SOUVENIR OF THE

EIGHTH INTERNATIONAL CONFERENCE

"CHALLENGES & OPPORTUNITIES IN ARTIFICIAL INTELLIGENCE: ENGINEERING & MANAGEMENT APPLICATIONS"

(COAIEMA-2025)

AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY

AIMT

LEARNING WITHOUT LIMITS

AMBALIKA INSTITUTE OF MANAGEMENT AND TECHNOLOGY, LUCKNOW

(AKTU College Code: 363)
Maurawan Road, Mohanlalganj, Lucknow, Uttar Pradesh, Pin Code: 226301
Website: www.aimt.edu.in

Address:
Ambalika Institute of Management and Technology
Gram Tikra, Maurawan Road, Mohanlalganj, Lucknow- 226301 India
E-mail: education@aimt.edu.in
E-mail Conference: editor.coii@ambalika.co.in
Website: www.aimt.edu.in

Editors
1 Dr. Avneesh Kumar Singh
2 Dr. Pankaj Prajapati
3 Mr. Alok Mishra

Volume 1

ISBN Number: 978-81-979166-6-3

978-81-979166-6-3

Published by:

Ambalika Institute of Management and Technology
Gram Tikra, Maurawan Road, Mohanlalganj, Lucknow- 226301 India
E-mail: education@aimt.edu.in
E-mail Conference: editor.coii@ambalika.co.in
Website: www.aimt.edu.in

Printed By:
Amar Fax Services Aliganj
LGF-3 , sai Kripa 3 , aliganj,
near Radhey Lal, Lucknow,
Uttar Pradesh 226024

CONTENTS

MESSAGE

Brajesh Pathak
Deputy Chief Minister

Medical Education, Medical Health & Family Welfare, Mother and Child Welfare
Government of Uttar Pradesh
Office : Room No. 99, 100, Main Building,
Vidhan Sabha Sachivalaya
Phone : 0522-2238088 / 2213272 (Off.)

Date 24-02-2025

Greeting Message

It is great to hear that Ambalika Institute of Management & Technology, Lucknow is organizing its 8th International Conference on Challenges & Opportunities in Artificial Intelligence, Engineering & Management Applications from 07th & 08th March, 2025.

India is in need of progressive and innovative ideas in the field of technical education. With the rapid advancement in AI, this type of conference definitely provide a powerful platform to the young blood to demonstrate their skill and strength for the development of new and innovative ideas.

I appreciate the Institure for this remarkable step and congratulate them too for that International Conference.

My heartily wishes for a grand success of this conference.

Brajesh

(Brajesh Pathak)

9, Raj Bhawan Colony, Lucknow-226001. Ph.: 0522-2239999 (Resi.)

आशीष पटेल
मंत्री
प्राविधिक शिक्षा एवं उपभोक्ता मामले
उत्तर प्रदेश

अ. शा.प.सं. मेमो वीआईपी/मंत्प्रा0शि0उ0मा0/25
विधान भवन, मुख्य भवन, कक्ष सं. 86, 87
दूरभाष : कार्यालय : 0522 - 2238124
आवास : 0522 - 2235211
आवास : 1- ए, माल एवेन्यू, लखनऊ
दिनांक : 25/02/25

MESSAGE

I am delighted to know that Ambalika Institute of Management and Technology, Lucknow is organizing an international conference on "Challenges and Opportunities for Innovation in India (COAIEMA-2025)" from 7th to 8th of April 2025.

Theme of the conference has gained importance looking to the present-day problems facing the society. Teachers and members of faculty have to play an important role in this direction while motivating the students for innovation.

I wish success for this conference.

(Ashish Patel)

Dr. Shweta Mishra
Convener (COAIEMA-2025)
AIMT, Lucknow

प्रो० जय प्रकाश पाण्डेय
कुलपति
Prof. Jai Prakash Pandey
Vice Chancellor

डॉ० ए०पी०जे० अब्दुल कलाम प्राविधिक विश्वविद्यालय
उत्तर प्रदेश, लखनऊ
Dr. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY
Uttar Pradesh, Lucknow

Dated: 04.03.2025

Message

I extend my heartiest congratulations to each and every one of you for the remarkable success of **COAIEMA-2025**, hosted at Ambalika Institute of Management and Technology, Lucknow. Your unwavering dedication, meticulous planning, and collaborative efforts have truly ensured that this event was a resounding success.

This conference not only highlighted the intellectual strength within your institution but also served as a platform for the exchange of innovative ideas, cutting-edge research, and valuable insights in the field of Innovation. I would like to express my sincere gratitude to the organizing committee for their tireless work in ensuring the seamless execution of the conference. Your attention to detail, proactive approach, and commitment to excellence have set a high standard for future events.

To the participants, your active involvement and enthusiastic contributions have been instrumental in the success of this conference. The lively discussions, networking opportunities, and collaborative spirit have undoubtedly made this a memorable and impactful event.

As we reflect on the achievements of **COAIEMA-2025**, let it stand as a testament to our collective capabilities and the immense potential for even greater accomplishments in the future. The success of this event is a reflection of the talent, dedication, and passion within our academic and engineering community.

Once again, congratulations to all, those who contributed to making this conference a grand success. May this achievement inspire us all as we continue to push the boundaries of excellence in education, research, and innovation.

Thank you for your hard work and commitment.

