ALLIANCE UNIVERSITY
CENTRE for RESEARCH

RESEARCH PUBLICATIONS

SEPTEMBER 2024

RESEARCH PUBLICATIONS

SEPTEMBER 2024

" Research is creating new knowledge. "

Neil Armstrong

" If we knew what we were doing, it wouldn't be called research, would it? "

Albert Einstein

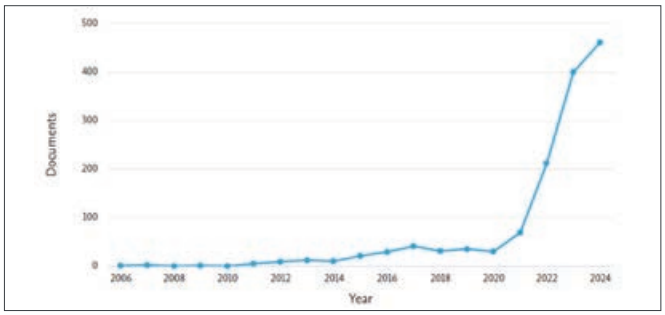
" Research is formalized curiosity. It is poking and prying with a purpose. "

Zora Neale Hurston

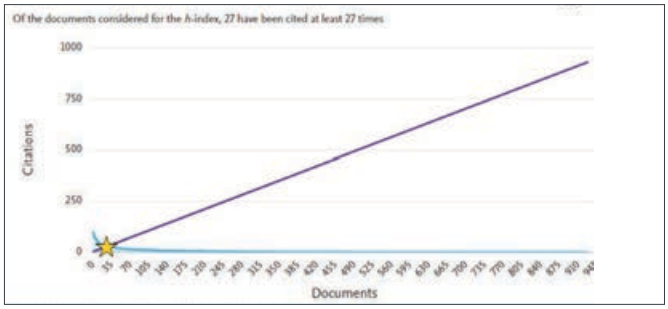
1,351
Documents

443
Authors

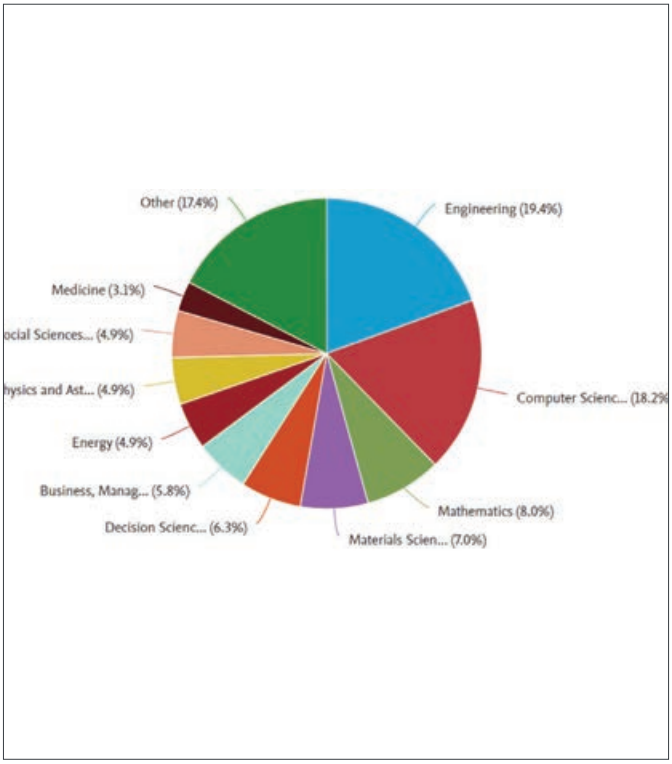
Documents by Year



These documents *h*-index



Documents by Subject Area

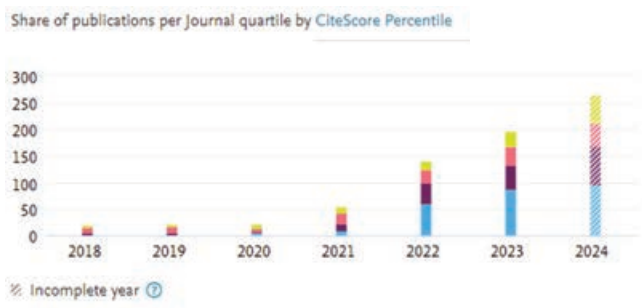


Summary

1132	464	3842	3.4	2.30
Scholarly Output	Authors	Citation Count	Citations per Publication	Field-Weighted Citation Impact

20.9%
All Open Access

Publication by Journal Quartile



Quartiles	Publications	Publication share (%)
Q1 (top 25%)	259	36.1
Q2 (26% - 50%)	184	25.6
Q3 (51% - 75%)	150	20.9
Q4 (76% - 100%)	125	17.4

Cumulative shares	Publications	Publication share (%)
Q1 to Q2 (top 50%)	443	61.7
Q1 to Q3 (top 75%)	593	82.6

Geographical Collaboration Overall

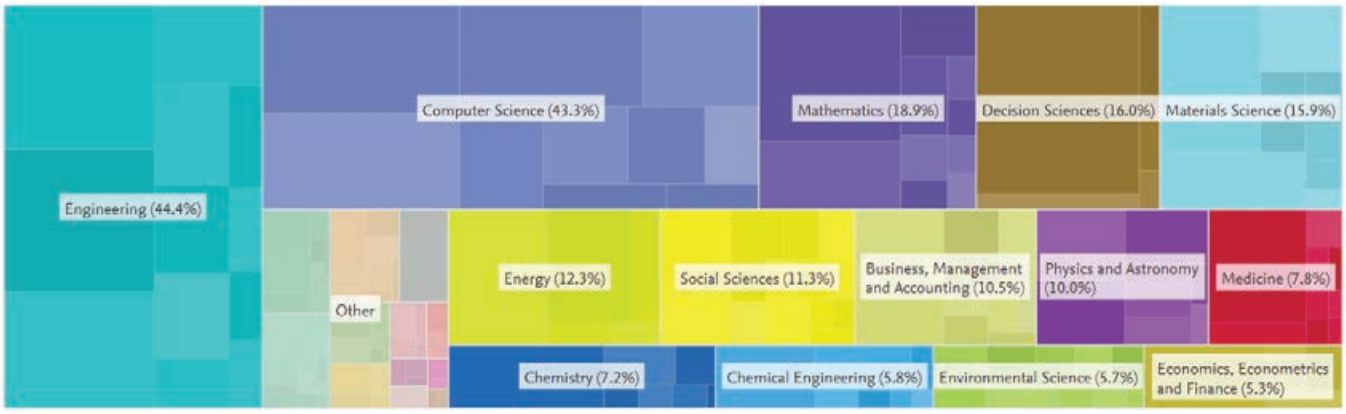
International, national and institutional collaboration by Alliance University in the selected year range.

Metric		Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	33.5%	411	2,483	6.0	2.34
Only national collaboration	47.0%	577	1,703	3.0	2.69
Only institutional collaboration	12.4%	152	179	1.2	0.74
Single authorship (no collaboration)	7.2%	88	169	1.9	0.41

Publication by SDG

Subject Areas

Segment size represents relative publication share per Subject Area. Note that a publication can be mapped to multiple Subject Areas. Lear



ABOUT ALLIANCE UNIVERSITY

Alliance University is a Private University established in Karnataka State by Act No.34 of year 2010 and is jointly recognized by the University Grants Commission (UGC), New Delhi, Bar Council of India (BCI) and the All-India Council for Technical Education (AICTE), New Delhi. Since its inception in 2010, Alliance University has been a forerunner in higher education, calling out to the new generation of scholars, engineers, scientists, artists, people in business, social reformers helping to shape and transform societies and communities through and beyond, around the world. Alliance University with a vibrant and picturesque campus in Bengaluru, one of the fastest growing cities in India, offers more than 20 undergraduate and postgraduate majors to approximately 7000 students of diverse backgrounds. Currently, that trailblazing spirit makes Alliance University, one of the most sought-after universities in the world, featuring top-ranked academic programmes such as Alliance School of Business, Alliance College of Engineering and Design, Alliance School of Law, and Alliance Ascent College, and newly commenced Alliance School of Liberal Arts.

Alliance University is a leader in global education, with world-class infrastructure, state of the art laboratories, international visiting faculty, exchange programmes with leading universities in the US, UK, and European Union, and linkages with Research Labs across the world. Education at Alliance University is designed to inspire our students to become critical thinkers and to lead and change the world.

Indexing/Quartile - Scopus/QA | **Percentile** - 3rd | **Impact Factor** - NA | SDG

17 PARTNERSHIPS FOR THE GOALS

THE DEVELOPMENTAL FACETS OF RELIGIOUS HARMONY IN INDIA

Thomas S.; Satapathy S.

Multidisciplinary Reviews Volume 7, Issue 11 November 2024 Article number e2024267

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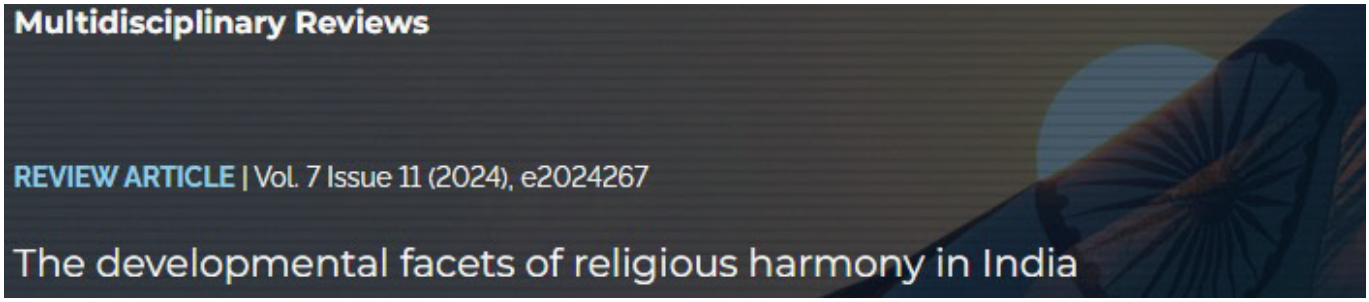

Abstract

India is a multireligious society with religious harmony. India upholds the values of secularism as the basic feature of its Constitution. Respect for other religions and their beliefs is one of the main characteristics of Indian society and the core of religious harmony. The life of each and every Indian citizen is very much rooted in their religious beliefs and practices, with true trust and confidence in constitutional values. The recent development of religious fanatism or radicalism shakes the secularistic pillar of the nation and is a threat to religious harmony. A narrow-minded attitude toward other religions creates a feeling of insecurity and fear of survival among people. This can be considered a disturbing element of religious harmony and one of the major challenges India currently faces. Legislations related to religion can be seen as a small challenge in the developmental process of religious harmony. The judiciary holds an important place in securing and promoting this harmony. Interreligious dialog is a channel through which to ensure harmony in a pluralistic society. This paper analyzes the emergence of religious concord and its applicability to the current Indian context.

Author keywords- anti-conversion; interreligious dialog; irreligion; religious fanatism; religious harmony; religious tolerance; secularism

Indexing/Quartile - Scopus/NA | **Percentile** - 51st | **Impact Factor** - 1.1 | SDG

03 GOOD HEALTH AND WELL-BEING

DEEP LEARNING-BASED HYPERSPECTRAL MICROSCOPIC IMAGING FOR CHOLANGIOCARCINOMA DETECTION AND CLASSIFICATION

Sravan Kumar S.; Sahoo O.P.; Mundada G.; Aala S.; Sudarsa D.; Pandey O.J.; Chinnadurai S.; Matoba O.; **Muniraj I.**; Deshpande A.

Optics Continuum Open Access Volume 3, Issue 8, Pages 1311 - 132415 August 2024
Article number 527576

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Abstract

Cholangiocarcinoma is one of the rarest yet most aggressive cancers that has a low 5-year survival rate (2%-24%) and thus often requires an accurate and timely diagnosis. Hyperspectral Imaging (HSI) is a recently developed, promising spectroscopic-based non-invasive bioimaging technique that records a spatial image (x, y) together with wide spectral ( ) information. In this work, for the first time we propose to use a three-dimensional (3D)U-Net architecture for Hyperspectral microscopic imaging-based cholangiocarcinoma detection and classification. In addition to this architecture, we opted for a few preprocessing steps to achieve higher classification accuracy (CA) with minimal computational cost. Our results are compared with several standard unsupervised and supervised learning approaches to prove the efficacy of the proposed network and the preprocessing steps. For instance, we compared our results with state-of-the-art architectures, such as the Important-Aware Network (IANet), the Context Pyramid Fusion Network (CPFNet), and the semantic pixel-wise segmentation network (SegNet). We showed that our proposed architecture achieves an increased CA of 1.29% with the standard preprocessing step i.e., flat-field correction, and of 4.29% with our opted preprocessing steps.

