web Application]

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***Abstract*— Ayur Arogya is a project that aims to develop an application that is used for healthcare services. The purpose of the web application is to help the medical field manage the difficulties of patients and services. This online healthcare service is very useful, not only to get information but also to stay updated on health services. The main purpose of counselling is to help the patient amplify their vision of the specific situation and discover their proper potential in dealing with the conditions of disease in order to promote a better quality of life. The user can register to donate organs and blood. The patient can know the availability of medicine and the cost of medicine. It would be more helpful to know about the nearest hospital for treatment. We provide financial support other than medical expenses (scholarships, stipends, etc.). Patients can interact with doctors through video conferences. These healthcare service projects consist of many categories and services.**

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Pat and Pet
[Online Pet Service Web Application]

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***Abstract*— PAT AND PET is a web application which provides all the services needed for a pet. It includes services like doctor services, medical store services, training services, caretaker services etc. Apart from these services we also provide an option for buying and selling of pets, food and other accessories like muzzles, harness, leashes, collar belts, toys, pet beds, nail trimmers, bowls, cages, comb, shampoos etc. Users are able to communicate with doctors for discussing about their pets illness, vaccination details. Users are also able to communicate with medical store for buying medicines by sending the prescription given by the doctors. User can register for the license for their pets. Users can send messages to the admin for pre-booking of particular pets. Events like dog show information will be given to the users. Vaccination information will be given and option for booking of vaccination for pets are provided. Through PAT AND PET, users are able to search for the different categories of each pets, what are the food we should give them, how to take care of them, their health information like vaccination and other treatments etc.**

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LA-MANS
[Manpower Supply Web Application]

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***Abstract*— This web application is very useful for public and business man those who are looking for workers. Also, this web application provides jobs for those who are seeking for a job. The lab or management system is incredibly useful for everybody who wants the service like plumbing, electronic repair, mechanic, painting, electrical work, carpenter, housekeeping, construction workers, architecture, fabrications etc. Nowadays for any services like Plumbing, Electrical, Electronic, Mechanical etc if any customer wants to use this type of services then they can go through a personal meeting or mobile call. It is difficult for customer to find any service in emergency at any time and place. So we are going to develop website which will help customers to find out solution for any problems related to this service. Our website is a online platform for all kind of services at any time and place. Our project will also provide the facilities like security, online payment.**

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Stay Easy System

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***Abstract*— Stay Easy System is a website to automate and manage hostel activities of SAC. The system provides automation of various processes including the admission of a student to till their vacation, attendance consolidation to mess bill calculation, online fee payments and notifications, and employees leave application as well. Here the users can register and login through this application and can view the details about the hostel. Moreover, the student user can make their leaving and return to the hostel which will be notified to their parents by SMS and also either parents or the students can make the fee payment and they can attend the online meeting conducted by the admin. Employees can request their leave to the admin through the system and they can view their salary details based on their leaves and other allowance.**

***Index Terms*— Mess bill calculation, Java script, Node-Js, PostgreSQL, Database Management**

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Fud @ Time

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***Abstract*— Fud @ Time is an android application to pre-order food from a restaurant. This application also provides a way to manage the giveaway of excess food from the restaurant which includes the cancelled orders also. This is made possible by notifying the details of the excess food to various community organizations to serve it to the needful ones. It also provides a way to several organizations to get notified about the kitchen wastes and the waste food from the restaurant in order to make use of these bio wastes to make bio-fertilizers. Our app allows the user to order food before reaching the restaurant. This saves the time as the user isn't waiting for the waiter to pick the orders. Through this project we aim at creating an application in java language using android studio IDE with Flutter framework.**

***Index Terms*— Waste food and excess food management, pre ordering of food, Advance online payment, android studio IDE, Java, Flutter framework**

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Famwok

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***Abstract*— "FAMWOK" is a project that aims to develop an android application which provides a platform for farmers, customers and companies to interact with each other. The main aim behind the application is to help bring together a variety of functions that are found in existing systems and makes them easy to access in one place.**

This platform provides an auction facility and rental services for equipments, vehicles etc. Farmer that is, user, customer, companies, laboratories and labourer can use this application. Farmer can sell their product by posting the product details and the buyers are able to view this and if they are interested, they can directly communicate with the farmers. The companies registered in this application can also use the option to sell their products such as pesticides, fertilizers etc.

All users can comment their doubts and experience in the post and those who used this product can give ratings and review about the product quality and provide online payment facility for all purchases. Users can post their query regarding farming, use of fertilizers etc. in this platform and any one can provide a solution for it.