(Prof. Jai Prakash Pandey)
Vice Chancellor

Sector-11, Jankipuram Extension, Lucknow - 226031 (U.P.) India, Website : www.aktu.ac.in
(Office) : +91 522 2772189, 2772194 E-mail : vc@aktu.ac.in

Pramod Tiwari
Member of Parliament
Deputy Leader, Rajya Sabha
Member : Congress Working Committee

सत्यमेव जयते

Member
- Parliamentary Standing Committee - **Finance Ministry**
- Parliamentary Standing Commitee - **Jal Shakti Ministry**
- Parliamentary Consultative Commitee - **Home Affairs Ministry**

दिनांक–28.02.2025

–: संदेश :–

यह अत्यंत हर्ष का विषय है कि **दिनांक– 7 एवं 8 मार्च, 2025** को अम्बालिका इंस्टीट्यूट ऑफ मैनेजमेण्ट एण्ड टेक्नोलॉजी, लखनऊ द्वारा 8th International Conference on **"Challenge & Opportunities in Artificial Intelligence Engineering & Management Application** (COAIEMA- 2025) का आयोजन किया जा रहा है । इस संस्थान ने पिछले कुछ वर्षो में अपने परीक्षा परिणाम और विद्यार्थियों के प्लेसमेण्ट के माध्यम से न केवल उत्तर प्रदेश में बल्कि देश के अग्रणी तकनीकी संस्थानों में अपने को प्रतिस्थापित किया है ।

सम्पूर्ण विश्व बहुत तेजी से आगे बढ़ रहा है । भारत को इस दौर में आगे आने के लिये तकनीकी एवं प्रबन्धन के क्षेत्र में नित्य नये प्रगतिशील कदमों की आवश्यकता है, और दुनिया में हो रही आधुनिक उपलब्धियों का जहाँ संज्ञान रखना है वहीं विशेषज्ञों को आमंत्रित करके प्रदेश का अग्रणी संस्थान होने के नाते नये कदम, नयी खोज एवं नये सिद्धान्तों के लिये अवसर भी प्रदान करना है । भविष्य में यदि देश को शीर्ष स्थानों में शामिल होना है तो सिर्फ चलना ही नहीं पड़ेगा बल्कि अन्य को पीछे छोंड़ते हुये आगे बढ़ना भी होगा ।

मुझे आशा ही नहीं बल्कि पूर्ण विश्वास है कि **अम्बालिका इंस्टीट्यूट ऑफ मैनेजमेण्ट एण्ड टेक्नोलॉजी** द्वारा **अन्तर्राष्ट्रीय संगोष्ठी** का आयोजन अपने अभीष्ठ को प्राप्त करने में पूरी तरह सफल रहेगा ।

मैं अम्बालिका परिवार को इस कदम के लिये हृदय के अन्तस्थल से हार्दिक बधाई देता हूँ, और इस अवसर पर संगोष्ठी के स्मारिका के प्रकाशन पर अपनी शुभकामनायें ज्ञापित करता हूँ ।

ससम्मान,

आपका

(प्रमोद तिवारी)

17, Teen Murti Marg, New Delhi-110011, Mob.: +91-9711247000 | Tel. No.: +91-11-23017727
4, Lal Bahadur Shastri Marg, Lucknow, Uttar Pradesh-226001, Tel. No.: +91-522-2239841
2, Elgin Road, Civil Lines, Prayagraj, Uttar Pradesh-211001, Tel. No.: +91-532-2404032
E-mail : pramodtiwari.mprs@sansad.nic.in | pramodtiwari17000@gmail.com

PREFACE

Here's a potential preface for the conference souvenir:

Welcome to the International Conference on "Challenges & Opportunities in Artificial Intelligence: Engineering & Management Applications" (COAIEMA-2025)!

It is our great pleasure to host this prestigious event on March 7th and 8th, 2025, at Ambalika Institute of Management & Technology, Lucknow. This conference aims to bring together experts from academia, industry, and research institutions to share their knowledge, experiences, and innovations in the rapidly evolving field of Artificial Intelligence.

The theme of the conference, "Challenges & Opportunities in Artificial Intelligence: Engineering & Management Applications," reflects the growing importance of AI in various sectors, including engineering, management, healthcare, finance, and more. The conference provides a platform for researchers, practitioners, and students to explore the latest advancements, challenges, and opportunities in AI and its applications.

We are grateful to all the authors, keynote speakers, panelists, and delegates who have contributed to the success of this conference. We also extend our sincere appreciation to the organizing committee, reviewers, and volunteers for their tireless efforts in making this event a reality.

This souvenir is a compilation of the conference proceedings, including research papers, keynote addresses, and other relevant information. We hope that this publication will serve as a valuable resource for researchers, practitioners, and students interested in AI and its applications.

Once again, we welcome you to COAIEMA-2025 and hope that you will have a productive and enriching experience.

CONFERENCE CHAIR PERSONS

Mr. Pramod Tiwari

(Chief Patron COAIEMA-2025

Mr. Ambika Misra

(Patron COAIEMA-2025)

Ambalika Institute of Management & Technology

Prof. Syed Qamar Abbas

Chairman (COAIEMA-2025)
Ambalika Institute of Management & Technology

Prof. Ashutosh Dwivedi

Vice - Chairman (COAIEMA-2025)
Ambalika Institute of Management & Technology

Prof. Shweta Mishra

Convener (COAIEMA-2025)
Ambalika Institute of Management & Technology

CONVENER'S AND SESSION TRACK DETAILS

Dr. Shweta Mishra

Addl. Director (AIMT Lucknow)

Convener (COAIEMA-2025)
Ambalika Institute Of Management & Technology

Maurawan Road, Mohanlal Ganj, Lucknow,Uttar Pradesh- 226301 (India)