Indexing/Quartile - Scopus/NA | **Percentile** - 94th | **Impact Factor** - 1.1 | SDG

FACILE SUSTAINABLE UPCYCLING OF FLY ASH INTO MULTIFUNCTIONAL DURABLE SUPERHYDROPHOBIC COATINGS

Roy S.; Pham H.D.; Latif M.; Kim J.W.; Park G.; Kim J.; Ghosh B.D.; Goh K.L.

Progress in Organic Coatings Volume 197 December 2024 Article number 108770

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Abstract

Fly ash (FA), a hazardous byproduct of coal combustion in power plants, poses significant environmental and health risks due to improper disposal and utilization. This study introduces a facile, sustainable, and cost-effective method for converting FA into a robust superhydrophobic material for various substrates. -FA particles are modified with polydopamine (PD) in water and covalently grafted with octadecyl amine (ODA) via the Michael Addition-Schiff Base reactions, resulting in robust superhydrophobic FA (SH-FA) with a water contact angle (WCA) of 163° (±3.1). When applied as a coating to jute, cotton, polyester fibers, PU sponge, and wood, they became superhydrophobic, with WCAs ranging from 154.7 to 161.2° except for the wood substrate, which achieved a WCA of 132° (±3°). The coated polyester fabric exhibited remarkable durability, retaining consistent WCA values after 70 abrasion cycles, 75 adhesive tape peelings, and 20 detergent washing cycles. It also showcased excellent self-cleaning properties, effectively repelling dust and various liquids. Additionally, the coated PU sponge demonstrated exceptional performance in separating oil from different oil/water mixtures, achieving rapid separation of organic solvents within seconds and maintaining a separation efficiency of over 98% even after 12 reuse cycles. These results indicate the potential for transforming FA through effective management.

Author keywords- Abrasion; Fly ash; Self-cleaning; Superhydrophobic; Sustainable; Waste

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CLIMATE CHANGE: POLICY, INSTITUTIONAL, AND LEGAL FRAMEWORK

Dubash N.K.; Pillai A.V.; **Sridhar A.**

The Oxford Handbook of Environmental and Natural Resources Law in India Pages 549 - 56818 July 2024

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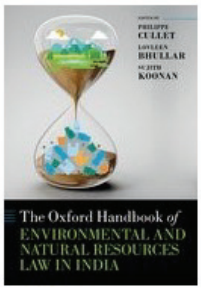

CHAPTER

28 Climate Change: Policy, Institutional, and Legal Framework Get access >

Navroz Kersi Dubash, Aditya Valiathan Pillai, Anirudh Sridhar

https://doi.org/10.1093/oxfordhb/9780198884682.013.31 Pages 549–568

Published: 18 July 2024

Abstract

Transforming towards a low-carbon, climate-resilient society will require reimagining existing governance arrangements. This chapter documents how India's policies, institutions, and legal structures have changed in response to climate change. These developments have been opportunistic in character, with policy changes preceding institutional development. Policies are many and widespread, therefore, but lack strategic coherence. A more deliberate approach would bring with it enhanced governance requirements, including new structures for coordination, deliberation, and strategy-setting. This chapter pays attention to the prospects for climate law in India in this context, discussing different approaches to constructing firmer legal foundations for climate action. Transforming towards a low-carbon, climate-resilient society will require reimagining existing governance arrangements. This chapter documents how India's policies, institutions, and legal structures have changed in response to climate change. These developments have been opportunistic in character, with policy changes preceding institutional development. Policies are many and widespread, therefore, but lack strategic coherence. A more deliberate approach would bring with it enhanced governance requirements, including new structures for coordination, deliberation, and strategy-setting. This chapter pays attention to the prospects for climate law in India in this context, discussing different approaches to constructing firmer legal foundations for climate action.

Author keywords- Climate governance; Climate institutions; Climate law; Climate policy; Framework climate laws

Indexing/Quartile - Scopus/Q3 | **Percentile** - 37th | **Impact Factor** - 0.9 | SDG

DISCOVERING CONSUMER BEHAVIOR TOWARDS BACK-OF-PACK NUTRITION LABELS: A SYSTEMATIC LITERATURE REVIEW

Priya K.M.; **Babu K.**; Sujatha

Current Research in Nutrition and Food Science Open Access Volume 12, Issue 2, Pages 502 – 526 August 2024

Dr. Kiran Babu N C
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Abstract

This systematic literature review aims to examine the impact of back-of-pack (BOP) labels on food manufacturers' practices in the field of consumer behaviour research. The review comprehensively analyses a wide range of articles spanning over two decades to provide an up-to-date and comprehensive analysis of the subject matter. It focuses specifically on how BOP labels affect consumers, food manufacturers' behaviors and practices. The findings highlight that BOP labels conveying intuitive information effectively prompt product reformulation, particularly in reducing unhealthy nutrients such as sodium, sugar, and calories. Voluntary BOP labeling has limited uptake and is often applied to already healthier products. Consumers and food producers' response varies based on label design and enforcement type, suggesting strategic labeling of healthier choices. The review provides valuable insights for future public health research and policymaking efforts, emphasizing the importance of mandatory policies and specific guidance in BOP labels. This research brings novelty by comprehensively examining the impact of back-of-pack (BOP) labeling on consumers and food manufacturers' practices. The findings contribute to the literature by highlighting the differential effects of mandatory and voluntary BOP labeling approaches and offering insights into label design and enforcement types. As per the researcher knowledge there is no available systematic literature review (SLR) specifically focusing on BOP labeling in recent years. Future research should explore the long-term impacts of mandatory versus voluntary BOP labeling on consumer dietary habits and food manufacturers' product reformulation strategies.

Author keywords- Back of Pack Nutrition Labelling (Bopnl); Food Labeling; Food Sector; Health Outcomes; Nutritional Regulations; Product Adaptation

Indexing/Quartile - Scopus/Q1 | **Percentile** - 89th | **Impact Factor** - 6.2 | SDG

11 SUSTAINABLE CITIES AND COMMUNITIES

FRICTIONAL STABILITY OF PUMICE-REINFORCED LIGHTWEIGHT MAGNESIUM COMPOSITE IN AMBIENT AND ELEVATED TEMPERATURE ENVIRONMENTS

Chenrayan V.; Shahapurkar K.; Manivannan C.; Soudagar M.E.M.; Fouad Y.; Kalam M.A.; Ali M.M.; Bashir M.N.

Journal of Materials Research and Technology Open Access Volume 32, Pages 3465 - 34751 September 2024

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Abstract

Lightweight materials with better resistance to sliding wear are prominent candidates for automobile brake drums, clutch pads and cylinder block applications to facilitate fuel economy. This attempt is reserved to cater to materials with higher tribological quality needs. Less dense foamy pumice stone particles were involved in three different percentages (5, 10, and 15 wt%) to reinforce lightweight AZ31 Mg alloy. A stir-assisted squeeze casting technique was pursued to process the composite and refine the grain structure. A phase detection, elemental mapping and microstructure study were done through X-ray diffraction (XRD), energy dispersive spectroscopy (EDS), and scanning electron microscopy (SEM), respectively. An experimental dry sliding wear scrutiny was administered using a pin-on-disc apparatus by considering: (i) ambient and elevated temperature environments and (ii) three different levels of loads. The results reveal a significant drop in wear loss and a frictional coefficient for 15% pumice-loaded composite than the base alloy. Post-wear examination acknowledges the fact that the ambient temperature wear is governed by adhesive-abrasive wear and high temperature is by abrasive wear mechanisms. Worn-out scrutiny authenticates the presence of oxide layers and their role in lubrication. A comparative study with previous works upholds the novel magnesium composite is the right candidate for the mentioned automobile applications.

Author keywords- Abrasive wear; Adhesive wear; Coefficient of friction; Oxide layers; Pumice; Squeeze casting

Indexing/Quartile - Scopus/Q1 | **Percentile** - 85th | **Impact Factor** - 6.2 | SDG

ENHANCING MECHANICAL PERFORMANCE AND WATER RESISTANCE OF CAREYA-BANANA FIBER EPOXY HYBRID COMPOSITES THROUGH PLA COATING AND ALKALI TREATMENT

Rao H.J.; Singh S.; Singh N.; Ramulu P.J.; Santos T.F.; Santos C.M.; Senthamaraikannan P.; **Suyambulingam I.**; Gapsari F.; Raharjo R.; Mavinkere Rangappa S.; Siengchin S.

Journal of Materials Research and Technology Open Access Volume 32, Pages 4304 - 43151 September 2024

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Abstract

The ongoing research focuses on exploring the potential of Careya arborea (CA) fiber, banana fiber (BF), and epoxy composites as sustainable alternatives to petroleum-based products and synthetic fibers. The aim is to enhance the interfacial bonding and overall performance of these composites while reducing reliance on traditional materials. The study investigates the adhesion between CA fiber, BF (both chemically treated), and epoxy with polylactic acid (PLA) coating. Specifically, it examined how the PLA coating affects the mechanical properties, including tensile strength, flexural strength, impact resistance, and water absorption behavior, of the fabricated composites. Mechanical characterizations of the composite specimens are conducted following ASTM standards. The PLA-coated and NaOH-treated specimens significantly improved their tensile strength (20.56%) and flexural strength (16.7%), and significantly reduced their water absorption capacity (by 47.6%) compared to the untreated ones. These findings highlight the promise of using treated natural fibers and PLA coatings to create more sustainable and high-performance composite materials.

Author keywords- banana fiber; Careya arborea fiber; Hybrid composites; NaOH treatment; Natural fiber composites

Indexing/Quartile - Scopus/Q3 | **Percentile** - 63rd | **Impact Factor** - 2.07 | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ROADMAP ON COMPUTATIONAL METHODS IN OPTICAL IMAGING AND HOLOGRAPHY [INVITED]

Rosen J.; Alford S.; Allan B.; Anand V.; Arnon S.; Arockiaraj F.G.; Art J.; Bai B.; Balasubramaniam G.M.; Birnbaum T.; Bisht N.S.; Blinder D.; Cao L.; Chen Q.; Chen Z.; Dubey V.; Egiazarian K.; Ercan M.; Forbes A.; Gopakumar G.; Gao Y.; Gigan S.; Gocłowski P.; Gopinath S.; Greenbaum A.; Horisaki R.; Ierodiaconou D.; Juodkazis S.; Karmakar T.; Katkovnik V.; Khonina S.N.; Kner P.; Kravets V.; Kumar R.; Lai Y.; Li C.; Li J.; Li S.; Li Y.; Liang J.; Manavalan G.; Mandal A.C.; Manisha M.; Mann C.; Marzejon M.J.; Moodley C.; Morikawa J.; **Muniraj I.**;

Applied Physics B: Lasers and Optics Open Access Volume 130, Issue 9 September 2024 Article number 166

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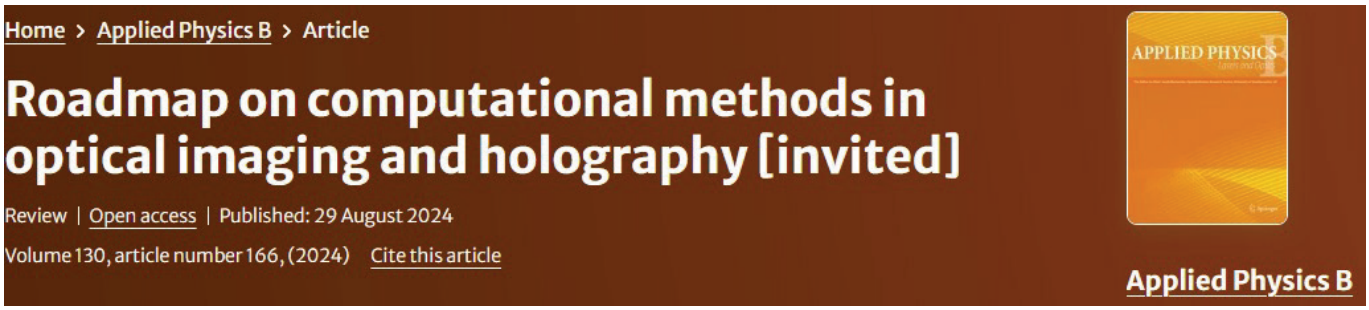

Abstract

Computational methods have been established as cornerstones in optical imaging and holography in recent years. Every year, the dependence of optical imaging and holography on computational methods is increasing significantly to the extent that optical methods and components are being completely and efficiently replaced with computational methods at low cost. This roadmap reviews the current scenario in four major areas namely incoherent digital holography, quantitative phase imaging, imaging through scattering layers, and super-resolution imaging. In addition to registering the perspectives of the modern-day architects of the above research areas, the roadmap also reports some of the latest studies on the topic. Computational codes and pseudocodes are presented for computational methods in a plug-and-play fashion for readers to not only read and understand but also practice the latest algorithms with their data. We believe that this roadmap will be a valuable tool for analyzing the current trends in computational methods to predict and prepare the future of computational methods in optical imaging and holography.