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Lung Nodule Detection Through CNN Segmentation

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***Abstract*— As the lung is one of the main respiratory organs in humans, any abnormalities in it would have a significant negative impact on the respiratory system. One of the irregularities is a lung nodule (LN), and early detection and treatment are essential to lessen its severity. In the proposed study, the LN will be extracted from several lung CT slices, including the axial, coronal, and sagittal planes, using the Convolutional-Neural-Network (CNN) segmentation methods. The phases of this study are as follows: I image collecting and preprocessing; (ii) creation of ground truth; (iii) segmentation enabled by CNN; and (iv) performance assessment and validation. This study employs both one-fold training and two-fold training techniques to demonstrate the value of pre-trained CNN segmentation systems. The Cancer Imaging Archive database provided the test pictures for this investigation. The results of this study's experimental inquiry, which was carried out using Python, show that VGGSegNet provides superior Jaccard (>88%), Dice (>93%), and Accuracy (>96%) values than other CNN techniques.**

***Index Terms*—CNN;Lung nodule; CT scan; CNN segmentation; respiratory system; VGG-SegNet.**

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Lagrange Multiplier as an Optimizer in Support Vector Machine

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***Abstract*— The Lagrange multiplier method is widely used for solving constrained optimization problems. In this paper, the classic Lagrangians are generalized to a wider class of functions that satisfies the strong duality between pri- mal and dual problems. Then the generalized Karush-Kuhn-Tucker (KKT) conditions for this generalized Lagrange multiplier method are derived.This useful method has applications in optimization problems and designs of consensus protocols, which is demonstrated by proposing a new continuous-time algorithm and its distributed version for optimization.**

This is designed for anyone looking for a deeper understanding of how Lagrange multipliers are used in building up the model for support vector machines (SVMs). SVMs were initially designed to solve binary classification problems and later extended and applied to regression and unsupervised learning. They have shown their success in solving many complex machine learning classification problems.

***Index Terms*— Optimization, Lagrange, Method, KKT, Classic-Lagrangians, Optimization problems**

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Enzymatic Screening, Biochemical and Molecular Characterization of Efficient Protease Producing Bacteria from Waste Soil

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***Abstract*— Proteases constitute a very large and complex group of enzymes, widely utilized in a host of industries. Recent years have witnessed a phenomenal increase in the use of enzymes as industrial catalysts. It represents one of the three largest groups of industrial enzymes and account for about 60% of the total worldwide sale of enzymes.**

The current investigation intended to isolate a suitable bacterial strain for protease production. Protease producing bacteria were isolated from compost, plastic waste, poultry, agricultural and food waste containing soil, screened for protease production on skim milk agar plates and confirmed the protease production through protease assay. Among the seventy-eight bacterial isolates screened, the bacterial isolate showing highest protease production was selected and biochemically characterized using IMVIC and catalase test. Kirby Bauer antibiotic susceptibility test of the potential test isolates against various dosage of broad-spectrum antibiotics was accomplished. Molecular characterization of the isolates namely ZVP 5 involves genomic DNA extraction and PCR amplification of 16S rDNA using universal primers and subjecting it to automated sequencing method. NCBI BLAST analysis of the isolate demonstrated maximum sequence similarity of 100% to Serratia marcescens respectively. Exploitation of biodiversity to provide microorganisms that produce proteases well suited for their diverse applications is considered to be one of the most promising future alternatives. In the future, protein engineering will play a primary role in producing proteases with new properties. Bacterial proteases play a vital role in different industries due to their potential, and their future use is likely to be increased. Advance strategies like protein/genetic engineering, molecular biology, and computational biology needs to be adopted to generate improved protease-producing strains.

***Index Terms*— Protease assay,IMVIC, catalase test, Kirby Bauer antibiotic susceptibility, PCR, NCBI BLAST**

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Trans–cis Isomerization of Azopyridines: A Computational and Experimental Study

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***Abstract*— Azobenzenes undergo reversible trans-cis photo-isomerization and have been studied exclusively as photo-responsive material. Despite their similar photochemistry, azopyridines have received relatively little attention. Compared with azobenzenes, azopyridines offer additional opportunities for material design through hydrogen bonding and coordination chemistry. Energy barriers were determined from two-dimensional potential energy surfaces of the ground states.The energy barrier was reported as 9.1 kcal mol-1 for the title compound, which had a much lower energy barrier than the reported azobenzenes. Experimental results also revealed that the title compoundhad a better switchable trans-cis conversion achieved in 165 minutes, while cis-trans conversion was achieved in 45 minutes. In addition, we have also investigated and analyzedthe photoisomerization pathway.These results conclude that the title compound is a potential candidate for designing optical materials.**

***Index Terms*— DFT, TD-DFT, azopyridines, photoisomerization, photoresponsive material, isomerization energy**

REFERENCES

[1] T. Yin, Z. Zhao and H. Zhang, RSC Adv., 2016, DOI: 10.1039/C6RA10880F.
[2] T. Yin, Z. Zhao and H. Zhang, New J. Chem., 2017, DOI: 10.1039/C6NJ03095E
[3] T.-T. Yin, Z.-X. Zhao, H.-X. Zhang, Organic Electronics, 2017, DOI 10.1016/j.orgel.2017.10.002