Mob. : +91 7992185666

E-mail: editor.coii@ambalika.co.in

Website: www.aimt.edu.in/Conference/

CO-CONVENERS

Prof. Avneesh Kumar Singh
Mob.:9235704436

Prof Pankaj Prajapati
Mob.:9450638547

Prof. Alok Mishra
Mob.:9455738000

ORGANIZING COMMITTEE MEMBERS

Prof. Abhishek Mishra

Prof. P. K. Srivastav

Prof. S. K. S. Tomar

Prof. Anoop Singh

Prof. Suresh Maithani

Prof. Amritanshu Shekhar

Prof. Vandana Pathak

Prof. Gaurav Shukla

MEMBERS OF THE PROGRAMME COMMITTEE

Prof. Mathieu St-Laurent, Senior Director - Membership, Research and Strategy, IPSA

Prof Euiyoung Kim, Seoul National University, South Korea

Prof Keiichi Tsuchiya, Western University Valencia, Spain

Dr. A.K.singh, Professor,(Dr. APJ Abdul Kalam University)

Dr. Ravi Shankar Mishra, professor (Dr. APJ Abdul Kalam University)

Mr. Shivesh Sinha, Sr. Technical program Manager, California, United States.

Mr. Amir Raza, University of Warwick, UK.

Prof Krishna Raj, HBTI Kanpur.

Dr. Alok Mishra, Professor, Gaya College Of Engineering , Gaya, Bihar

Dr. P.K.Dwivedi, Associate Professor, RMLAU, Ayodhya

Dr. Dharmendra Pratap Singh, Université du Littoral Côte d'Opale, France.

Dr. Amitabh Upadhya, Higher Education Dubai, United Arab Emirates

REGISTRATION AND CERTIFICATE

Prof. P. K. Srivastav	9918336734
Miss Nikhat Firdosh	7985702521
Prof. Kumari Divya	8707848672
Dr. Jitendra Kurmi	8699569434
Mr. Samarpit Singh	6392694797

PROGRAMME

SCHEDULE OF INTERNATIONAL CONFERENCE ON CHALLENGES & OPPORTUNITIES IN ARTIFICIAL INTELLIGENCE: ENGINEERING & MANAGEMENT APPLICATIONS (COAIEMA-2025)			
7th -8th March, 2025			
Day - 1 (07-03-2025)			
S.No	Timing (IST)	SESSION 1: (INAUGRAL SESSION)	
1	10:00 - 10:10 AM	Lamp lightning	ALL DISTINGUISHED GUEST & COLLEGE KEY PERSONS
2	10:10 - 10:11 AM	National Anthem	AIMT STUDENTS WITH ALL PRESENTEES
3	10:11 - 10:15 AM	Welcome of Guests	BY COLLEGE OFFICIALS
4	10:15 - 10:30 AM	Welcome Speech	SHRI AMBIKA MISHRA (CHAIRMAN AIMT & PATRON COAIEMA-2024)
5	10:30 - 10:45 AM	Address by Chief Guest	PROF. J.P. PANDEY (HON'BLE VC, AKTU)
6	10:45 - 11:00 AM	Address by Guest of Honour	MR.A.K.MATHUR,SR.VICE PRESIDENT, LMA
11:00 - 11:15 AM		HIGH TEA	
Session-2: PLENARY AND KEY NOTE SESSION -1			
1	11:15 - 11:45 AM	Keynote Speaker address	PROF P.K.MISHRA, PROFESSOR, BHU, VARANASI
2	11:45 - 12:10 PM	Keynote Speaker address	DR. ANURAG SINGH,ASSOCIATE PROFESSOR,BHU, VARANASI
3	12:10 - 12:50 PM	Keynote Speaker address	Dr. MANISH GUPTA, PROFESSOR, MNNIT ALLAHABAD
4	12:50 - 01:40 PM	Keynote Speaker address	MR. SANJAY MEDHAVI, ASSOCIATE PROFESSOR,BHU, LU.
	01:40 - 02:15 PM	LUNCH	
Session-3: PLENARY AND KEY NOTE SESSION -2			
5	02:15 - 02:45 PM	Keynote Speaker address	DR.S.P.SHUKLA, DIRECTOR,REC, BANDA
6	02:45 - 03:15 PM	Keynote Speaker address	DR. O.P.SINGH,PROFESSOR, BHU, VARANASI
7	03:15 - 03:45 PM	Keynote Speaker address	DR. PUNEET MISHRA,UNIVERSITY OF LUCKNOW, LUCKNOW
Session-4: TECHNICAL SESSION -1(OFFLINE)			
			Session Chair/Co-chair
1	3:45 PM Onward	Oral Presentation (ALL DEPARTMENT)	