Indexing/Quartile - Scopus/ | **Percentile** - | **Impact Factor** - | SDG 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE 17 PARTNERSHIPS FOR THE GOALS

ADAPTING TO REMOTE WORK: NAVIGATING SUSTAINABILITY IMPACTS THROUGH BASIC SCIENCES IN INDIAN IT ENTERPRISES

Mukherjee S.; Neogi S.; Verma A.

Unleashing the Power of Basic Science in Business Pages 311 – 331 26 July 2024

Mr. Sayantan Mukherjee
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Alliance University, Bangalore, INDIA

Abstract

The trend towards remote and hybrid work patterns in India's IT companies could have beneficial and bad consequences on the industry's survival. This study aims to synthesise the latest management research and case studies and offer practical conclusions, supported by relevant basic science principles. In response to the COVID-19 pandemic, several Indian companies have adopted remote and hybrid work arrangements. This study report seeks to understand the relationship between sustainability performance, new ways of working, workspace consumption patterns, and methods for reducing physical workspace use by individuals and businesses, supported by psychological and environmental evidence. Polls of Indian IT firm managers and executives found that innovative working practices reduce office space, improving sustainability metrics.

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Indexing/Quartile - Scopus/Q1 | **Percentile** - 56th | **Impact Factor** - 2.6 | SDG

FRACTIONAL WHALE DRIVING TRAINING-BASED OPTIMIZATION ENABLED TRANSFER LEARNING FOR DETECTING AUTISM SPECTRUM DISORDER

GV S.; **Paul P.M.**; Gudimindla H.; Rachapudi V.

Computational Biology and Chemistry Volume 113 December 2024 Article number 108200

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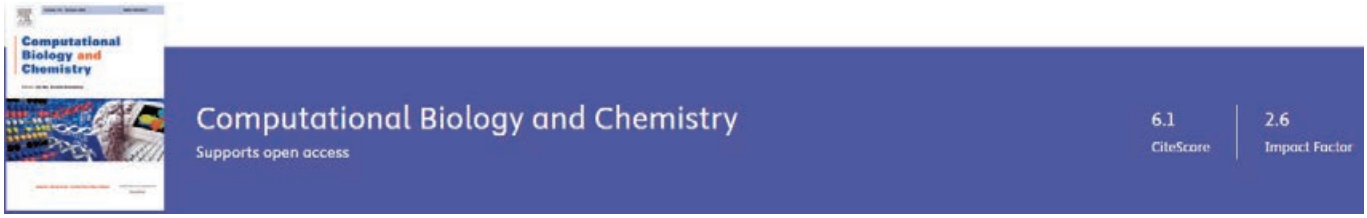

Abstract

Autism Spectrum Disorder (ASD) is a neurological illness that degrades communication and interaction among others. Autism can be detected at any stage. Early detection of ASD is important in preventing the communication, interaction and behavioral outcomes of individuals. Hence, this research introduced the Fractional Whale-driving Driving Training-based Based Optimization with Convolutional Neural Network-based Transfer learning (FWDTBO-CNN_TL) for identifying ASD. Here, the FWDTBO is modelled by the incorporation of Fractional calculus (FC), Whale optimization algorithm (WOA) and Driving Training-based Optimization (DTBO) that trains the hyperparameters of CNN-TL. Moreover, the Convolutional Neural Networks (CNN) utilize the hyperparameters from trained models, like Alex Net and Shuffle Net in such a way that the CNN-TL is designed. To improve the detection efficiency, the nub region was extracted and carried out with the functional connectivity-based Whale Driving Training Optimization (WDTBO) algorithm. Moreover, the TL is tuned by the FWDTBO algorithm. The result reveals that the ASD detection technique, FWDTBO-CNN-TL acquired 90.7 % accuracy, 95.4 % sensitivity, 93.7 % specificity and 93 % f-measure with the ABIDE-II dataset.

Author keywords- Alex Net; Driving Training Optimization; Fractional calculus; ShuffleNet; Whale optimization algorithm

Indexing/Quartile - Scopus/Q1 | **Percentile** - 92nd | **Impact Factor** - 5.6 | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CHARACTERIZATION OF ALKALI TREATED AND UNTREATED ABUTILON INDICUM FIBERS

Arun Ramnath R.; Senthamaraikannan P.; Gautham V.; **Indran S.**; Gapsari F.

Industrial Crops and Products Volume 22215 December 2024 Article number 119719

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Abstract

The primary objective of this study is to characterize Abutilon indicum stem Fibres (AIF) obtained through the water retting method. The fundamental attributes were investigated for untreated and alkali-treated AIFs, including physical and chemical properties, thermal stability as determined by thermogravimetric analysis, functional groups as identified by Fourier transform infrared spectroscopy (FTIR), crystalline properties as determined by X-ray diffraction (XRD) analysis, surface roughness as assessed by atomic force microscopy (AFM), and surface textures as determined by scanning electron microscopy (SEM) images. Results convey that, the surface-modified fibers upon alkali treatment exhibit an increase in cellulose composition from 56.12 % to 65.43 % and a reduction in hemi-cellulose, lignin, moisture and wax content. Such a higher composition of cellulose content in the fibers influenced the surface roughness, crystalline size and crystalline index (CI) which thereby indicates the presence of Cellulose III1 and other crystallites arranged in order over the alkali-treated AIFs. Alkali treatment increased the degradation temperature and thermal stability from 1750 C to 2020 C and 302.60 C to 3400 C, respectively. From the above-mentioned test results, it is evident that the surface-modified AIFs from alkali treatment provided more desired results than the untreated counterparts.

Author keywords- Abutilon indicum Fibers (AIFs); Alkali Treatment (AT); Cellulose; Greener Composites and Surface Roughness; Thermal Stability

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

02 ZERO HUNGER

08 DECENT WORK AND ECONOMIC GROWTH

IOT SOLUTIONS FOR CROP PROTECTION: SAFEGUARDING AGRICULTURAL 6G NETWORKS

Shelke C.; Naidu I.E.S.; Himabindu M.; Rakesh C.; Jain A.; Dhanraj J.A.

6G Security Education and Multidisciplinary Implementation Pages 269 - 2869
August 2024

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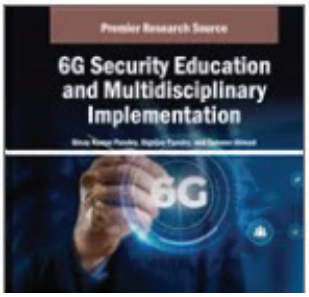

6G Security Education and Multidisciplinary Implementation

Binay Kumar Pandey, Digvijay Pandey, Tanveer Ahmad

Release Date: August, 2024 | Copyright: © 2024 | Pages: 395

DOI: 10.4018/979-8-3693-7421-4

ISBN13: 9798369374214 | ISBN13 Softcover: 9798369374221 | EISBN13: 9798369374238

Abstract

The convergence of internet of things (IoT) solutions and agricultural practices has resulted in revolutionary alterations in crop management and protection. With the emergence of sophisticated connectivity technologies such as 6G networks, the capacity to protect agricultural assets and improve crop protection has reached unparalleled levels. The current period of swift technological progress presents an opportunity for the incorporation of internet of things (IoT) solutions into the upcoming 6G networks. This integration has the potential to significantly transform crop protection techniques, guarantee food security, and optimize agricultural productivity.

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

AN ANALYSIS ON THE FUTURE USAGE OF METAVERSE IN THE MARKETING EVENT INDUSTRY IN INDIA: AN ISM APPROACH

Sahdev S.L.; Krishnan C.; Durans A.; Hassan A.; Thakur J.

New Technologies in Virtual and Hybrid Events Pages 146 - 16312 August 2024

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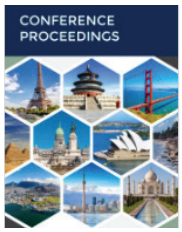

2024 4th International Conference on Pervasive Computing and Social Networking (ICPCSN)

May 3 2024 to May 4 2024
Salem, India

ISBN: 979-8-3503-8634-9

Abstract

The term metaverse has recently attracted much attention and is being widely dis-cussed in various industries around the world, including marketing and events. This research explores future possibilities of the metaverse in the context of the Indian marketing event industry through an ISM analysis. Consequently, the metaverse-an environment that contains interactive digital objects and persons-presents new opportunities for improving the effectiveness of marketing events in terms of interest, accessibility and innovation. Thus, the use of ISM in the context of this research allows to determine the most critical enablers and restraints for the adoption of the metaverse in Indian marketing events. The chapter provides clear tactical implications for using metaverse technologies to enhance traditional formats of events, interact with the audience, and adapt marketing and communication solutions to the Indian market.

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

STRATEGIC INTEGRATION OF BASIC SCIENCE FOR EDUCATIONAL SERVICES IN BUSINESS

Verma A.; **Mukherjee S.; Neogi S.**

Unleashing the Power of Basic Science in Business Pages 163 - 18226 July 2024

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Strategic Integration of Basic Science for Educational Services in Business

Ajay Verma, Sayantan Mukherjee, Shromona Neogi

Source Title: Unleashing the Power of Basic Science in Business

Copyright: © 2024 | Pages: 20

DOI: 10.4018/979-8-3693-5503-9.ch009

Abstract

In the midst of a monumental era characterized by the profound impact of digital transformation across industries, the strategic integration of information and communication technologies (ICT) into educational services has risen to the forefront as an imperative within the expansive landscape of business operations. This chapter embarks on an extensive and meticulous Bibliometric analysis, delving into the intricate interplay between ICT, education, and business. Leveraging sophisticated bibliometric techniques meticulously applied to vast academic databases, this study navigates through the complex terrain of this interdisciplinary realm, uncovering nuanced trends, intricate patterns, and pivotal themes that shape its landscape. Spanning a comprehensive analysis of articles spanning the past decade, our research unveils the dynamic evolution and trajectory of scholarship within this domain, shedding light on the myriad facets of its development.

Indexing/Quartile - Scopus/NA | **Percentile** - 92nd | **Impact Factor** - 5.6 | SDG

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PHYSIOCHEMICAL PROFILING OF BIOPLASTICIZER DERIVED FROM FICUS BENGHALENSIS LEAVES FOR ECO-FRIENDLY APPLICATIONS

Kanagaraj A.; Senthamaraikannan P.; Selvaraj R.C.A.; Karthic S.; Divakaran D.; **Suyambulingam I.**; Siengchin S.

Industrial Crops and Products Volume 22215 December 2024 Article number 119535

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Abstract

Ficus benghalensis is a tree belonging to the Moraceae family, reaching a height of 20–30 m and featuring branches that spread out widely, along with roots that grow in the air. F. benghalensis leaf cellulose (FBLC) is a type of biodegradable plasticizer with a restricted range of uses. Using pyrolysis and chemical reactions, this research aimed to produce a biodegradable plasticizer from natural sources. Once extracted, microscopic investigations evaluated the plasticizer's suitability for use in lightweight packaging. The prominent Fourier transform infrared peaks ranging from 644 to 1124 cm−1 indicated the presence of C—Cl and C—F bonds. Additionally, the peak at 1524 cm−1 corresponds to the C—OH stretching in FBLC plasticizer, which is an organic molecule. The thin, downward UV peak indicated the presence of lignin or hemicelluloses. A strong transmission peak was observed at wavelengths of 240 and 366.34 nm. The FBLC plasticizers could be responsible for the size variations seen in the XRD view. The presence of a prominent thermogravimetric analysis (TGA) peak at an angle of 2 = 28.35° indicated that the plasticizers had a significant enhancement on its crystalline properties. The material exhibits thermal stability up to a temperature of 271 °C. The FBLC plasticizer's kurtosis (Rku) value ranged from 13.44 to 15.74, with a maximum value of 15.74 generating spikes on the produced surface and a minimum value of 13.44 skewing atomic force microscopy data. Scanning electron microscopy analysis revealed the presence of micro-sized fillers, plasticizers particles, rough surfaces on the fillers, and well-matched rough surfaces. The EDX test confirmed that the FBLC was free from any elemental impurities and showed a high level of purity. The Rq or Rrms value of FBLC surface roughness, measured at 48.28 µm, represented the square root of amplitudes relative to the midline. A significant reduction at 71.76 °C demonstrated the main

thermal transition of the biopolymer, also known as the glass transition temperature of FBLC. In summary, the research findings suggested that bioplasticizers are a viable substitute for synthetic chemicals commonly used in the lightweight packaging industry.

Author keywords- Bioplasticizers; Extraction; Ficus benghalensis leaf cellulose (FBLC); Microscopical characterization; Packaging application

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

ADOPTION OF ARTIFICIAL INTELLIGENCE-ENABLED BOTS IN THE HEALTHCARE EDUCATION INDUSTRY: A COST-BENEFIT STUDY

Neogi S.; Mukherjee S.; Verma A.