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Indigofera Tinctoria Carbondot and Azadirachta Indica Nano Composite as Effective Corrosion Inhibitor for Mild Steel in 1 N HCL Solution

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***Abstract*— Mild steel (MS) is commonly used in several industrial sectors due to its wide range of physical properties and cost effectiveness, however MS corrosion is one of the serious problems encountered in these industries. In recent years, research has mainly focused on the development of ecofriendly green corrosion inhibitors to prevent corrosion. A novel ecofriendly, efficient green corrosion inhibitor Carbon dot (CD) based nanocomposite synthesized by hydrothermal method. As per the studies, the tested corrosion inhibitor is a good inhibitor and shows good adhesion to the steel surface. The CD Nanocomposite showed an inhibition efficiency of 94.6% at the temperature of 303 K. The tested CD Nanocomposite inhibitors have already shown better corrosion inhibition efficiency compared to most similar corrosion inhibitors reported in the literature. The characterization of IT-CD and AIG Nanocomposite was performed by Fourier- transform infrared spectroscopy (FTIR), ultraviolet-visible (UV-vis) spectroscopy, photoluminescence (PL), Raman spectroscopy, and X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS). Electron Microscopy (HRTEM) and Scanning electron microscope (SEM). Inhibitory Effect of ITCD-AIG Nanocomposite on Mild Steel (MS) in HCl Corrosion Evaluated by Weight Loss Analysis, Electrochemical Impedance Spectroscopy (EIS) and cyclic voltammetry (CV).**

HIGHLIGHTS

- A new functional inhibitor of CD-AIG nanocomposite was synthesized by the hydrothermal method.
- CD AIG nanocomposite was an effective corrosion inhibitor for mild steel, and the inhibitory efficiency in 1 M HCl at 303 K reached 94.6%
- CD AIG nanocomposites form a hydrophobic protective layer on mild steel surfaces through physical and chemical adsorption to prevent corrosion.

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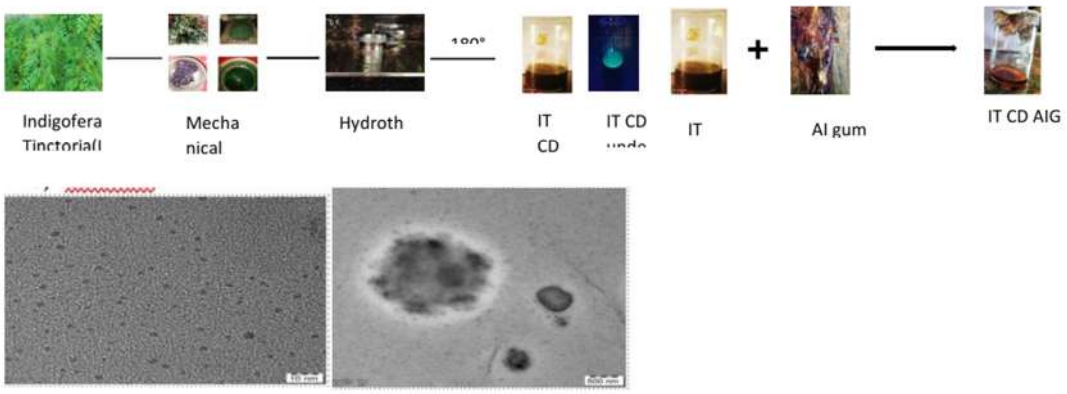
Graphical Abstract



Estimation of Total Carotenoids from the Leaves of Butea Monosperma (Lam) Taub

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***Abstract*— Carotenoids are coloured pigments produced by all photosynthetic organisms like algae, cyanobacteria and plants. They belong to the class of fat- soluble hydrocarbons and are composed of 40- carbon terpenoids and eight isoprenoid units, that form the basic structure. Carotenoids are important constituents of light harvesting complexes in plants and act as accessory photosynthetic pigments alongside chlorophylls. In vascular plants, two types of carotenoids are found, unoxygenated carotenoids called as carotenes and oxygenated ones called as xanthophylls. The present study aims to determine the total carotenoids from the leaves of Butea monosperma (Lam) Taub. Butea monosperma (Lam) Taub, commonly called as "Flame of the Forest" is a medium sized tree belonging to the Family Leguminosae and Sub Family Papilionaceae. It is native to the tropical deciduous forests of Indian subcontinent and South- Eastern Asia. All parts of the tree possess medicinal properties and it also used in various religious ceremonies. The fresh leaves were collected and acetone extracts were prepared. The estimation of total carotenoids was done based on standard procedure (Thimmaiah, 1999). The results indicate the presence of carotenoids in the acetone extracts.**

***Index Terms*— Carotenoids, Butea monosperma, Flame of the Forest.**

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Assessment of Algal Diversity and Associated Macroinvertebrates in Achankovil River, Kerala, India