Day 2 (08-03-2025)			
Session-5: WELCOME SESSION			
1	10:00 - 10:10 AM	Welcome of Guests and Welcome Speech	DR. ASHUTOSH DWIVEDI, DIECTOR AIMT, VICE CHAIRMAN (COAIEMA 2024)
2	10:10 - 10:40 AM	Address by Special Guest	COL(Dr.) SAMEER MISHRA
	10:40 - 11:00 AM	HIGH TEA	
Session-6: PLENARY AND KEY NOTE SESSION -3			
1	11:00 - 11:30 AM	Keynote Speaker address	DR. MANISH TIWARI, PROFESSOR, MNNIT PRAYAGRAJ MR. AMIR RAZA, UNIVERSITY OF WARWICK,UK
2	11:30 - 12:00 PM	Keynote Speaker address	
3	12:00 - 01:00 PM	Keynote Speaker address (ONLINE)	SRI SHIVESH SINHA
4	01:00 - 01:30 PM	Keynote Speaker address (ONLINE)	SRI DEVENDRA GUPTA
5	01:30 - 02:00 PM	Keynote Speaker address (ONLINE)	MR. BRIJN SINGH
	02:00 - 03:00 PM	LUNCH	
Session-7: TECHNICAL SESSION -2(ONLINE)			
			Session Chair/Co-chair
1	3:00 PM Onward	Oral Presentation (ALL DEPARTMENT)	
Session-8: VALEDICTORY SESSION			
1	04:30 - 04:40 PM	Address by Chief Guest	SRI RAJESHWAR SINGH, MLA, SAROJANI NAGAR
2	04:40 - 04:50 PM	Address by Guest of Honour	PROF. S. P. PANDEY, PRO VICE-CHANCELLOR, COER UNIVERSITY, ROORKEE
3	04:50 - 05:00 PM	Best Paper Award	BY CHIEF GUEST
4	05:00 - 05:10 PM	Vote Of Thanks / Valedictory Session	DR. SHWETA MISHRA, ADDL. DIRECTOR, CONVENER COAIEMA-2024

ABSTRACTS

A COMPREHENSIVE SURVEY ON EMPATH VA: AN AI-ENHANCED VIRTUAL ASSISTANT FOR VICTIMS OF DIGITAL HARASSMENT

Sonali Rangdale[1], Aditi Bele[2], Pradnya Patil[3], Janhavi Jadhav[4]
Vaishnavi Kundgir[5], Rupali Umbare[6]
Department of Information Technology JSPM's Rajarshi Shahu College of Engineering, Tathawade, Pune, India
sprangdaleit@jspmrscoe.edu.in, aditibele13@gmail.com, pradnyapp1201@gmail.com, jadhavjanhavi001@gmail.com, vaishnavi194014@gmail.com, rtumbareit@jspmrscoe.edu.in

Abstract—online harassment has become a pervasive challenge across digital platforms, adversely impacting victims' mental well-being and online safety. This paper presents an AI-driven harassment detection and mitigation system designed to address this critical issue. The system leverages a Flask-based web application integrated with machine learning models, natural language processing (NLP), and real-time user notifications. Key components include an XGBoost classifier and a deep learning severity prediction model, which together identify harassment types and their intensity using custom-trained tokenizers and text preprocessing techniques. The solution processes user comments for harmful content like hate speech, bullying, and offensive language, categorizing them into predefined harassment types based on a curated keyword mapping. By analyzing severity levels, the platform notifies users and provides actionable steps, such as blocking, reporting, or accessing helpline information, ensuring timely intervention. Real-time notifications, user-friendly interfaces, and robust relational databases facilitate seamless interaction and data management. The proposed system integrates multilingual datasets and ensures scalability for diverse applications, emphasizing proactive measures to foster a safer and more empathetic digital environment.

Index Terms — *Online Harassment, AI-Driven Mitigation, Machine Learning, NLP, Real-Time Notifications, Flask Application, Severity Analysis, Digital Safety.*

HOPELINK: A MULTIFACETED DONATION AND SUPPORT APPLICATION USING MEDMATCH ALGORITHM

Ms. S. Chitra[1], Bharath S[2], Deepika C[3], Dhana Chandhuru S[4], Husna Marliya T[5]

[1]*Assistant Professor/IT, Information Technology,*

chitraananya15@gmail.com

[2,3,4,5,] *Students, Department of Information Technology,*

Velalar College of Engineering and Technology, Erode, Tamil Nadu, India.

bharathmowlish407@gmail.com, deepikait2025@gmail.com, chandhurudhana@gmail.com, husnamarliya993@gmail.com

Abstract– The highly intuitive and sophisticated HopeLink mobile app is one that simplifies organ transplantation, blood donation, surrogacy, and sperm donation processes. It connects public donors and hospitals through a secure platform. This application's straightforward layout allows the process simple for individuals to establish themselves as organ donors and choose their preferred options. Users choose roles (Donor or Hospital), with features like dashboards for news, donor registration, and a proprietary organ-matching algorithm (MedMatch Algorithm), which surpasses traditional algorithms used in similar applications by providing enhanced security and unmatched performance. Hospitals can grant safe access to donor information to authorised medical practitioners. The HOPELINK software incorporates end-to-end encryption, Role-based access control and the Advanced Encryption Standard(AES-256), two-factor authentication(2FA), along with biometric prospects for hospital-approved doctors for improved security. HopeLink is a single application currently integrates all types of donations (organ, sperm, surrogacy, and blood) in one unified system.

Index Terms – *Multiple-Organ Offering Network – Healthcare Integration – Donating LifeSaving organs and tissues – MedMatch Algorithm – Privileged Donor Data Management – Straightforward Interface – Streamlined Processes – Reliable Encryption – Multi- Functional Healthcare App.*

NAVIGATING BRAIN TUMOR COMPLEXITY: A DEEP LEARNING APPROACH FOR MULTIMODAL SEGMENTATION FRAMEWORK WITH 2D U-NET ARCHITECTURE

Rajdeep Das

Abstract—Significant advancement of deep learning is responsible for the development of tools that facilitates recognition and subdivision of Brain Tumors on magnetic resonance imaging (MRI). The importance of such physical examination at the beginning is invaluable to aid the patient's subsequent clinical care, and also it is of help in doctor suspecting the illness of their patients and the particular area of the brain affected so that it could result in the accurate treatment given by the doctor. The aim is to develop an early brain-tumour detection model with a future approach toward deep learning methodology that will also focus on checking the accuracy, in both aspects - current or upcoming advancement in field. A model has been developed based on the 2D U-Net architecture, an advanced deep learning approach for multimodal segmentation in brain tumours, for providing precise tumour predictions and identification of affected areas for aiding in the survival prognosis of patients. The proposed model's accuracy using 2D U–Net architecture at the training data is 95.13% and it turns out that the testing data accuracy of the proposed model is 82.14%. This research will contribute a great deal to the multimodal medical image analysis in the near future.