Unleashing the Power of Basic Science in Business Pages 332 - 35226 July 2024

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Adoption of Artificial Intelligence-Enabled Bots in the Healthcare Education Industry: A Cost-Benefit Study
Shromona Neogi, Sayantan Mukherjee, Ajay Verma
Source Title: Unleashing the Power of Basic Science in Business
Copyright: © 2024 | Pages: 21
DOI: 10.4018/979-8-3693-5503-9.ch017

Abstract

A few instances of artificial intelligence (AI) enabled chatbots and robots that are now being utilised by the healthcare industries are chatbots, delivery robots, robot concierges, conveyor healthcare services, and self-service information/check-in/ check-out kiosks. Despite substantial advancements made in the study of social robots, this chapter aims to partially fill the hole left by the dearth of earlier research on the topic of chatbots in the medical sector. The chapter examines the benefits and drawbacks of adopting AI-enabled chatbots by the healthcare industry, which consists of establishments such as hospitals, nursing homes, telemedicine centers, health camps, and other types of healthcare-providing firms. According to the findings of the study, AI-enabled chatbots are adopted is affected by a variety of factors, including the cost of labour and technology, the willingness of patients to have their needs met by a chatbot, the cultural characteristics of both patient and healthcare service providers, the technological characteristics of AI-enabled chatbot solutions, and others.

11 SUSTAINABLE CITIES AND COMMUNITIES

Indexing/Quartile - Scopus/Q1 | **Percentile** - 88th | **Impact Factor** - 2.5 | SDG

SENTIMENTAL IMPACT OF FAKE NEWS ON SOCIAL MEDIA USING AN INTEGRATED ENSEMBLE FRAMEWORK

Arora S.; Agrawal V.; Kumar D.; Arora S.; **Banshal S.K.**

Social Network Analysis and Mining Volume 14, Issue 1December 2024
Article number 185

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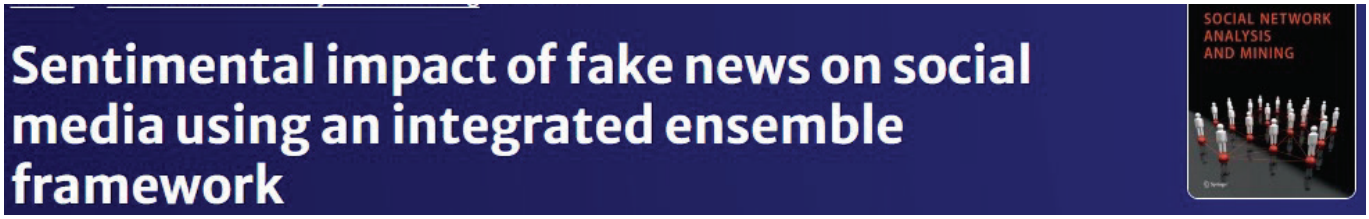

Abstract

Social media has transformed the way we interact with each other in the twenty-first century. As it continues to evolve and shape our lives, it is important to consider both the benefits and the potential risks of these platforms. One of these risks is the spread of misinformation over global platforms like Twitter. The rapid dissemination of false information can have far-reaching consequences, influencing public opinion and potentially leading to real-world harm. One critical area of concern is the impact of fake news on mental health and well-being. This study aims to explore the emotional responses elicited by fake news and provide insights into the psychological effects of false information circulated through social media. To achieve this, a novel Ensemble Hard Voting Classifier (EHVC), which accurately classifies tweets as either fake or real with an accuracy of 93.84% has been developed. Additionally, sentiment analysis has been conducted, yielding an accuracy of 83.02%. These two stand-alone models are then integrated into a unified architecture that analyzes the sentiments triggered by fake news in real-time using the Twitter API. Additionally, this research validates the significance of the relationship between fake news and sentiments in order to substantiate that degrading mental health is a direct consequence of fake news by employing the Pearson's Chi-Squared test for independence. The proposed methodology results have also been compared and analyzed against conventional machine learning algorithms to demonstrate the efficacy of the EHVC model. This research not only highlights the psychological impacts of fake news but also underscores the importance of addressing misinformation on social media platforms.

Author keywords- Ensemble; Fake news; Machine learning; Sentiment analysis; Social media

07 AFFORDABLE AND CLEAN ENERGY

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

CHOLANGIOCARCINOMA CLASSIFICATION USING SEMI-SUPERVISED LEARNING APPROACH

Sikhakolli S.K.; Aala S.; Chinnadurai S.; **Muniraj I.**; Deshpande A.

3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 in Proceedings Optica Imaging Congress 2024, 3D, AOMS, COSI, ISA, pcAOP - Part of Optica Imaging Congress 2024 3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 - Part of Optica Imaging Congress Toulouse 15 July 2024 through 19 July 2024 Code 202460

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Abstract

This article introduces a novel semi-supervised learning method for Cholangiocarcinoma detection using inherent statistical parameters of the image on the multidimensional Choledochal dataset. Results closely match the pathologist's annotations, validated by image similarity indices.

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

A NOVEL AND ROBUST PREPROCESSING TECHNIQUE FOR BLOODSTAIN CLASSIFICATION IN HYPERSPECTRAL IMAGING USING ML

Suresh A.; Sikhakolli S.K.; **Muniraj I.**; Deshpande A.; Elumalai K.; Chinnadurai S. *3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 in Proceedings Optica Imaging Congress 2024, 3D, AOMS, COSI, ISA, pcAOP - Part of Optica Imaging Congress2024 3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 - Part of Optica Imaging Congress Toulouse 15 July 2024 through 19 July 2024 Code 202460*

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Abstract

In crime investigations, rapid bloodstain identification is crucial. Hyperspectral imaging (HSI) offers a non-destructive solution. Our investigation into preprocessing techniques to improve classification accuracy and reduce computation time reveals that the best options are max normalization and mean filter.

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG 07 AFFORDABLE AND CLEAN ENERGY

BIOMASS DERIVED CELLULOSE NANOFIBER LOADED PVA-NANOCURCUMIN COATING FOR EXTENDING THE SHELF LIFE OF MANDARIN ORANGES (CITRUS RETICULATA)

Anjana Krishna S.V.; Umadevi S.; Midhun Dominic C.D.; **Parameswaranpillai J.**; Asha Bhanu A.V.; Susan George J.; Sreedevi T.; Thomas S.; Poornima Vijayan P.

Hybrid Advances Volume 5April 2024 Article number 100162

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Abstract

The concern over agricultural waste disposal can be resolved by converting them into value-added products. Here, sustainable fruit coatings and films have been developed via. wealth from waste concept. The cellulose nanofibers (CNF) have been extracted from the waste onion skin. The isolated CNF has been characterised using scanning electron microscopy (SEM), transmission electron microscopy (TEM), optical microscopy (OM), dynamic light scattering (DLS) and solid-state 13C NMR spectroscopy. A combination of cellulose nanofiber (CNF) and nanocurcumin in polyvinyl alcohol (PVA) matrix has been used for the fabrication of coating over fresh mandarin oranges. The effect of nanocurcumin in PVA-CNF nanocomposite on the post-harvest maintenance of mandarin oranges has been investigated. The morphology of the prepared films is studied by SEM and atomic force microscopy (AFM). The quality of the orange fruits coated using the above formulation by dip coating method was analysed via. weight loss analysis, total soluble solid (TSS), pH, titrable acidity (TA) and antioxidant activities. It was found that the nanocurcumin incorporated PVA-CNF coating was effective in reducing mass loss and maintaining the physiochemical properties of oranges in comparison with other formulations. The developed method could be extended to use as food packaging films, which would be a sustainable solution for agricultural waste valorisation and plastic pollution. Through this research work, we propose an environment friendly approach for the preservation of fruits and vegetables.

Author keywords- Cellulose nanofiber (CNF); Fruit coating; Mandarin oranges; Nanocurcumin; Polyvinyl alcohol (PVA) films

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

INVESTIGATING THE EFFICACY OF DEEP LEARNING NETWORKS FOR 3D IMAGING AND PROCESSING

Muniraj I.

3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 in Proceedings Optica Imaging Congress 2024, 3D, AOMS, COSI, ISA, pcAOP - Part of Optica Imaging Congress2024 3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 - Part of Optica Imaging Congress Toulouse 15 July 2024 through 19 July 2024 Code 202460

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Abstract

Artificial intelligence techniques, such as machine learning (ML) and deep learning (DL), are now widely used in various vision-based applications. Here, we summarize some of the most recent advances in Computational Integral Imaging using DL networks.

Indexing/Quartile - Scopus/Q2 | **Percentile** - 64th | **Impact Factor** - NA | SDG

11 SUSTAINABLE CITIES AND COMMUNITIES

15 LIFE ON LAND

HEURISTIC FOREST FIRE DETECTION USING THE DEEP LEARNING MODEL WITH OPTIMIZED CLUSTER HEAD SELECTION TECHNIQUE

Sengottaiyan N.; Ananthi J.; Rajesh Sharma R.; Hamsanandhini S.; Akey S.; Chinnaiyan R.; Gemeda K.A.

Journal of Computer Networks and Communications Open Access Volume 20242024
Article number 6569596

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Journal of
Computer Networks and Communications

Forward Series

Research Article | Open Access

Heuristic Forest Fire Detection Using the Deep Learning Model with Optimized Cluster Head Selection Technique

Sengottaiyan N., Ananthi J., Rajesh Sharma R., Hamsanandhini S., Sungheetha Akey, Chinnaiyan R.,

Abstract

Disaster prediction systems enable authorities and communities to identify and understand the risks associated with various natural and man-made disasters. Disaster prediction systems are essential tools for enhancing public safety, reducing the impact of disasters, and enabling more informed and strategic decision-making across various sectors. Their development and implementation represent a crucial aspect of modern disaster risk management and resilience systems. This novel technique introduces a modern approach to forest fire prediction by integrating a deep learning model with an optimized cluster head selection technique. The major goal is to augment the accuracy and efficiency of forest fire prediction, leveraging the capabilities of advanced machine learning algorithms and optimized sensor network management. The proposed system comprises two core components: a deep learning model for predictive analysis and an optimized selection process for cluster heads in sensor networks. The deep learning model utilizes various environmental data parameters such as humidity, wind speed, temperature and former fire incidents. These parameters are processed through a sophisticated neural network architecture designed to identify patterns and correlations that signify the likelihood of a forest fire. The model is trained on historical data to improve its predictive accuracy, and its performance is continuously evaluated against new data. Simultaneously, the optimized cluster head selection using the cat-mouse optimization technique plays a crucial role in efficiently managing sensor networks deployed in forests. The integration of these two components results in a robust system capable of predicting forest fires with high precision. The system not only assists in early detection and timely alerts but also contributes to the strategic planning of firefighting and resource allocation efforts. This approach has the prospective to significantly lessen the impact of forest fires, thereby protecting ecosystems and communities.

17 PARTNERSHIPS FOR THE GOALS

Indexing/Quartile - Scopus/Q1 | **Percentile** - 96th | **Impact Factor** - 10.8 | SDG

OUTCOME-BASED TYPOLOGY OF SOCIAL ENTERPRISES: INTERLACING INDIVIDUAL TRANSFORMATION, CAPITAL PROVISION, AND SOCIETAL INFLUENCE

Polychronopoulos G.; Lukeš M.; Sansone G.; **Agrawal A.**; Ulrich-Diener F.; Šlapáková Losová V.

Journal of Management Studies Open Access 2024

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JOURNAL OF MANAGEMENT STUDIES

Original Article | Open Access

Outcome-Based Typology of Social Enterprises: Interlacing Individual Transformation, Capital Provision, and Societal Influence

Abstract

Social entrepreneurship has emerged as a global phenomenon aimed at tackling societal grand challenges through market-based activities. A holistic understanding of social enterprise outcomes is crucial for reflecting their effectiveness in meeting social objectives and informing internal organizational processes. This study explores the outcomes of social enterprises through a comparative qualitative analysis of 49 social ventures in Austria, Canada, Czechia, Denmark, Germany, Greece, India, Italy, the Netherlands, and the United States, spanning diverse sectors. Three key outcome dimensions are identified: individual transformation, capital provision, and societal influence. Our analysis results in a typology of seven distinct types of social enterprises, each integrating these dimensions to varying degrees. Utilizing this typology, we reveal how social enterprises navigate barriers to solving complex social and environmental problems, illustrating the dynamic interplay between outcome dimensions and the importance of multi-objective organizing — beyond hybrid organizing — in addressing complex societal issues.