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***Abstract*— Algae and macroinvertebrates are important biota in aquatic ecosystems and algae act as the basic unit of the food chain. Algae and macroinvertebrates are interact each other and maintaining the proper equilibrium of the food web. The aims of the present study were to assess the algal diversity and associated macroinvertebrates in the Achankovil River. Samples were collected during the pre-monsoon, monsoon and post-monsoon seasons from the three regions upstream, midstream and downstream of the Achankovil River. Planktonic form of algae collected by using plankton net and attached forms and macro algae were collected using knife, scalpel and forceps and by hand. For preserving the algal specimens 4% formalin and Lugol's iodine were used. Macroinvertebrates associated were collected by using forceps and brush and 95% ethanol used for the preservation of the sample. Physico-chemical parameters of water were analyzed by standard methods. There are fifty one algal species were identified belongs to Chlorophyceae, Bacillariophyceae and Cyanophyceae. Maximum algal species belong to the Chlorophyceae. There are twelve types of macro invertebrates identified that are associated with algae. Physico-chemical parameters of the river with regards to algal diversity showed optimum levels.**

***Index Terms*— Achankovil river, Algal diversity, Macroinvertebrates**

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Syringic Acid Affords Hepatoprotective Effect by Modulating Oxidative Stress and Apoptosis in Streptozotocin Induced Diabetic Rats

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***Abstract*— Background: Diabetes mellitus (DM) is a chronic metabolic disorder; the oxidative stress associated with diabetes can lead to multiple complications, including hepatopathy or abnormalities leading to acute liver disease. The purpose of this study is to evaluate whether syringic acid (SA)exert any protective effect against hepatopathy in streptozotocin induced diabetic rats.**

Methods: Thirtymale Sprague-Dawley rats used for the study were divided to five groups; Normal(N), Normal + Syringic acid (N+SA), Diabetic control (DC), Diabetic + Syringic acid (D+SA) and Diabetic+Glimepiride (D+GM). Diabetes was induced to male Sprague-Dawley rats by single intraperitoneal injection (40 mg/kg) of streptozotocin. Syringic acid (SA) was administered orally at a dose of 50 mg/Kg body weight daily once for 60 days. The levels of plasma insulin, glucose, glycated hemoglobin, toxicity markers, antioxidant enzymes and mRNA expression of apoptotic genes were analyzed. Results were compared with diabetic rats provided with the standard drug glimepiride (0.1 mg/kg).

Results: Administration of syringic acid to diabetic rats significantly ameliorated hyperglycemia, elevated insulin levels, decreased HbA1c and hepatic toxicity markers. In addition, SA reduced the level of lipid peroxidation products and restored the activities of antioxidant enzymes such as Superoxide dismutase, Catalase, Glutathione reductase and Glutathione peroxidase. SA could also downregulate the mRNA expression of proapoptotic markers such as caspase3, caspase 9, Bax and upregulate the expression of Bcl2.

Conclusion: These findings suggest that syringic acid could potentially ameliorate hepatic damage in streptozotocin induced diabetic rats through its ability to attenuate hyperglycemia induce doxidative stress and apoptosis.

***Index Terms*— Hepatopathy, Oxidative stress, Syringic acid**

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Menthol Regulates Autophagy in Experimental Diabetes

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***Abstract*— A central neurological disorder associated with diabetes mellitus, diabetic encephalopathy (DE) is characterized by structural and neurochemical abnormalities and cognitive impairment. As of now, the mechanisms of DE are not fully understood. Autophagy is an intracellular degradation pathway vital for maintaining cellular homeostasis by eliminating damaged organelles, pathogens, and unwanted protein aggregates. Increasing evidence has demonstrated that autophagy might play an essential role in the progression of DE. The present study aims to evaluate the effects of menthol on autophagy in streptozotocin (STZ)-induced diabetic rats. Diabetes was induced in male Sprague-Dawley rats by a single intraperitoneal injection of streptozotocin (40mg/kg body weight). Cognitive deficits were evaluated after four weeks of diabetes induction. Menthol was orally administered at a dose of 50mg/kg body weight for 60 days. Results were compared with diabetic rats supplemented with the standard drug metformin (100mg/kg body weight). Oral administration of menthol improved cognitive performance in diabetic rats. Moreover, menthol significantly regulated hyperglycemia, raised insulin levels, reduced HbA1c and hepatic toxicity markers. Menthol also regulated the expression of genes involved in the AMPK/mTOR signaling pathway. These results revealed that menthol exhibits neuroprotective effect by regulating the genes implicated in autophagy in diabetic rats. Thus, menthol may be employed as a potential therapeutic agent for the management of diabetes.**

***Index Terms*— Diabetic encephalopathy, Menthol, Autophagy, AMPK/mTOR signaling**

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Management of Drought and Salinity Stress in Crop Plants by Endophytes