Keywords—*Brain Tumor Detection, Deep learning, Magnetic reasoning Images (MRI), Convolutional Neural Network (CNN)*

EARLY-STAGE DETECTION FOR ALZHEIMER DISEASE USING MACHINE LEARNING AND DEEP LEARNING ALGORITHM

Vishank Agrohi[1],Dr. Sanjeev Thakur[2]

[1,2] *Amity University Noida Campus, Noida, INDIA*

vishank1999@gmail.com, sthakur3@amity.edu

Abstract—The increase in Risk awareness enables patients to take preventive action even before irreversible brain damage occurs, a correct diagnosis of Alzheimer's disease (AD) is crucial to patient treatment, particularly in the early stages of the disease. Despite the fact that numerous recent studies have employed. The majority of machine detection techniques rely on congenital observations to diagnose AD using computers. Early diagnosis of AD is possible, however it cannot be predicted because prediction is only useful up until the point at which the disease starts to show symptoms. Deep Learning (DL) is now a widely used method for AD early diagnosis. Here, we examine how DL can assist researchers in making early diagnoses of AD and provide a quick overview of some of the key works in the field. A widespread and well-known neurodegenerative illness that impairs cognition is Alzheimer's disease (AD). The "nervous system" problem has drawn the greatest interest in the field of medicine. In spite of this thorough investigation, there is no method or remedy to halt or reduce its spread. However, there are numerous solutions (both pharmaceutical and nonmedication alternatives) that can help treat AD symptoms at different stages and improve the patient's quality of life. Patients must receive the right care at each stage of the disease as it progresses. Therefore, it may be beneficial to identify and categorise AD phases before beginning symptom treatment. About 20 years ago, there was a significant acceleration in the field of machine learning (ML) advancement. This work, which use ML techniques, focuses on early Identification of AD. We performed extensive testing to identify AD in the "Alzheimer's Disease Neuroimaging Initiative" (ADNI) dataset. The three categories that were to be created out of the dataset were AD, "Cognitive Normal" (CN), and "Late Mild Cognitive Impairment" (LMCI). The ensemble model of "Logistic Regression" (LR), "Random Forest" (RF), and "Gradient Boost" (GB) is presented in this study as Logistic Random Forest Boosting (LRFB). There is currently a lot of interest in using machine learning to discover metabolic disorders that impact a huge number of people worldwide, such as diabetes and Alzheimer's.Every year, their incidence rates rise at a startling rate. When it comes to Alzheimer's, Changes caused by neurodegenerative disorders impact the brain. An increasing number of people, their families, and the healthcare system will be affected by disorders that impair memory and functioning as our population ages. There will be significant

social, financial, and economic repercussions from these. Alzheimer's disease is unpredictable when it is first developing. When AD is treated early on, it is more successful and results in less minor harm than when it is treated later. A key concern in computer-aided detection (CAD) is the classification of brain diseases. The two main causes of death are brain tumours and Alzheimer's disease (AD). Positron Emission Tomography (PET), Computed Tomography (CT), and Magnetic Resonance Imaging (MRI) scans are used in the study of various disorders. Need specialised knowledge to comprehend the modality. The illness most commonly affects the elderly and has a potentially devastating latter phases. The outcome can be ascertained by computing the score from the Mini-Mental State Examination, after which the MRI The brain scan is successful. In addition, a variety of classification techniques, including deep learning and machine learning are helpful in the diagnosis of MRI scans. They do, however, have some accuracy related restrictions. This research presents several novel preprocessing techniques that greatly enhance these MRI images' classification ability. It also shortened the amount of time needed to train the model using different prior learning algorithms. The Alzheimer's Disease Neurological Initiative (ADNI) provided a dataset that was transformed from a 4D from a format to a 2D one. Techniques for histogram equalisation, selective clipping, and greyscale image conversion were employed to prepare the pictures. Following pre-processing, three learning techniques for the classification of AD were developed.That is Convolution Neural Networks (CNN), XGBoost, and Random Forest.

Index Terms—*Alzheimer's Disease (AD), Artificial Intelligence (AI) ,Deep Learning (DL) , Machine Learning (ML) , MRI, Mild Cognitive Impairment (MCI)*

A ROBUST ENSEMBLE MODEL FOR ALZHEIMER'S DIAGNOSIS THROUGH HANDWRITING FEATURES

Kurra Vishnu Sai[1], Dr P. Joyce Beryl Princess[2], Suddapalii Viswanath[3]

Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences

Coimbatore, India

kurravishnu@karunya.edu.in, joyceberyl@karunya.edu, suddapalliviswanath@karunya.edu.in

Abstract– Alzheimer's Disease (AD), a progressive and intractable brain disorder, is identified by early symptoms, including memory loss. Since conventional psychological testing frequently lacks the accuracy to detect AD in its early stages, early identification of the condition is still difficult. This work suggests a strong ensemble model that uses handwriting characteristics to improve AD diagnosis accuracy. By using XGBoost as the main algorithm, the model produces better results by averaging the results of early classifiers, which reduces errors. Excluding extraneous information from 174 samples increased accuracy by 94%. The promise of machine learning, in particular XGBoost, in early AD identification is highlighted in this paper, along with the significance of combining many biomarkers for a thorough diagnostic framework. The findings suggest building scalable and precise strategies to combat AD's rising prevalence.