Author keywords- grand challenges; social enterprises; social entrepreneurship; social impact; social outcomes; typology

Indexing/Quartile - Scopus/Q4 | **Percentile** - 7th | **Impact Factor** - NA | SDG

EMOTION RECOGNITION WITH A HYBRID VGG-RESNET DEEP LEARNING MODEL: A NOVEL APPROACH FOR ROBUST EMOTION CLASSIFICATION [RECONOCIMIENTO DE EMOCIONES CON UN MODELO HÍBRIDO DE APRENDIZAJE PROFUNDO VGG-RESNET: UN ENFOQUE NOVEDOSO PARA UNA CLASIFICACIÓN SÓLIDA DE LAS EMOCIONES]

Karthikeyan N.; Madheswari K.; Umesh H.; **Rajkumar N.; Viji C.**

Salud, Ciencia y Tecnologia - Serie de Conferencias Volume 36 March 2024 Article number 960

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Vol. 3 (2024): Salud, Ciencia y Tecnología - Serie de Conferencias

Published: 2024-01-01

Abstract

AbstractThe recognition and interpretation of human emotions are crucial for various applications such as education, healthcare, and human-computer interactions. Effective emotion recognition can significantly enhance user experience and response accuracy in these fields. This research aims to develop a robust emotion recognition system by integrating VGG and ResNet architectures to improve the identification of subtle variations in facial expressions. This paper proposes a hybrid deep learning approach using a combination of VGG and ResNet models. This system incorporates multiple convolutional and pooling layers along with residual blocks to capture intricate patterns in facial expressions. The FER2013 dataset was employed to train and evaluate the model's performance. Comparative analysis was conducted against other models, including VGG16, DenseNet, and MobileNet. The hybrid model demonstrated superior performance, achieving a training accuracy of 99,80 % and a validation accuracy of 66,17 %. In contrast, the VGG16, DenseNet, and MobileNet models recorded training accuracies of 54,27 %, 68,51 %, and 84,68 %, and validation accuracies of 46,58 %, 56,11 %, and 60,35 %, respectively. The proposed hybrid approach effectively enhances emotion recognition capabilities by leveraging the strengths of VGG and ResNet architectures. This method outperforms existing models, offering a significant improvement in both training and validation accuracies for emotion recognition systems.

Author keywords- CNN; Deep Learning; Densenet; Emotion Detection; Hybrid Model; Image Classification; Mobilenet; Resnet; VGG16

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

DATA-DRIVEN CONCRETE QUALITY OPTIMIZATION IN INDUSTRY 4.0: PREDICTIVE COMPRESSIVE STRENGTH MODELING THROUGH MACHINE LEARNING AND ENSEMBLE APPROACHES

Judeson Antony Kovilpillai J.; Mohamed S.S.; Pragya; Jayanthy S.; Viji C.; **Rajkumar N.**

2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 2024 2024 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 2024 Bangalore 28 June 2024 through 29 June 2024 Code 202014

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Published in: 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS)

Date of Conference: 28-29 June 2024 **DOI:** 10.1109/ICITEICS61368.2024.10624824

Abstract

As numerous manufacturing enterprises are progressing towards Industry 4.0, advanced predictive models are required to optimize contemporary construction practices. The precise prediction of the compressive strength of cement is crucial, as it is an integral material for any constructional unit. This research paper explores numerous advanced machine learning and ensemble learning techniques for effective concrete strength prediction, enabling proactive quality control measures in an Industry 4.0 based environment. The research utilizes an open-source dataset and employs advanced machine learning techniques to interpret and learn intricate relationships among input features, such as cement quantity, blast furnace slag content, fly ash ratios, water weight, superplasticizer usage, and coarse and fine aggregate proportions, as well as curing age for predictive modeling. Experimental results validate the Histogram-Based Gradient Boosting model as an optimal technique for effectivey forecasting the compressive strength of cement in Newtons per square millimeter (MPa), with a cross-validation R2 Score of 0.922. The findings of this research work contributes to the increasing demand for accurate and scalable predictive models within the quality control unit of an Industry 4.0 based manufacturing firm.

Author keywords- Compressive Strength; Ensemble Learning; Machine Learning; Predictive Modeling

Indexing/Quartile - Scopus/Q4 | **Percentile** - 4th | **Impact Factor** - NA | SDG 11 SUSTAINABLE CITIES AND COMMUNITIES

ON COMPARISON OF RENEWAL AND TREND RENEWAL PROCESSES WITH RESPECT TO STOCHASTIC ORDERINGS

Ravi S.; **Ghosh S.K.**

Asian Journal of Statistical Sciences Volume 4, Issue 1, Pages 23 - 312024

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ASIAN JOURNAL OF STATISTICAL SCIENCES
Frequency :Bi-Annual
ISSN :2582-9912
Peer Reviewed Journal

Abstract

Trend renewal processes (TRPs) were introduced by Lindqvist (1993) as a time-transformed renewal process. After a brief introduction to TRPs with possibly some new results, independent ordinary renewal processes (ORPs) and TRPs are com-pared with respect to some stochastic orderings between the generating inter-arrival time random variables, like, the usual stochastic order, hazard rate order, likelihood ratio order and variability order, and on the basis of the trend function. Some illustrations are given.

Author keywords- Hazard rate ordering; Likelihood ratio ordering; Renewal process; Stochastic ordering; Trend renewal process; Variability ordering

Indexing/Quartile - Scopus/Q1 | **Percentile** - 85th | **Impact Factor** - NA | SDG

CONSERVATION PRIORITIES FOR INDIAN BIODIVERSITY: SPATIOTEMPORAL PATTERNS, POLICY EFFICACY, AND FUTURE OUTLOOK

Vishwapriya C.; Devaiah N.G.

Biodiversity and Conservation 2024

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Abstract

As one of the world's mega-biodiverse regions, the Indian subcontinent harbors exceptional biological riches spanning diverse taxa and ecosystems. However, rapid economic growth and associated anthropogenic pressures pose ever-increasing threats to native biota through habitat loss, overexploitation, invasive species, climate change, and pollution. This paper analyzes India's changing biodiversity landscape, evaluates the efficacy of conservation policies, and charts strategic priorities for the future. Spatiotemporal trends for 3563 species across terrestrial, fresh water and marine realms were assessed using IUCN Red List data. We find that birds and mammals show modest improvements recently owing to legal protections and habitat recovery initiatives. However, other less-charismatic taxa exhibit alarming population declines nationwide. Our policy analysis highlights critical gaps in implementation frameworks involving multi-sector coordination, capacity building, benefit sharing, and participatory decision-making. To arrest biodiversity erosion and achieve stated policy targets by 2030, we propose an integrated, evidence-driven strategy prioritizing invasives control, agro-ecological transitions, pollution abatement, ecological connectivity via green-gray infrastructure, and community-based adaptation. Mindful of inherent socio-ecological complexities, our recommendations provide a framework for targeted conservation investments attuned to India's development aspirations.

Author keywords- Biodiversity crisis; Conservation planning; IUCN Red List; Policy gaps; Sustainability transitions

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

DESIGN AND IMPLEMENTATION OF AN AI AND IOT-ENABLED SMART SAFETY HELMET FOR REAL-TIME ENVIRONMENTAL AND HEALTH MONITORING

Kawale S.R.; Mallikarjun S.; Dankan Gowda V.; Prasad K.D.V.; **Shekhar R.**; Anil Kumar N. *2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 20242024 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 2024 Bangalore 28 June 2024 through 29 June 2024 Code 202014*

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Published in: 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS)

Date of Conference: 28-29 June 2024 **DOI:** 10.1109/ICITEICS61368.2024.10624824

Abstract

This research paper is introducing the concept of AI and IoT-enabled Smart Safety Helmet for Real-Time Environmental and Health Monitoring, which is a breakthrough attempt focusing on providing safety solutions for workers in dangerous areas. Employing the AI-IoT synergy to solve the problem of monitoring the surrounding environment and the mental state of the user, our helmet significantly decreases a risk of an accident and exposure to dangerous conditions. The primary part of the study is to mount various sensors on the helmet so as to observe the realtime changes in the environmental parameters that include CO2 levels, temperature, humidity, and physical responses of the wearer as well. This sensor data is then fed into a microcontroller unit that is connected with IoT that uses this process and analyze the data to identify risks and assess risk levels. Through the IoT technology, a perfect channel for a real-time data transfer to the end-users end the centralized monitoring systems is availed, enabling an action to be taken immediately. We ran many different types of MATLAB simulations and real-world testing scenarios. Then our evaluation determined the sensors' accuracy, the efficiency of the AI model, the consumption of the power, the data transmission capabilities, and the overall usability of the helmet. This outcome not only confirms the safety and economical nature of the helmet but as well its user-centricity design which ensures its effectiveness in creating a safe working environment.

Author keywords- Accuracy; AI and IoT Integration; Data Processing; Environmental; Hazard Detection; Health Monitoring; Helmet; Real-Time Monitoring; Safety; Sensor; Smart Safety

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG 13 CLIMATE ACTION

BATTERY RANGE ESTIMATION IN ELECTRIC VEHICLES USING MACHINE LEARNING AND DEEP LEARNING TECHNIQUES

Sulaiman S.M.; Judeson Antony Kovilpillai J.; Mir M.H.; Golda Brunet R.; **Pragya; Soumi**

2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 20242024 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 2024Bangalore28 June 2024through 29 June 2024Code 202014

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Date of Conference: 28-29 June 2024 **DOI:** 10.1109/ICITEICS61368.2024.10624824

Abstract

Greenhouse gas emission has been a prominent issue leading to global warming. One of the reasons is the use of motor vehicles fueled by oil and natural gas. These vehicles burn the oil and gases to power their engines that leads to the release of several gases into the Earth's atmosphere. One of these gases is CO2, a greenhouse gas contributing to global warming. Electric vehicles popularly known as EVs becoming a major solution to this issue. However, they face few practical issues like the long wait time to recharge the batteries. One of the issues is the estimation of remaining distance coverage with the available battery power. This is crucial as it helps the users to plan their next recharge efficiently. This paper presents the application of machine learning in estimating the travel distance that can be covered with the available battery power remaining. This paper explored several state-of-the-art machine learning models and propose LSTM as the suitable technique to accurately estimate the distance that can be covered with the remaining battery power. The models were evaluated using an open-source dataset taken from Kaggle. The proposed model achieved a mean R2 score of 0.84 and demonstrated the potential of LSTM technique for this problem. The findings of this work is time relevant as the demand for EVs are increasing everyday.

Author keywords- Battery Range Estimation; Deep Learning; LSTM; Machine Learning; Predictive Modelingrenewal process; Variability ordering

Indexing/Quartile - Scopus/ Q2 | **Percentile** - 69th | **Impact Factor** - NA | SDG

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

ADDITIVE MANUFACTURING (3D PRINTING) TECHNOLOGIES FOR FIBER-REINFORCED POLYMER COMPOSITE MATERIALS: A REVIEW ON FABRICATION METHODS AND PROCESS PARAMETERS

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Additive manufacturing (3D printing) technologies for fiber-reinforced polymer composite materials: A review on fabrication methods and process parameters

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e-Polymers
Volume 24 Issue 1

Abstract

In recent years, additive manufacturing (AM) has seen extensive exploitation in the research areas for the processing of fiber-reinforced polymer composites (FRPCs). Existing reviews on AM have recommended either sustainable production methods or have introduced new processing methodologies. A relationship between materials used, manufacturing processes, process parameters, and their properties is essential in any manufacturing process. Accordingly, this review focuses on the manufacturing of FRPCs in relation to process parameters and properties of the polymer composites. Various studies dealt with the lightweight materials and parts that were manufactured through AM and which could retain the mechanical and other properties without compromising the strength and weight of the final product. The technologies involved in the major AM processes and the constituents used for the fabrication of FRPC parts, their advantages, and drawbacks are also deliberated. This review combines the material selection for AM technologies along with the choice of proper AM technique for printing FRPCs. This review further illustrates the recent research and technology that aims at embracing FRPCs into a circular economy. In summary, this review opens the door for new opportunities and for meeting challenges in the manufacturing of FRPCs by AM methodologies.

Author keywords- 3D printing; additive manufacturing; fabrication methods; fiber-reinforced polymer composites; process parameters

Indexing/Quartile - Scopus/Q2 | **Percentile** - 65th | **Impact Factor** - 4.05 | SDG 07 AFFORDABLE AND CLEAN ENERGY

VALORIZATION OF AVOCADO PEEL WASTE: EXTRACTION AND CHARACTERIZATION OF CELLULOSE NANOFIBERS FOR MULTIFUNCTIONAL APPLICATIONS

P. V V.; K. V N.; Sabura Begum P.M.; Hounfodji J.W.; Sankar S.; Muraleedharan S.; Kamath A.N.; Ajithkumar T.G.; **Parameswaranpillai J.**; C. D M.D.