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***Abstract*— Endophytes are an important group of symbiotic microorganisms which play a key role in plant growth and development. They may improve the ability of the plants to tolerate diverse types of abiotic and biotic stresses and enhance the resistance of plants to insects and pests. Many biotic and abiotic factors in the field and surrounding environment regularly influence agricultural methods nowadays. Biotic pressures, such as phytopathogen invasions, and abiotic stresses, such as climate change, have a detrimental impact on crop plant development. Drought and salinity are two of the most important stresses that plants encounter. Drought stress has a significant impact on root physiology, leaf structure, photosynthetic activity, and seedling germination, resulting in lower crop development overall. Similarly, salinity has a considerable impact on plant physiological and metabolic processes by reducing seedling growth, decreasing photosynthetic activity, causing water stress, ion toxicity, and slowing protein synthesis and lipid metabolism. Endophytes have been proven to help plants withstand stressful circumstances through several methods such as antioxidant synthesis. To some extent, advances in methodologies such as transcriptomics and other omics technologies have aided in the study of endophytes in stress management. The role of endophytic microbes in the regulation of drought and salinity stress in crop plants is discussed in this review article.**

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Construction of Topology on Graphs using Subgraphs

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***Abstract*— Many topological versions are introduced in graph theory by different authors. We attempt to introduce a new graph topological space with examples in this work, and study some characteristics. The study of graph theory by means of topology is a promising area of study. A large number of studies focus on topologizing graphs by constructing topologies from graphs using numerous techniques. A topology on a directed graph was established in 1968 by T.N. Bhargava and T. J. Ahlborn. In 2013, Saba Nazar Faisel Al-khafaj and Abedal-Hamza Mahdi Hamzi created a topology on an undirected graph. M.Shorky created topology on graphs using operations on graphs in 2015. In 2018, we saw the creation of topologies on the edge set of the graphs by K.A. Abdu and A. Kilicman. Hatice Kubra Sari and Abdullah Kopuzlu examined the topological spaces produced by undirected graphs in 2020. Most of the earlier studies of the topologies connected to graphs were vertex- or edge-based. A topology for graphs in terms of spanning subgraphs was introduced by Karunakaran K and G Suresh Singh in 2007. This inspired us to study a topology associated to subgraphs of a graph. Let G = (V, E) be a graph of size greater than or equal to 1 and let G be a collection of edge induced subgraphs of G. We can define a topology for the graph G by using this collection of edge induced subgraphs and the topology defined so is called an Edge Induced Subgraph Topology of the graph G. The ordered pair (G, G) is called an Edge Induced Subgraph Topological Space. Further we try to prove some results related to this topological space.**

***Index Terms*— Edge Induced Subgraph Topology; Complement Edge Induced Subgraph Topology; Edge Induced Closed Subgraph.**

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A New Quasi Garima Distribution and its Properties

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***Abstract*— As a generalisation of the Quasi Garima distribution, this paper introduces length biased quasi Garima distribution. There has been research and analysis into the various statistical characteristics of novel distributions, including moments, order statistics, survival analysis, Bonferroni, and Lorenz curves. Maximum likelihood estimator is used to estimate the parameters of the novel distribution that has been proposed, and its Fisher's information matrix has been explained. In order to assess a novel distribution's superiority, real data set have finally been fitted to it.**

***Index Terms*— Quasi Garima distribution, weighted distribution, Survival analysis, Order statistics, Maximum likelihood estimation**

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Representation of Gender in Women magazines Covers; A Study Based on Vanitha Magazine

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***Abstract*— We examine the Cover pages of Vanitha, one of the most circulated women's magazines in India magazine, from January 2019 to August 2021 to find out the representation of women on cover pages. Content analysis is chosen as the method of the research. Sixty-six cover pages from the Vanitha magazine were collected and analyzed using descriptive statistics such as frequencies and percentages. The study also uses a visual analysis to examine the cover pages. The study's findings ascertain a stereotypical representation of women on magazine covers. The study's findings implied that females were more featured in women's magazines. It is also found that even though the majority of the cover pages feature women, there is still an apparent disparity in age, color, class, and social status of the models featured. Women in their old age don't have any space on the cover pages.**

In contrast, the middle and young women featured in the cover pages have been portrayed following the norms imposed by the patriarchal society. An accurate representation of the multidimensionality of the female psyche is absent on the cover pages. The study also finds the current trend of women's magazines using single portraits as cover photographs. A recurring tendency to normalize the social norms established by patriarchal groups regarding the ideal woman is evident in portraits of single women on cover pages. Most of the stars featured on magazine covers are male and female actors. It is followed by a significantly less number of models, politicians, singers, and authors. It is also found that a seductive effect is visible in the pictures featured on the cover pages rather than communicating the content. The most dominant frame in cover lines is the health frame, followed by celebrities, beauty, food, relationship, career, festival, astrology, entrepreneurship, travel, and politics.