Keywords–*Alzheimer's Disease (AD), Handwriting Features. XGBoost Algorithm. Machine Learning, Early Diagnosis, Ensemble Model.*

REAL-TIME PREDICTION OF FUEL CONSUMPTION USING MACHINE LEARNING TECHNIQUES

N Mahima Kumar[1], Mrs. Angelin Jeba[2], Kurra Vishnu Sai[3]

Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore,India

nmahima@karunya.edu.in ,*angelinjeba@karunya.edu*, *kurravishnu@karunya.edu.in*

Abstract– The ability to predict fuel consumption in real-time is essential for optimizing vehicle performance, reducing emissions, and cutting operational costs in transportation systems. This research proposes a machine learning-based framework for real-time fuel consumption prediction, utilizing vehicle telemetry data, such as speed, acceleration, engine load, and environmental conditions like weather and traffic. Machine learning models, such as decision trees, support vector machines, and deep learning, are used to analyze and predict fuel consumption patterns. The model is trained on past driving data and tested on real-world datasets for accuracy. The results demonstrate the effectiveness of the proposed system in providing near-instantaneous predictions with high precision, offering valuable insights for fleet management, energy conservation, and sustainable transportation. The framework is designed to be scalable and adaptable, making it suitable for deployment in diverse vehicle types and driving conditions.

PREDICTIVE MAINTENANCE OF INDUSTRIAL EQUIPMENT USING MACHINE LEARNING: INNOVATIONS AND PRACTICES

Ganesh Adithya G , Gokul K, Anjaline Jayapraba , Deepa T,

Abstract– Predictive maintenance is an industrial operations game-changing strategy implemented to reduce unwanted downtimes while improving efficiency. With the help of machine learning, this project aims to detect possible equipment breakdowns by examining historical data over a period of a few days. The analysis includes key operational parameters, including air and process temperature, rotational speed, torque, and tool wear time. It also contains unique identifiers for equipment and products, as well as labels for occurrence and failure type. Using supervised machine learning algorithms like Random Forest and Support Vector Machines (SVM), the model detects patterns in the operational data to predict failure in anticipation of its actual occurrence. The feature extraction techniques and anomaly detection makes the system adaptive which improves the prediction of health of the equipment. This means that industries can timely intervene, resulting in lesser maintenance costs, longer asset life Cycle along with uninterrupted operation. This project illustrates the role of the continuous learning and adapting capability, wherein consistent operational data monitoring coupled with sophisticated algorithms allows for overcoming the challenges established by variability of industrial environments. The results underscore predictive maintenance as one of the Industry 4.0 manifestations that go hand in hand with smarter and more sustainable manufacturing. The present study highlights the diverse switching characteristics of machine learning that can prove to be a game changer in predictive maintenance providing the industries a solution to tackle the problems proactively enabling the best possible productivity levels along with minimized risk and down time. These findings provide a template for the construction of strong predictive maintenance systems that will drive continuous industrial services and maximize resource consumption.

Keywords– *Machine learning algorithms; Failure prediction; Rotational speed; Tool wear; Random forest classifier; Support vector machine (SVM); Feature extraction; Anomaly detection; Equipment failures; Downtime; Maintenance costs*.

ENHANCING DATA INTEGRITY THROUGH PROVENANCE TRACKING IN SEMANTIC WEB FRAMEWORKS

Nilesh Jn

technoNilesh@gmail.com

Abstract—this paper explores the integration of provenance tracking systems within the context of Semantic Web technologies to enhance data integrity in diverse operational environments. SURROUND Australia Pty Ltd demonstrates innovative applications of the PROV Data Model (PROV-DM) and its Semantic Web variant, PROV-O, to systematically record and manage provenance information across multiple data processing domains. By employing RDF and Knowledge Graphs, SURROUND addresses the critical challenges of shared entity identification and provenance granularity. The paper highlights the company's architecture for capturing comprehensive provenance data, enabling robust validation, traceability, and knowledge inference. Through the examination of two projects, we illustrate how provenance mechanisms not only improve data reliability but also facilitate seamless integration across heterogeneous systems. Our findings underscore the importance of sophisticated provenance solutions in maintaining data integrity, serving as a reference for industry peers and academics engaged in provenance research and implementation.

REFKG: A KNOWLEDGE-DRIVEN SYSTEM FOR FACT-CHECKING AND QUERY RESOLUTION USING KNOWLEDGE GRAPHS

Rajiv Kumar

groverrajiv1984@gmail.com

Abstract– This paper presents RefKG, an innovative framework designed to enhance the ffectiveness of large language models (LLMs) in knowledge-intensive tasks such as fact-checking and knowledge graphbased question answering. RefKG utilizes knowledge graphs in a reflective manner, enabling the model to identify and adjust relational pathways, reconstruct relevant information, and engage in logical reasoning based on retrieved data. The framework employs a knowledge-focused, multi-task fine-tuning approach, integrating specialized instructions and a custom training dataset to optimize LLMs for these tasks. Experimental findings demonstrate that RefKG surpasses existing methods across various benchmarks, highlighting its versatility with different model architectures. This approach is compatible with any open-source LLM, providing a powerful tool for real-time, knowledge-based reasoning in the realms of fact verification and answering complex queries.