Biomass Conversion and Biorefinery 2024

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Abstract

This study explored the utility of underutilized avocado peels for extracting cellulose nanofibers (CNFs). Mild oxalic acid hydrolysis assisted by steam explosion was employed after alkali hydrolysis and chlorine-free bleaching to prepare cellulose nanofibers. The structural, atomic, and elemental features of the extracted fibers were studied using Fourier transform infrared spectroscopy (FTIR), 13C solid-state nuclear magnetic resonance (13C NMR) spectroscopy, and energy dispersive X-ray (EDAX) analysis, respectively. The crystallinity index of the nanofibers was 87%, which was 53% greater than that of the crude sample. The elution of hemicellulose and lignin was evident from the scanning electron microscopy (SEM) images, and the nanofibers had a fiber diameter of 30–82 nm according to the transmission electron microscopy (TEM) analysis. The applied chemical treatment also elevated the thermal stability of the fibers. The extracted fibers can be applied in numerous fields, including electronics, packaging, automobiles, biomedicine, and cosmetics. Graphical Abstract: (Figure presented.).

Author keywords- Avocado peels; Cellulose nanofibers; Mild acid hydrolysis; Sustainability

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

PREDICTION OF CARDIAC DISEASE USING NAIVE BAYES ALGORITHM

Ramesh S.M.; **Sengottaiyan N.**; Vanathi D.; Manoja R.; Tamizharasu K.; Kalyanasundaram P. *2nd International Conference on Sustainable Computing and Smart Systems, ICSCSS 2024 – Proceedings Pages 994 - 9972024 2nd International Conference on Sustainable Computing and Smart Systems, ICSCSS 2024 Coimbatore 10 July 2024 through 12 July 2024 Code 201925*

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Abstract

The goal of this work is to use machine learning methods, such as the Naive Bayes algorithm, to accurately forecast cardiac disease. The proposed work implements K-Nearest Neighbour (KNN), Support Vector Machine (SVM) and Naïve Bayes to perform regression and classification analysis on the data to attain improved accuracy. This revised dataset is used to train the models, and standard metrics are used to thoroughly assess the model's predicted performance. With an accuracy of 88%, the naive bayes algorithm performed better than the KNN algorithm. In the context of forecasting cardiac disorders, this conversation offers a thorough review of the Naive Bayes method. The implementation generates accurate predictions based on crucial health factors through data preprocessing, feature selection and model training.

Author keywords- Accuracy; Cardiac disease; Datasets; Machine Learning; Naive Bayes Algorithm

Indexing/Quartile - Scopus/Q4 | **Percentile** - 15th | **Impact Factor** - 1.1 | SDG

HARNESSING NOVEL TECHNOLOGIES TO FORTIFY ANTI-CORRUPTION EFFORTS: ASSIMILATING INDIA'S EXPERIENCES INTO UZBEKISTAN'S FIGHT AGAINST CRIMINALITY

Thommandru, Abhishek, Maratovich, Fazilov Farkhod,
Revista Brasileira de Politicas PublicasOpen AccessVolume 14, Issue 1, Pages 320 – 3392024

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CEUB EDUCAÇÃO SUPERIOR Revista Brasileira de Políticas Públicas

Abstract

Corruption casts a long shadow over Uzbekistan's socio-political landscape, hindering economic growth and social harmony. To confront this formidable challenge, Uzbekistan seeks to draw upon India's extensive experience harnessing New Emerging Technologies (NET), such as the Digital India mission and the Unified Payments Interface (UPI), for effective anti-corruption measures. This paper conducts a comprehensive exploration of Uzbekistan's corruption landscape, unveiling the historical, cultural, and institutional factors fueling this pervasive issue. It delves into corruption's severe consequences on Uzbekistan's economy, governance, and society, underscoring the critical need for robust anti-corruption strategies. Leveraging India's proven insights, the paper meticulously dissects successful strategies tailored to the Indian context, including strengthening anti-corruption laws, empowering agencies, fostering transparency, promoting accountability, and engaging civil society. Recognizing that combating corruption demands a multi-dimensional approach, it advocates a holistic strategy encompassing legal, institutional, societal, and cultural dimensions. Through comparative analysis, the research offers recommendations for Uzbekistan's anti-corruption arsenal. These include establishing specialized agencies, enacting comprehensive anti-corruption legislation, promoting transparency and accountability via digital platforms, and nurturing a culture of integrity through education and awareness initiatives. While acknowledging disparities between Uzbekistan and India, the paper underscores adapting strategies to the local context through institutional capacity-building, international collaboration, and civil society engagement. Unwavering political commitment and leadership are stressed as pivotal. The integration of India's experiential insights and strategic utilization of NET provide Uzbekistan a unique opportunity to confront pervasive corruption. By embracing these recommendations tailored to its context, Uzbekistan can aspire to a more transparent, accountable, and corruption-free society – paving the way for sustainable development, good governance, and social justice.

Author keywords- Anti-corruption; Criminoverse; Governance; Transparency; Uzbekistan

Indexing/Quartile - Scopus/Q3 | **Percentile** - 31st | **Impact Factor** - NA | SDG

EFFICIENT POWER-AWARE PROTOCOLS FOR GREEN COGNITIVE RADIO NETWORKS IN INDUSTRIAL COMMUNICATIONS

Sumathi D.,Priya, R. Kavi, Suresh B, Srija N, Sunddararaj, Suvetha Poyyamani, Sivachitra M.

Journal of Environmental Protection and EcologyVolume 25, Issue 5, Pages 1615 - 16262024

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Journal of Environmental Protection and Ecology

International Journal edited by the Balkan Environmental Association (B.E.N.A.) for rapid scientific and other information, covering all aspects of the problems of sustainable development and ecology.

Abstract

In industrial environments characterised by harsh communication conditions and spectrum scarcity, cognitive radio networks (CRNs) offer promising solutions to enhance communication reliability and efficiency. However, leveraging CRNs in such environments requires addressing challenges related to spectrum detection, allocation, and energy-efficient transmission. To tackle these challenges, we propose an integrated system that combines intelligent spectrum detection, spectrum allocation using reinforcement learning, Dynamic spectrum access (DSA) with Proximal policy optimisation (PPO), and energy-aware transmission optimisation. Our proposed system aims to enhance the performance and sustainability of CRNs in industrial settings by accurately identifying available spectrum bands, optimising spectrum allocation, and dynamically adjusting transmission parameters based on real-time channel conditions and energy constraints. We employ spectral density estimation and detection thresholds for intelligent spectrum detection, reinforcement learning-based spectrum allocation for efficient spectrum utilisation, and DSA with PPO for adaptive transmission parameter adjustment. Additionally, energy-aware transmission optimisation ensures minimal energy consumption while maintaining reliable communication links. Experimental results demonstrate the effectiveness of our proposed system in optimising energy consumption, improving data transmission efficiency, and enhancing network reliability in industrial CRNs. Overall, our system presents a comprehensive approach to address the challenges of spectrum scarcity and energy efficiency, making it suitable for various industrial communication applications.

Author keywords- Ballistic mechanism; Ballistic protection; Failure criterion; Multilayer armor; Natural Fiber Composites

07 AFFORDABLE AND CLEAN ENERGY

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

AUTONOMOUS INSPECTION OF SOLAR PANELS AND WIND TURBINES USING YOLOV8 WITH QUADROTOR DRONES

Lionel N.; Bingi K.; Ibrahim R.; **Korah R.**; Kumar G.; Rajanarayan Prusty B.
Proceedings of the 9th International Conference on Mechatronics Engineering, ICOM 2024Pages 322 - 3262024

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Abstract

This paper introduces an autonomous inspection system for solar panels and wind turbines utilizing Tello drones and the YOLOv8 object detection algorithm. The main objective is to establish an efficient method for identifying and evaluating these renewable energy components' conditions, focusing on detecting issues such as breakage and dust accumulation. The system involves a pair of Tello drones operating as a swarm and connected to a standard router to enable real-time video streaming and data processing. The drones utilize the YOLOv8 algorithm for object detection, and Python programming is employed to manage their operations. The methodology encom-passes establishing reliable communication among the drones, router, and laptop, initializing the drones, capturing real-time video, and utilizing YOLOv8 for object recognition and clas-sification. The paper presents case studies demonstrating the system's effectiveness in detecting and classifying solar panels and wind turbines under varied conditions. While the system exhibits promise in reducing manual inspection labour and enhancing safety, limitations related to image quality suggest that using higher- resolution cameras could further improve its efficiency.

Author keywords- object detection; solar panel inspection; Tello drones; wind turbine inspection; YOLOv8

Indexing/Quartile - Scopus/Q3 | **Percentile** - 31st | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

5G-BASED MOBILE COMMUNICATIONS: STABLE ROUTE SELECTION FOR ADAPTIVE PACKET TRANSMISSION

ijayalatha R.; **Chitra Kiran N.**; Vekariya D.; Brahma Rao K.B.V.; Deshpande A.G.; Sindhuja R.; Alaskar K.; Natarajan K.; Rajaram A.

Journal of Environmental Protection and Ecology Volume 25, Issue 5, Pages 1686 - 16962024

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Journal of Environmental Protection and Ecology

International Journal edited by the Balkan Environmental Association (B.E.N.A.) for rapid scientific and other information, covering all aspects of the problems of sustainable development and ecology.

Abstract

A major difficulty in 5G-based mobile communications is to guarantee robust selecting routes for adaptive packet transmission in a dynamic environment. Traditional routing protocols struggle to adapt to the fluctuating wireless channel conditions inherent in 5G networks. To address this, our study introduces a novel system that integrates Deep Q-Networks (DQN) techniques with the Zone routing protocol (ZRP). Leveraging real-time network data including channel quality, traffic load, and congestion levels, the system employs machine learning algorithms to predict route stability. This predictive capability enables dynamic identification of the most stable route for packet transmission, with continuous monitoring and adjustment in response to evolving network conditions. Our proposed system follows a multi-step flow, starting from data collection and culminating in route selection based on machine learning predictions. Extensive simulations and real-world experiments validate the efficacy of our approach, demonstrating significant improvements in packet delivery ratio, latency, and overall network stability compared to conventional methods. Notably, our system exhibits resilience against varying network conditions and maintains scalability with increasing network size and traffic load. Through the fusion of machine learning and routing protocols, our study offers a promising solution to the critical challenge of stable route selection in 5G-based mobile communications, addressing the diverse demands of emerging applications and services.

Author keywords- 5G networks; deep Q-Networks; packet transmission; route selection; zone routing protocol

Indexing/Quartile - Scopus/Q3 | **Percentile** - 48th | **Impact Factor** - 0.88 | SDG 07 AFFORDABLE AND CLEAN ENERGY

SOURCE RECOMMENDATION SYSTEM USING CONTEXT-BASED CLASSIFICATION: EMPIRICAL STUDY ON MULTI-LEVEL ENSEMBLE METHODS

Kafi A.A.; **Banshal S.K.**; Sultana N.; Gupta V.

Journal of Scientometric Research Open Access Volume 13, Issue 2, Pages 475 - 4841 May 2024

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Abstract

Aim/Background: This research aims to develop an automated contextual classifier for scholarly papers by utilizing established algorithms and understanding the information retention of different parts of a scholarly article, such as the Abstract, Article Title, and Keyords. It also seeks to recommend a contextual classifier-based recommender system to help academics identify credible sources. Scholarly articles from various study fields often use similar terms in their titles and keyords. However, finding a publication venue can be challenging for researchers at the beginning of a scientific inquiry. Thus, it is crucial to classify information based on its context, especially when abstracts, keyords, and titles receive equal attention. Materials and Methods: An ensembled model was developed and trained using 114K instances from 38 classes of the Web of Science (WoS) dataset and 40 classes of the Dimensions dataset. The ensemble approach incorporated both machine learning and deep learning algorithms to build a diverse classifier. The model was evaluated by testing it with an 80:20 train-test split to assess performance. The classifier was further integrated into a recommender system designed to suggest probable publication sources based on given article information. Results: The ensemble classification approach demonstrated superior performance with faster inference and efficient training time. The balanced training model, tested on 114K instances, effectively categorized scholarly articles into one of 40 categories. The recommender system was capable of recommending up to 10 probable publication sources based on the article's Title, Keyords, and Abstract. Models utilizing abstractions yielded the best results and provided a better understanding of the context in every iteration of the experiment. Conclusion: This study successfully developed an ensemble-based

contextual classifier for academic papers, which can also function as a recommender system. The system aids researchers in choosing the most appropriate sources to publish by categorizing articles into 40 categories and suggesting credible publication venues. This approach simplifies the decision-making process for academics, enabling them to identify relevant publications and suitable sources for their work more efficiently.