***Index Terms*— Gender Representation, Content Analysis, Women's Magazines, Kerala**

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Effect of Physical Activity Programme on Health Related Physical Fitness and Quality of Life in Midlife Women

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***Abstract*— The purpose of the study was to determine the effect of physical activity programme on health-related physical fitness and quality of life in midlife women. The selected variables were Body composition, Flexibility, Cardio respiratory endurance, Muscular strength, Muscular endurance and WHO-BREF Questionnaire. Fifty midlife women between the age group of 30-45 years residing in Alappuzha district were randomly selected as the subjects of the study. The selected subjects were divided into experimental and control group with twenty-five subjects (N=25) each. Experimental group underwent physical activity programme 3 times a week for a period of 12 weeks and control group did not undergo any training programme other than their routine work. The collected data was analyzed by using paired t- test and ANCOVA (analysis of covariance).**

The findings of the study have revealed that the significant improvement was seen in Health related physical fitness and overall quality of life following 12 weeks of physical activity programme for the experimental group whereas no changes were seen in controlled group.

***Index Terms*— Physical Activity Programme, Health Related Physical Fitness, Quality of life**

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Studies on Structural and Optical properties of NdMnO3 Nanoparticles Synthesized through Combustion Route

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***Abstract*— In the present study, Neodymium Manganite perovskite nanopowder is synthesized by solution combustion method using metal nitrates as oxidants and citric acid as fuel. Synthesized Neodymium Manganite (NdMnO3) nanoparticles were characterized using XRD, FTIR, UV-VIS absorption spectra. XRD results confirmed orthorhombic perovskite structure of NdMnO3. FTIR analysis illustrates the perovskite structure of Mn-O stretching bond at 556 cm-1. The optical properties of NdMnO3 nanoparticles were studied by UV-VIS spectra analysis. The sample exhibited a sharp absorption edge in the ultraviolet region. Using Tauc model, a bandgap value of 1.8eV is obtained. The refractive index, high frequency dielectric constant and static dielectric constant were calculated. Moreover, these materials are widely used in solid oxide fuel cells and offer promising materials for photocatalytic application and magnetic applications.**

***Index Terms*— Neodymium Manganite, Perovskite, Combustion synthesis**

REFERENCES

[1] S.Gong, B.G.Liu, Electronic energy gaps and optical properties of LaMnO3,Phys.Lett.Sect.A Gen. At. Solid State Phys.375(2011)1477-1480,https://doi.org/10.1016/j.physleta 2011.02.027

[2] C, Ma, W, Ren, L.Wang, J, Xu, A, Chang, L Bian, Structural, optical, and electrical properties of (Mn1.56Co0.96Ni0.4804)1-x(LaMnO3)x composite thin films, J, Eur. Ceram. Soc.36(2016) 4059-4064.https://doi.org/10.1016/j.jeurceramsoc 2016.06.019.

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Combustion Synthesis and Characterization of Samarium Manganite Nano Perovskites

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***Abstract*— Perovskites have significant applications in the field of material science, which includes magnetoresistance, superconductivity, bio sensing, environmental monitoring etc due to their physical, chemical, and optical properties. In the present study, Samarium manganite (SmMnO3) perovskite nanopowder is synthesized by solution combustion method using metal nitrates as oxidants and citric acid as fuel. Synthesized SmMnO3 nanoparticles were characterized using XRD, FTIR and UV-VIS absorption spectra. XRD results confirmed the orthorhombic perovskite structure of SmMnO3. FTIR analysis illustrates a significant absorption band at 570 cm-1 corresponds to the stretching vibration of the Mn-O bond. In the UV-Vis absorption spectra, the strongest peak is observed in the UV region, and in the visible region also, the material possesses good absorbance. Using the Tauc model, a bandgap value of 1.5 eV is obtained. The refractive index, high frequency dielectric constant and static dielectric constant were calculated.**

***Index Terms*—Samarium manganite, Perovskite, dielectric constant**

REFERENCES

[1] T. Ha, T. Huong, H. Nam, N. Hai, C. Viet, Results in Physics Sr doped LaMnO3 nanoparticles prepared by microwave combustion method: A recyclable visible light photocatalyst, Results Phys.19(2020)103417. https://doi.org/10.1016/j.rinp.2020.103417.

[2] V. A Khomchenko, D.A. Kiselev, J.M. Vieira, L Jian, A.L. Kholkin, A.M.L. Lopes, Y.G. Pogorelov, J.P. Araujo, M. Maglione, Effect of diamagnetic Ca, Sr, Pb, and Ba substitution on the crystal structure and multiferroic properties of the BiFeO3 perovskite, Appl.Phys.103(2008). https://doi.org/10.1063/1.2836802.

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Luminescence of Europium Activated Barium Codoped CaMoO4

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***Abstract*— Luminescent materials have been widely used in solid state lighting, display devices, solar cells etc because of their high efficiency, colour rendering index, environmental friendliness and long life time. Molybdates compounds with scheelite-type tetragonal structure exhibit excellent chemical and thermal stability. So, they are considered as a good host lattice for light-emitting materials and have potential applications in LEDs, lasers, optical fibers, and catalysis.**

Eu doped Ba incorporated CaMoO4 phosphors have been successfully synthesized through solid state reaction method. The structural and optical properties of the sample were studied using X-ray diffraction, UV absorption, Raman spectroscopic analysis and Photoluminescence Spectroscopy. The samples crystallized in tetragonal scheelite structure with space group 141/a. They exhibit a strong absorption at 395 nm and 464 nm. The strong emission observed at 614 nm corresponding to transition 5D0→7F2, evidences that the phosphors have red luminescence on excitation with ultra violet or blue radiation. The intensity of emission was found to be enhanced on co-doping with Barium due to the local structural distortion and was confirmed with Raman analysis.