POWERED AI BASED VIRTUAL ASSISTANT USING LLM MODEL

Arshdeep Singh[1], Gaytri[2], Kirat Kaur[3], Mehakpreet Kaur[4], Khushboo[5]

Department of Computer Science and Engineering Chandigarh University,Gharuan Mohali, India

arshdhillon8560@gmail.com , gaytrigarg04@gmail.com, kirat.e12999@cuchd.in, jandym1ndy13@gmail.com, khushboobansal2602@gmail.com

Abstract— The modern world is racing against artificial intelligence and automation. People have created a great deal of these systems to speed up their lives. Nowadays, each of us is holding a device. Everyone wants strong automation in it. Comparably, virtual assistants are present in phones and desktop computers. These assistants employ voice commands to receive user input and carry out various automations, such opening programs and browsers. It responds to the user's general questions in addition to supporting automation. We also plan to construct a desktop virtual assistant system that uses Python to help with automation and user inquiries. It can recognize speech and has been trained to provide the desired results. In contrast to current solutions, the assistant is designed as a highly extensible and configurable platform. You have the ability to personalize the assistant's responses and behaviour. Services that work with well-known tools are also available. This user-friendly interface is ideal for users of all skill levels. To increase their productivity, this can function as their personal desktop assistant and be fully automated. The system makes use of APIs such as Open we athermap, which provides weather forecasts, and News api, which disseminates the most recent news. The Large Language Model (LLM) serves as the voice assistant's brain, answering general questions from users. Based on a review of the literature on current virtual assistant technologies, this study seeks to give a thorough and focused knowledge of the project that follows. The project's overview is given in the article, which starts with a study of the literature and an examination of virtual assistant systems as they stand right now.

Keywords— *Large Language Model, Speech-to-Text (STT),*

AUTOMATION REAL-TIME TEXT-TO-BRAILLE CONVERSION AND PRECISION PUNCHING USING IOT FOR ACCESSIBLE READING

G. Anuradha[1], Rakesh Ponukupati[2], Bharadwaj Rachakonda[3]

Department of Computer Science and Engineering (AIML) Velagapudi Ramakrishna Siddhartha Engineering College, Andhra Pradesh, India

ganuradha@vrsiddhartha.ac.in, rakesh20050618@gmail.com, rbharadwaj022@gmail.com

Abstract—The Internet of Things (IoT) allows devices connected to the Internet to receive real-time information for automation in various applications. Iot is used in converting a digital text to a texture Braille that is easily read by the blind in the application of text to Braille converter. outlined here is a textto- Braille converting machine with an application of IoT with an aim of supporting the mobility of the visually challenged. In the next step the text is translated into Braille and its punched with high precision onto paper using a punching tool. With a specially oriented dividing line it is possible to make the formation of Braille right-sided so that the blind can open tactile forward. This integration of IoT makes the entire process allow for real time processing and thereby making the utilization, efficiency and the overall user experience of the Braille conversion much better. The system completes this by integrating Adaptive Braille Formatting and Precision Punching and this guarantees exact braille. Biomechanical Interface and Kinematic Modelling subcomponents enable the precise and efficient functioning of the punching mechanism in a way that does not disrupt reading.

Keywords–*Biomechanical Interface, Kinematic Modeling, precision punching, Adaptive Braille Formatting.*

EFFECTIVE DRUG DOSAGE MONITORING METHOD FOR IMMUNE SYSTEMS USING REINFORCEMENT LEARNING TECHNIQUES

Suddapalli Viswanath[1], Chamarti Hareesh Kumar[2], Dr S.Christina Magneta[3], Kurra Vishnu Sai[4], Jakarigari Akhil[5], Mallu Likith Reddy[6]

UG Student, Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, India

chamartihareesh@karunya.edu.in, christinamagneta@karunya.edu.in , kurravishnu@karunya.edu.in, akhiljakarigari@gmail.com, mallulikhith@karunya.edu.in

Abstract–This study investigates a novel approach to medication dosage tracking using reinforcement learning (RL) to enhance the delivery of immune system medicines. In contrast to the majority of static procedures, this system looks at real-time data to determine the optimal balance between safety and efficacy and adjusts to the patient's demands. To determine each person's ideal dosage based on their response, the course of their illness, and how the therapy varies over time, the system employs sophisticated reinforcement learning techniques, such as actor-critic approaches, Q-learning, and Deep Q-Networks (DQN). The primary goal of the project is real-world implementation, addressing concerns related to regulatory compliance, scalability, and model interpretability. This RL-based technology also increases treatment accuracy and opens the door to improved, more customized treatment approaches. This project intends to close the gap between current medical practices and the potential of cutting-edge AI, resulting in significant progress in individualized healthcare.

Keywords– *Reinforcement Learning (RL), Drug Dosage Optimization, Personalized Medicine, Deep Q-Network (DQN), Immune System Therapy.*

ADVANCED STRESS ANALYSIS WITH HRV METRICS AND DEEP LEARNING-DRIVEN CNN MODELS

Mallu Likith Reddy[1], Dr S.Christina Magneta[2], Chamarti Hareesh Kumar[3]

UG Student Karunya Institute of Technology and Sciences, Artificial Intelligence and Machine Learning, Coimbatore,India

mallulikhith@karunya.edu.in,christinamagneta@karunya.edu , chamartihareesh@karunya.edu.in

Abstract — Stress is a natural response to demands or pressure, which can occasionally be triggered by circumstances that are perceived as hazardous or overwhelming. Excessive stress can lead to major health issues like anxiety, depression, and sleep disruptions. Despite being a popular metric for stress detection, ultra-high precision in heart rate variability (HRV) is still challenging to attain. As opposed to heart rate, which is expressed in beats per minute, HRV is the variation in the time intervals between successive heartbeats, particularly the RR intervals. This study investigates HRV characteristics as biomarkers for stress detection and constructs a convolutional neural network (CNN) model to classify stress into three groups: no stress, interruption stress, and time constraint stress.The model outperforms current techniques with an accuracy of 99.9% using the SWELL-KW dataset. Additionally, examination of variance highlights how crucial HRV is features in identifying stress, showcasing their potential for improving detection accuracy.