Author keywords- Contextual Classification; Recommendation System; Scholarly Article; Subject Classification; Text Analysis

Indexing/Quartile - Scopus/Q4 | **Percentile** - 7th | **Impact Factor** - NA | SDG

A COMPUTATIONAL MODEL OF EPIDEMICS USING SEIRX MODEL

Marimuthu S.; Debnath S.; Ramachandran S.; Parasuraman M.; Menon S. Salud,

Ciencia y Tecnologia - Serie de Conferencias Open AccessVolume 31 January 2024 Article number 1107

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Published: 2024-01-01

Abstract

Epidemiology studies the spread and impact of infectious diseases within defined populations, focusing on factors such as transmission rate, infectious agents, infectious periods, and susceptibility. Computational epidemiology simulates these factors using basic compartmental models like Susceptible-Infected-Recovered (SIR), Susceptible-Exposed-Infected (SEI), and Susceptible-Exposed-Infected-Recovered (SEIR). However, these models inadequately address mortality and fatality rates. To enhance the accuracy of epidemic transmission models, we propose an expanded SEIR model by introducing a new compartment, denoted as X, representing the deceased population. This new model, Susceptible-Exposed-Infected-Recovered-Deceased (SEIRX), incorporates fatality and mortality rates, providing a more comprehensive understanding of epidemic dynamics. The SEIRX model demonstrates superior accuracy in inferring and forecasting epidemic transmission compared to existing models, offering a complete and detailed approach to studying infectious disease outbreaks.

Author keywords- Computational Epidemiology; Exposed; Forecasting of Epidemics; Infected; Recovered (SEIRX); Susceptible; Susceptible-Exposed-Infected; World Health Organization

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

SLICE: COMBINED SUPER LINEAR ITERATIVE CLUSTERING AND EARTH MOVER'S DISTANCE FOR BRAIN TUMOUR CLASSIFICATION

Neelamraju P.M, **Muniraj I**,
3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 - Part of Optica Imaging CongressToulouse15 July 2024through 19 July 2024Code 202460

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3D Image Acquisition and Display: Technology, Perception and Applications

Abstract

We demonstrate that the combination of Super Linear Iterative Clustering and Earth Mover's Distance efficiently segments tumours from the MRI dataset. Despite using a smaller training dataset our approach achieves an accuracy of 86.2%.

04 QUALITY EDUCATION

Indexing/Quartile - Scopus/Q4 | **Percentile** - 7th | **Impact Factor** - NA | SDG

ENHANCING DEEP LEARNING FOR AUTISM SPECTRUM DISORDER DETECTION WITH DUAL-ENCODER GAN-BASED AUGMENTATION OF ELECTROENCEPHALOGRAM DATA

Lalli K.; Senbagavalli M. Salud,
Ciencia y Tecnologia - Serie de ConferenciasVolume 36 March 2024 Article number 958

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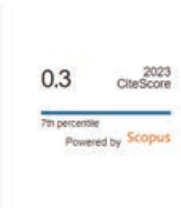
Published: 2024-01-01



Abstract

Autism Spectrum Disorder (ASD) is a general neurodevelopmental condition that requires early and accurate diagnosis. Electroencephalography (EEG) signals are reliable biomarkers for ASD detection and diagnosis. A recent Deep Learning (DL) model called Resting-state EEG-based Hybrid Graph Convolutional Network (Rest-HGCN) has been developed for this purpose. However, a challenge in ASD diagnosis is the limited availability of EEG data, leading to imbalanced classes and ineffective model training. To address this issue, a new approach is proposed in this paper, which involves a generative model for EEG data augmentation. A novel Dual Encoder-Balanced Conditional Wasserstein Generative Adversarial Network (DEBCWGAN) is designed to produce fine synthetic minority-class EEG examples and augment the original training dataset. This model integrates the Variational Auto-Encoder (VAE) and balanced conditional Wasserstein GAN. Initially, EEG signals for ASD in the training dataset are pre-processed as Differential Entropy (DE) features and split into different segments. Each feature segment is processed in the temporal and the spatial domain depending on the electrode place. Then, twin encoders are trained to capture both spatial and temporal information from these features, concatenate them as Latent Variables (LVs), and provide them to the decoder to produce synthetic EEG examples. Additionally, gradient penalty and L2 regularization are used to speed up convergence and prevent overfitting effectively. Further, the augmented dataset is used to train the Rest-HGCN for ASD detection, enhancing its robustness and generalizability. Finally, test outcomes demonstrate that the DEBWGAN-GP-Rest-HGCN on the EEG Dataset for ASD and ABC-CT dataset achieves 91,6 % and 88,1 % accuracy, respectively compared to the Rest-HGCN, AlexNet, K-Nearest Neighbor (KNN) and Support Vector Machine (SVM). © 2024; Los autores.

Author keywords- Autism Spectrum Disorder; Class Imbalance; Data Augmentation; Differential Entropy; Dual-Encoder; EEG; Rest-HGCN; Wasserstein GAN

Indexing/Quartile - Scopus/Q2 | **Percentile** - 66th | **Impact Factor** - 2.1 | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FAILURE PREDICTION OF GEARED MECHANISM AT MULTIPLE GEARSHIFT CONFIGURATION BY UTILIZING THE EXPERIMENTAL DESIGN AND INTEGER PROGRAMMING METHOD

Mandol S.; Bhattacharjee D.; **Kumar M.H.**; Govindan R.; Kaur G.; Jain N.; Verma A., *International Journal on Interactive Design and Manufacturing 2024*

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Abstract

This research paper aims to model the failure pattern based on safety factor data at different gear shift configurations for a compound planetary gear assembly. An optimization approach is expounded in this work, which aims to reduce the developed stresses within the gearbox assembly while considering all the gear-shift configurations. Computer-aided engineering software, in conjunction with the Design of Experiments technique, is employed to analyze the computer-aided design model of the gear assembly with gear shift configurations of gear members. The method of integer programming provides an optimal solution by deducing a safety factor value, indicating the system's capacity to withstand the specified loading condition. Here in the proposed safety factor model emphasizes on the failure analysis for a Ravigneaux gearbox, based on the material failure theory, to enhance the load-bearing capacity for all shift configurations of the compound epicyclic gear assembly. The regression models for three safety factor values based on maximum equivalent stress, maximum shear stress, and fatigue exhibit a p-value close to zero. High significance has been observed with the thermal condition, suggesting that good lubrication is required to maintain the gearbox at an optimal temperature.

Author keywords- Abutilon indicum Fibers (AIFs); Alkali Treatment (AT); Cellulose; Greener Composites and Surface Roughness; Thermal Stability

Indexing/Quartile - Scopus/Q4 | **Percentile** - 10th | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FUNDUS-BASED PHOTOACOUSTIC VASCULAR IMAGE DENOISING AND ENHANCEMENT

Nair P.A.; Dodda V.C.; Kuruguntla L.; **Muniraj I.**; Deshpande A.,
Proceedings of SPIE - The International Society for Optical Engineering Volume 130102024 Article number 130100Y

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Abstract

Fundus imaging is a great tool for the detection of diabetic retinopathy; however, it often suffers from poor image quality and fails to show the vascular information which is crucial for precise diagnosis. Photoacoustic (PA) imaging is a recently developed non-invasive bioimaging technique that illuminates tissues using nanosecond laser pulses to generate acoustic waves to obtain deep tissue images with optical imaging resolution. In this study, we synthesize PA images from normal and abnormal (glaucoma-affected) retinal fundus images. One of the major limitations of synthetic vascular PA images is noise. To alleviate this problem, we propose to use a dictionary learning-based denoising technique i.e., the K-Singular Value Decomposition (K-SVD). Results are compared with several standard denoising approaches such as the Median filter, Jerman filter, and Frangi filter together with the other learning-based approaches, e.g., orthogonal matching pursuit (OMP), and sequential generalized K-means algorithms (SGK). Our results demonstrate that the K-SVD denoising method exhibits superior performance in denoising glaucoma-affected abnormal retina PA images and normal retina PA images, offering better reconstruction image quality and noise removal.

Author keywords- Enhancement; Fundus images; Image denoising methods; Photoacoustic images; Vascular image

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

OTOSCOPY IMAGE CLASSIFICATION USING EMBEDDED AI

Ancy Jenisha V.; Jayanthy S.; **Judeson Antony Kovilpillai J.**; Abinaya G.; Abinayasri K. *2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 20242024 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems, ICITEICS 2024 Bangalore 28 June 2024 through 29 June 2024 Code 202014*

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Published in: 2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS)

Date of Conference: 28-29 June 2024 **DOI:** 10.1109/ICITEICS61368.2024.10624824

Abstract

To diagnose different ear diseases and disorders, otoscopy is an essential diagnostic method that looks at the eardrum and external ear canal. This project focuses on preprocessing, augmenting, and implementing Convolutional Neural Network (CNN) architectures for otoscopy image datasets, aiming to classify images such as normal, Acute Otitis Media (AOM), Tympanosclerosis, Acute Otitis Externa (AOE), Foreign Objects in the ear, and other conditions. The primary objective is to identify the architecture that demonstrates superior performance in terms of accuracy across different classes of ear conditions, achieved through fine-tuning and optimizing different layers. Among the various CNN architectures explored, the MobileNetV2 model exhibited notably high accuracy compared to others. Therefore, it was selected for deployment on a Raspberry Pi for real-world testing. A systematic approach to fine-tuning, focusing on optimizing key hyperparameters and architectural components and minor modifications to the base model architecture, the top layers of the base model are unfrozen to allow them to be fine-tuned on the disease identification task. Initially, the pre-trained MobileNetV2 model showed an accuracy of 66%. However, through fine-tuning and modification, the model's accuracy significantly improved to 97%, indicating the effectiveness of the proposed approach in enhancing classification performance. This study contributes to the advancement of automated otoscopy diagnosis by leveraging deep learning techniques, particularly CNN architectures. The successful deployment of the optimized MobileNetV2 model on a low-resource platform like Raspberry Pi underscores its potential for practical clinical applications, facilitating timely and accurate diagnosis of various ear conditions.

Author keywords- Activation Function; Convolutional Neural Network (CNN); Fine-Tuning; Hyperparameters; MobileNetV2

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

ATTENTION U-NET FOR DENOISING THE MULTIPLEXED DIGITAL HOLOGRAPHIC MICROSCOPY

Dodda V.C.; Kuruguntla L.; Kumar M.; Matoba O.; **Muniraj I.**

3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 in Proceedings Optica Imaging Congress 2024, 3D, AOMS, COSI, ISA, pcAOP - Part of Optica Imaging Congress2024 3D Image Acquisition and Display: Technology, Perception and Applications, 3D 2024 - Part of Optica Imaging Congress Toulouse 15 July 2024 through 19 July 2024 Code 202460

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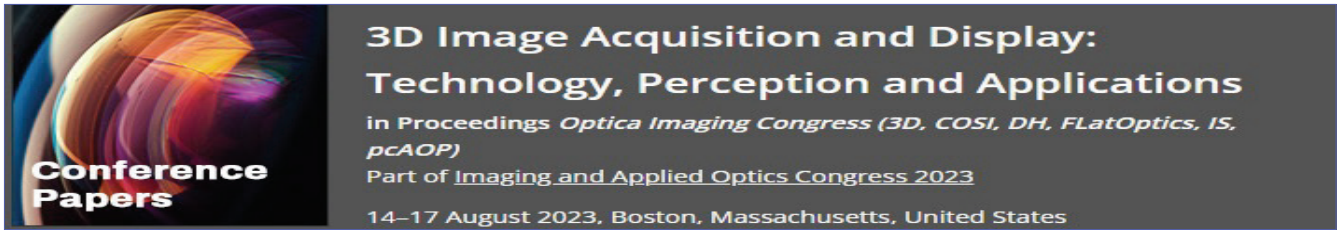

Abstract

Here, we demonstrate the efficacy of an attention-based U-Net architecture for denoising the reconstructed noisy amplitude and phase from a multi-beam interference-based digital holographic microscopy. The results demonstrate the effectiveness of our proposed network.

Indexing/Quartile - Scopus/Q2 | **Percentile** - 65th | **Impact Factor** - NA | SDG

07 AFFORDABLE AND CLEAN ENERGY

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

NELUMBO NUCIFERA BIOMASS WASTE-BASED BIOFILLER: A COMPREHENSIVE CHARACTERIZATION FOR UTILIZATION AS BIODEGRADABLE FILLERS

Ram G.; Arjunan T.V.; Vinoth Kumar K; Loganathan T.G.; **Suyambulingam I.**; Siengchin S.

Biomass Conversion and Biorefinery 2024

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Abstract

The widespread application of composite materials in diverse fields warrants the need of biocompatible materials to favor environmental sustainability and eco-friendliness. In this context, the rhizome of the lotus aquatic plant has attracted the exploration of its qualities for composite application. The Nelumbo nucifera (NN) is the botanical name of the lotus plant whose unused rhizome has been extracted, dried, crushed, and analyzed. The NN rhizome powder is characterized by Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), X-ray diffraction (XRD), energy-dispersive X-ray analysis (EDX), dynamic light scattering (DLS), and thermogravimetric analysis (TGA). The rhizome powder has hydroxyl, carboxyl, and ether functional groups with heterogeneous surface morphology, uneven dimensions particle sizes, and coarse structure. The XRD and TGA test reported the crystalline nature of the rhizome powder with CI 57.7%, crystallite size of 2.2 nm, and thermal stability up to 290 °C. These characteristics and results extend the NN rhizome as a natural filler in polymer composites with enhanced biological sustenance. Graphical Abstract: (Figure presented.).