REFERENCES

[1] Mariano Laguna, Nuria O. Nuez,* Ana I. Becerro and Manuel Ocaa Morphology control of uniform CaMoO4 microarchitectures and development of white light emitting phosphors by Ln doping (Ln = Dy3+, Eu3+), Royal Society Of Chemistry

[2] Fengwen Kang, Mingying Peng, Shanhui Xu,Zhijun Ma, Guoping Dong,and Jian-rong Qiu Broadly Tunable Emission from CaMoO4:Bi Phosphor Based on Locally Modifying the Microenvironment Around Bi3+ Ions,European Journal Of Inorganic Chemistry

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Nonlinear Optical Property of Nitrogen Doped Graphene Quantum Dots

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***Abstract*—Graphene Quantum Dots are emerging as a superior alternative to conventional semiconductor Quantum dots in a wide range of application due to their unique and outstanding properties. However, evaluation of its third order nonlinear optical properties through Z-scan technique is scarce. This work reports the synthesis, characterization and study of the third order nonlinear optical properties of nitrogen doped graphene quantum Dots. A facile hydrothermal treatment of Graphene oxide solution is employed for the successful synthesis of nitrogen doped Graphene Quantum dots. The synthesized dots have been characterized using Transmission Electron Microscopy, Xray Diffraction and X-ray Photoelectron Spectroscopy. The optical properties are studied using UV-visible Absorption Spectroscopy and Photoluminescence Spectroscopy. The structural and morphological properties of the nitrogen doped graphene quantum dots were studied through Transmission Electron Microscopy, X-ray diffraction, FTIR spectroscopy, Raman Spectroscopy and X-ray Photoelectron Spectroscopy. The nitrogen doped graphene quantum dot exhibit good linear optical properties with an excitation independent fluorescence at 435nm and an average quantum yield of 7.37%. Third order nonlinear optical properties of the synthesized materials were studied using Z-scan technique utilizing a CW laser at 532nm. Open aperture Z scan and Closed aperture Z scan reveal the reverse saturable absorption property and self-defocusing effect of the material respectively and the nonlinear optical parameters β, n2 and χ (3) were deduced.**

***Index Terms*—Graphene Quantum Dots, Third order nonlinear optical parameters, Z scan**

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Photocatalytic Degradation of Methylene Blue Dye Using Carbon Nanodot

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***Abstract*—The sun light-driven photocatalytic methods could be effective for the removal of major water pollutants like organic dyes, herbicides, pesticides, industrial contaminants and the like.To date, there have been only a few reports on the photocatalytic activity of phosphorus doped carbon nanodot (P-CD). We report herein the photocatalytic activity of undoped carbon nanodots (CD) and phosphorus doped carbon nanodots (P-CD) which effectively degrades Methylene Blue (MB) dye under continuous irradiation of sunlight. The structural as well as optical characterization of P-CD and CD were probed. The morphological and structural characterization of P-CD was done using Transmission Electron Microscopy (TEM) and Fourier Transform Infrared Spectroscopy (FT-IR). The average radius of P-CD was found to be 2.19 nm. UV-Visible spectroscopic studies of CD and P-CD showed maximum optical absorption at 252nm and 283nm.Among these, P-CD exhibits intense emission at 523nm. Significant decrease in the concentration of MB occurred after the addition of photocatalysts CD and P-CD.All the characteristic features of synthesised photocatalystsevidently proved that it is a potential candidate for the effective removal methylene blue in water bodies.**

***Index Terms*—Carbon nanodot, Photocatalysis, Demethylation.**

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Microstructure and Transient Photocurrent Response of Nanostructured Iron Oxychloride

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***Abstract*—Layered materials are potential candidates for various applications due to their large interlayer spacing which permits intercalation of guest molecules, ions etc. Iron based materials are widely chosen due to their cost-effectiveness and non-toxic nature. Iron oxychloride, a layer structured compound, is hence a material of interest in various fields. Facile synthesis of nanostructured iron oxychloride via solid phase thermolysis is discussed in this work. X-ray diffraction confirms the phase purity of the material with a van der Waal's gap of 7.85 Å. FESEM and TEM images confirm the fibrous nanostructure of the material. Broad absorption in the UV-Visible region corresponds to an optical band gap of 1.68 eV. The material does not exhibit photoluminescence, which is consistent with the indirect band gap observed. The transient photocurrent response confirms the photogeneration of charge carriers in the material. The results indicate that the material is a suitable candidate for photocatalytic and photodetector applications.**

REFERENCES

[1] Li, Y.; Gao, C.; Long, R.; Xiong, Y. Mater. Today Chem. 2019, 11, 197-216.
[2] ElMetwally, A. E.; Eshaq, G.; Yehia, F. Z.; Al-Sabagh, A. M.; Kegnæs, S. ACS Catal.2018, 8(11), 10668-10675.