Author keywords- EDX; FTIR; Nelumbo nucifera; Rhizome; TGA; XRD

07 AFFORDABLE AND CLEAN ENERGY

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG

AUTONOMOUS INSPECTION OF SOLAR PANELS AND WIND TURBINES USING YOLOV8 WITH QUADROTOR DRONES

Lionel N.; Bingi K.; Ibrahim R.; **Korah R.**; Kumar G.; Rajanarayan Prusty B.
Proceedings of the 9th International Conference on Mechatronics Engineering, ICOM 2024Pages 322 - 3262024

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Abstract

This paper introduces an autonomous inspection system for solar panels and wind turbines utilizing Tello drones and the YOLOv8 object detection algorithm. The main objective is to establish an efficient method for identifying and evaluating these renewable energy components' conditions, focusing on detecting issues such as breakage and dust accumulation. The system involves a pair of Tello drones operating as a swarm and connected to a standard router to enable real-time video streaming and data processing. The drones utilize the YOLOv8 algorithm for object detection, and Python programming is employed to manage their operations. The methodology encom-passes establishing reliable communication among the drones, router, and laptop, initializing the drones, capturing real-time video, and utilizing YOLOv8 for object recognition and clas-sification. The paper presents case studies demonstrating the system's effectiveness in detecting and classifying solar panels and wind turbines under varied conditions. While the system exhibits promise in reducing manual inspection labour and enhancing safety, limitations related to image quality suggest that using higher- resolution cameras could further improve its efficiency.

Author keywords- object detection; solar panel inspection; Tello drones; wind turbine inspection; YOLOv8

Indexing/Quartile - Scopus/NA | **Percentile** - NA | **Impact Factor** - NA | SDG 03 GOOD HEALTH AND WELL-BEING

A MACHINE LEARNING PERSPECTIVE FOR PREDICTING CHRONIC KIDNEY DISEASE

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2nd International Conference on Sustainable Computing and Smart Systems, ICSCSS 2024 — Proceedings

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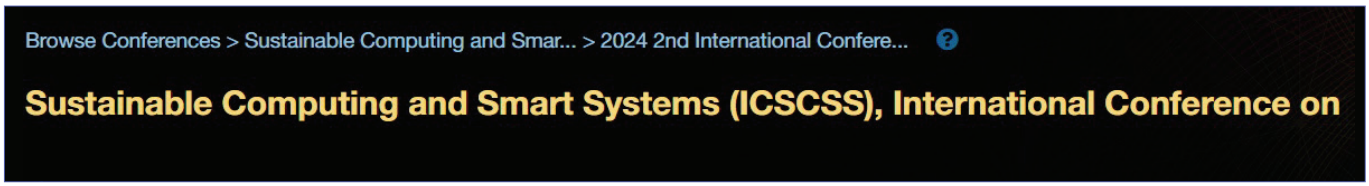

Abstract

Aim: The primary objective of this research is to increase accuracy in the prediction of chronic kidney disease (CKD) by using Machine Learning (ML) algorithms, including K-Nearest Neighbors, Support Vector Machines, and Artificial Neural Networks algorithm. Methods and Materials: The proposed work included four groups. Group 1 refers to a set of four different ensemble tree ML algorithms (Random Forest, Extra Trees, AdaBoost, and XGBoost) that were used to obtain the optimal classification model to support CKD early diagnosis; Group 2 refers to the K-Nearest Neighbors algorithm, which can be used to handle missing values; Group 3 uses the Support Vector Machine algorithm to classify patients into CKD or non-CKD categories; and Group 4 refers to the Artificial Neural Networks algorithm that analyses medical data to predict CKD. Results: The proposed system improves chronic kidney disease prediction, achieving 99.2% accuracy for early detection and management on an automated platform. Conclusion: All three models, including KNN, SVM and ANN, have demonstrated their potential in accurately predicting CKD with an average accuracy of 99.2%, which performs better than four different ensemble tree ML algorithms.

Author keywords- accuracy; Artificial Neural Networks; Chronic Kidney Disease; Machine Learning; Support Vector Machine

Indexing/Quartile - Scopus/Q2 | **Percentile** - 57th | **Impact Factor** - 0.86 | SDG

08 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

A MACHINE LEARNING PERSPECTIVE FOR PREDICTING CHRONIC KIDNEY DISEASE

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Studies in Systems, Decision and Control Volume 535, Pages 481 - 4912024

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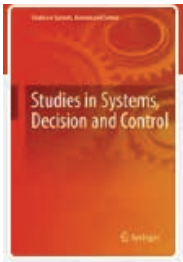

Book series

Studies in Systems, Decision and Control

Abstract

The impact of the COVID-19 pandemic on private enterprises has been particularly noticeable in the IT and non-ITES sectors. Work came to a complete halt due to the ensuing lockdown, severely affecting businesses and further harming industries like aviation and hospitality. Widespread job losses, shortened workweeks, minimum wage reductions, short-term leave policies, and even company closures have been the results. To understand the extent of these impacts, a descriptive study was conducted online in April—May 2021, involving 2439 white-collar workers from various private companies. Convenient sampling methods were used to gather data on the experiences of employees in these sectors during the pandemic. The survey's findings demonstrate a positive but weak association between Work-Life Balance and Health Stress ($r = 0.24$, $p < 0.01$) and a positive low correlation between Work-Life Balance and Job Satisfaction ($r = 0.23$, $p < 0.01$). Therefore, work-life balance and job satisfaction among employees were significantly correlated throughout the epidemic. Additionally, there was a negative moderate correlation between Health Stress and Job Satisfaction ($r = -0.48$, $p < 0.01$), indicating that as Health Stress decreases, Job Satisfaction increases at moderate levels. The implications of the study were discussed further.

Author keywords- COVID-19 pandemic; Health stress; Job satisfaction; Work-life balance

Indexing/Quartile - Scopus/Q1 | **Percentile** - 88th | **Impact Factor** - 0.86 | SDG

08 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

A MACHINE LEARNING PERSPECTIVE FOR PREDICTING CHRONIC KIDNEY DISEASE

Mukherjee A.; **Roy S.**; Maji P.K.; Dasgupta Ghosh B.

ACS Applied Energy Materials 2024

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Abstract

Human health and well-being are major focuses of current research worldwide. Self-powered smart wearable technology holds great promise for enhancing human life. However, developing materials with a high energy storage capacity for powering sensors, wearables, and portable electronics remains challenging. Here, we report on the design of a composite material, PVDF/f-Zn1-xCuxO (x = 0, 0.01, 0.02, 0.03), with high energy storage and energy-harvesting capacity. The material was synthesized via a hydrothermal process, in which copper (Cu) was doped into zinc oxide (ZnO) and then amine-functionalized with 3-aminopropyl triethoxysilane (APTES). Interestingly, the 2 wt % Cu-doped ZnO transformed from a nanoflake to a uniaxial nanorod morphology during synthesis, a key factor for high-energy storage properties. The modification of APTES facilitated the dispersion of uniaxial fillers within the polymer matrix. Adding f-Zn0.98Cu0.02O to polyvinylidene fluoride (PVDF) resulted in a 154% increase in tensile strength and a 56% increase in Young's modulus compared with neat PVDF. Moreover, the PVDF/f-Zn0.98Cu0.02O nanocomposite exhibited excellent energy storage density (9 J/cm3) and efficiency (81%). Additionally, it demonstrated an impressive piezoresponse, with an output voltage of 12 V and a power density of approximately 21.17 μW/cm2, significantly higher than those of neat PVDF and other contemporary composites. The efficiency of the composite for wearable devices was tested through various biomechanical pressure applications such as finger tapping, hand stomping, and finger bending, and it showed outstanding responses.

Author keywords- composites; Cu doped ZnO; energy storage; energy-harvesting; functionalization; nanorod morphology; PVDF

Indexing/Quartile - Scopus/Q4 | **Percentile** - 7th | **Impact Factor** - NA | SDG

17 PARTNERSHIPS FOR THE GOALS

FORECASTING OF NIFTY 50 AND NIFTY MIDCAP 50 STOCK MARKET INDICES BY USING ARIMA MODEL

Biswas A.; Jain A.

Finance India Volume 38, Issue 1, Pages 187 - 202 March 2024

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Abstract

Stock markets act as a catalyst for the economic growth of a country. The main purpose of the present study is to examine the market performance of two most risky indices of National Stock Exchange - Nifty50 and Nifty Midcap50 and accurately forecasting the future returns of the indices using ARIMA model. The study also made a comparative analysis of both the indices. The statistics exhibits that the data of both the series are heteroscedastic and non-stationary in nature. The findings reveal that ARIMA (5,1,5) and ARIMA (29,1,29) are the best fitted models for Nifty50 and Nifty Midcap50 indices respectively and projected the uptrends of both the indices during the short run i.e. from 1st June 2022 to 31st Dec 2022. Authors concluded that the forecasted returns of Nifty 50 nad Nifty Midcap 50 are accurate and can be usedby the investors to make appropriate decisions when to buy or sell the stocks.

Author keywords- ARIMA Model; Forecasting; India; Nifty MidCap50 Index; Nifty50 Index; Non-Stationary

Indexing/Quartile - Scopus/Q1 | **Percentile** - 89th | **Impact Factor** - 4.5 | SDG

03 GOOD HEALTH AND WELL-BEING

A NOVEL K-NEAREST NEIGHBOR CLASSIFIER FOR LUNG CANCER DISEASE DIAGNOSIS

Sachdeva R.K.; Bathla P.; Rani P.; Lamba R.; **Ghantasala G.S.P.**; Nassar I.F.,
Neural Computing and Applications 2024

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Abstract

One of the world's deadliest diseases is lung cancer. Based on a few features, machine learning techniques can help in the diagnosis of lung cancer. The performance of several classifiers: support vector machine (SVM), logistic regression (LR), Naïve Bayes (NB), random forest (RF), and K-nearest neighbor (KNN), was evaluated by the authors using the dataset available on Kaggle to create a systematic approach for the diagnosis of lung cancer disease based on readily observable signs and historical medical data without the requirement of CT scan images. The authors have proposed a novel approach for classification called Pearson correlation weighted KNN (PCWKNN), which is a modified version of KNN and uses Pearson correlation coefficient values to determine weights in a weighted KNN. The performance of the classifiers was evaluated using the hold-out validation method. SVM, LR, and RF were 96.77% accurate. NB obtained 95.16% accuracy. KNN achieved 91.93% accuracy. PCWKNN outperformed the employed classifiers and obtained an accuracy of 98.39%. Addressing the imperative for improved model generalization, the researchers utilized PCWKNN on an alternative, more extensive lung cancer dataset and subsequently broadened its application to diverse diseases, including the brain stroke dataset. The encouraging outcomes underscore PCWKNN's resilience and adaptability, suggesting its viability for real-world implementation.

Author keywords- KNN; LR; Lung cancer; Machine learning; NB; PCWKNN; RF; SVM

Indexing/Quartile - Scopus/Q2 | **Percentile** - 65th | **Impact Factor** - 3.5 | SDG 03 GOOD HEALTH AND WELL-BEING

ISOLATION AND CHARACTERIZATION OF NOVEL NATURAL FIBER FROM STREBLUS ASPER

Rao H.J.; Senthamaraikannan P.; **Suyambulingam I.**; Parameswaranpillai J.; Priyadharshini G.S.; Senthilkumar B.

Biomass Conversion and Biorefinery 2024

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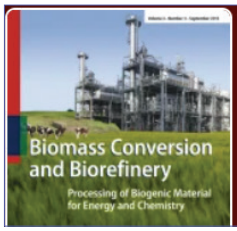

Biomass Conversion and Biorefinery
Processing of Biogenic Material for Energy and Chemistry
Publishing model
Hybrid

Abstract

Determining cost-effective and sustainable materials is challenging. So far, the fibers from Streblus asper have not been studied for versatile applications. The current investigations focused on the extraction and characterization of novel fiber from the Streblus asper tree through the water retting process. The study revealed that the extracted fiber has a cellulose content of 55.4 ± 5.6 wt.%, hemicellulose of 12.24 ± 3.31 wt.%, and lignin of 14.25 ± 4.56 wt.%. Also, the study revealed that the fiber has a density of 1388 ± 75 kg/m3, tensile strength of 347.5 ± 16.4 MPa, thermal stability of ca. 250 °C, crystallinity index of 29.9%, and crystalline size of 1.45 nm. Additionally, the surface morphology and the elemental composition analysis indicated fibril bundles and the presence of calcium, silicon, chlorine, and potassium, along with carbon and oxygen. Furthermore, atomic force microscopy revealed high surface roughness for the extracted fiber. These findings suggest that the Streblus asper fiber is a suitable substitute for many synthetic fibers used in plastic-reinforced composites.

Author keywords- Chemical composition; Crystalline properties; Fiber-reinforced plastics; Surface roughness; Thermal stability

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