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Gas, Fire Detection and Ranging Robot

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***Abstract*—In our day-to-day life there are lots of deaths due to inhalation of toxic gases and fire accidents. Inhalation of toxic gases during the cleaning of drainage, pipelines, tunnels and wells etc…cause serious health issues and can cause death. If there is a leakage human can't reach easily in tunnels and pipelines because if it contains flammable gases like methane, LPG, CNG. This will lead to blast in pipelines and tunnels and make more causality. Fire accidents are common in our society. It is extremely dangerous when out of control and it can cause severe injuries and can cause death Fire accidents in vehicles, buildings, aircrafts, ships and wildfires are serious problems and it is very difficult for firefighters to control huge fires.**

To avoid these, we are proposing a model "GAS, FIRE DETECTION AND RANGING ROBOT" which helps to find toxic gases, leakage in pipelines, and to detect and extinguish fire in any environments. This robot is designed using Arduino Uno, Bluetooth module, Gas Sensors, IR sensors, Motor driver, Motor, Water pump. We can also range the presence of gas and fire. We can range the distance using counting application of IR sensor. An app is used to display the distance and presence of gas in our mobile. Due to this we can reduce the causality and we can detect the gas and fire in real time application and alert the user. By the use of water pump, we can extinguish the fire without human interference.

***Index Terms*—Toxic gases, detect and extinguish fire, display the distance, flammable gases.**

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Home Automation

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***Abstract*—Home automation is a topic which is gaining popularity day by day, because of large advantages. One can achieve home automation by simply connecting home appliance electrical devices to the internet or cloud storage. The reason for this surge demand of network enabled home automation is reaching the zenith in recent days for its simplicity and comparable affordability. Platforms based on cloud computing help to connect to the things surroundings everyone so that one can find it easy to access anything and everything at any time and place in a user friendly manner using custom defined portals. Hence, cloud act as a front end to access IOT. Here we are assuming a system which can control devices through wireless based network or cloud-based approach. In this proposed system NODMCU based controller is used to connect to cloud via BLYNK application. As a Real time, operating system, control of appliances can be maintained, whenever and wherever we are, just with internet connectivity.**

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Biometric Lock System

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***Abstract*—Security is a prime concern in our day-to-day life. Everyone wants to be as much secure as possible. A BIOMETRIC LOCK is a vital link in a security chain. The microcontroller based digital lock for Doors is an access control system that allows only authorized persons to access a restricted area. The finger print door lock system is a device which has an electronic control assembly attached to it. This system allows the user to unlock the device with a matching algorithm. The application used for this project was designed using the KODULAR APP inventor. Creation of an application by KODULAR is very simple, as we can make an app by combining the blocks based on of our project. The ARDUINO UNO and BLUETOOTH MODULE communicate via serial communication and it makes the code simple. The basic function of the code is to monitor the incoming serial data and compare it with pre defined conditions, if the fingerprint is authorized then open the lock else keep it locked. Because these locks can only be opened by the holder of a unique fingerprint, they provide guaranteed security, speed and convenience.**

eywords- Biometric lock, kodular app, arduino uno, bluetooth module, unique fingerprint, serial communication.

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Comparing Different Classifier Model for Sentiment Analysis [Fine Tuning Distil BERT]

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***Abstract*—Computers were/are called dummy machines. Why? Because they can't make a self-decision. Now computers can make self-decision with machine learning models. Researches, experiments and availability of resources for huge data processing boosted this development in AI field. Leaning and predictions in machine learning is improving day by day. There are various applications of machine learning. Human language processing, predictions and classifications are categorised under Natural Language Processing. Different NLP models fits for different tasks. Bidirectional Encoder Representations from Transformer (BERT) is an NLP model, sentences are fit to the model by predicting it's actual sentiments. This processed data is fine tuned for different NLP tasks. Fine tuning a BERT model can increase the accuracy of decision making for various Natural Language Processing (NLP) tasks. In this project we pre- train DistilBERT model with Stanford Sentiment Treebank 2 (SST2), resulting output is passed onto a classifier model. We aim to compare the scores computed and obtain the confusion matrix for different classifier models which are fine-tuned with corresponding hyper parameters of the classifier models. The classifier models for comparison are Logistic Regression classifier, Gaussian Naive Bayes classifier, Stochastic Gradient Descent classifier, k nearest neighbour classifier, Decision Tree classifier and Support Vector machine.**

***Index Terms*—Natural language processing (NLP), DistilBERT, Sentiment Analysis, SST2**

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