Keywords—*Stress Detection, Heart Rate Variability, RR Intervals, Convolutional Neural Networks, Time-Domain Features, Frequency-Domain Features, Chronic Stress, SWELL-KW Dataset, Multi-Class Classification, Biomarkers.*

A NOVEL ONLINE FOOD ORDERING PLATFORM WITH SPECIAL ASSISTANCE FOR VISUALLY IMPAIRED INDIVIDUALS

Smita A Patil[1], Evelyn Jessica[2]

Dept. of Computer Applications KLE Technological University Hubballi, India

smita.patil@kletech.ac.in, evelynjessica0906@gmail.com

Abstract– The Online Food Delivery platform outlines a stepby-step approach that aids in useful adaptation of Online Food Ordering system. The platform caters to the needs of the individuals who are visually impaired. This platform incorporates Artificial Intelligence generated voice based technology that reads out the menu list and ensures effortless navigation on the Food Ordering Platform. The platform further performs food order processing as well as accepts and understands voice based delivery instructions. Further it performs payment processing through appropriate payment method selected during check-out. This platform also sends the order details to the customer as well as to the preferred restaurant. The platform further provides post-delivery assistance as well as collects feedback and rating from the customer.

Keywords—*Artificial Intelligence, Voice-Technology, Food-Ordering*

RASPBERRY PI-POWERED MACHINE LEARNING-BASED SMART ASSISTANT FOR LIBRARY ADMINISTRATION AND BOOK READING FOR BLIND, DEAF, AND DUMB PEOPLE

Varun Kumar,HemandKumar E, HemandKumar E

Abstract– This paper proposes a machine learning based smart assistant for library management and book reader targeted to visually impaired people. It combines low-cost Raspberry Pi computing platform and machine learning and OCR/TTS technologies. Its main goal is to allow printed text to be read aloud, enabling blind users to independently access books and other printed material.Use of machine learning in library management module helps organize the books, give customized recommendations, and keep a track of inventory for better performance. Voice commands will let a user interact with the system giving them a hands-free way to search for, borrow and return books. Speech Recognition provides a very intuitive and user-friendly interface, accessing the system with great ease.This is a large-scale solution that can be created in personal and institutional libraries with the aim of promoting inclusive education and access to information through an emulation UKED chat project. This innovative combination of natural language processing(NLP) with intelligent voice interfaces provides a reduced reliance on external assistance for blind individuals, while also giving them a more independent and enriched learning environment. This smart assistant not only supports accessibility by enabling its users and giving them independence but also increases the overall user experience in libraries.

Keywords–*Smart Library Assistant; Book Reader for Blind People; Raspberry Pi; Optical Character Recognition (OCR); Text to Speech (TTS); Machine Learning (ML); Speech Recognition; Library Management; Natural Language Processing(NLP); Hands Free Control; Real Time interaction; Audio Based Book Access; AI based Accessibility.*

MACHINE LEARNING BASED DEPRESSION DETECTION: A CASE STUDY ON INDIAN COLLEGE STUDENTS

Rajesh Saxena[1], Dr. Ashish Saini[2]

Computer Science & Engineering Quantum University Roorkee, India

mr.rajeshsaxena24@gmail.com, ashishsainigkv7@gmail.com

Abstract – Depression represents a significant global mental health issue, profoundly affecting individuals' physical, emotional, and social aspects of life. The World Health Organization estimates that around 450 million people globally are currently dealing with mental health disorders. Early identification plays a crucial role in improving treatment outcomes; however, traditional diagnostic techniques are often time-intensive, expensive, and require prolonged patient monitoring. Recent advancements in machine learning (ML) present promising solutions by facilitating the early detection of mental health conditions through behavioral analysis. This paper explores current ML- based methods for identifying depression, starting with an overview of how mental illnesses develop over time. Various ML algorithms and their applications in evaluating mental health are critically examined, focusing on model development for identifying anxiety, stress, and depression. The study delves into input-output parameters, datasets, performance metrics, and tools employed in these models, highlighting their advantages and limitations. Additionally, it addresses existing research challenges and offers recommendations for enhancing model performance. A case study involving 572 undergraduate students evaluates depression levels based on factors such as gender, geographical location, academic specialization, socioeconomic status, year of study, and job satisfaction. Depression predictions were carried out using six ML classifiers, with the Burns Depression Checklist (BDC) serving as the assessment tool. Among the models, the Naïve Bayes classifier demonstrated the highest True Positive Rate (0.923), while Logistic Regression and KNN provided reliable results with robust performance metrics. These findings emphasize the potential of ML to transform mental health assessments by providing cost-effective and accessible methods for early diagnosis and intervention.

Keywords – *BDC, depression, feature selection, machine learning, mental illness.*

MULTIMODAL AI FRAMEWORK FOR ENHANCED IMAGE SYNTHESIS AND NFT ASSET MANAGEMENT

S.Janardhan[1] Student, Ojasvi Maddipoti[2]Student, R.Sundar[3] Assistant Professor
School of Computing Sathyabama Institute of Science and Technology Chennai, India
babijanardhan@gmail.com, ojasvim1108@gmail.com, sundar.r251@gmail.com

Abstract— Multimodal AI Framework for Enhanced Image Synthesis and NFT Asset Management introduces a transformative approach to digital image creation, analysis, and management. By integrating advanced models for image generation, analysis, and prompt engineering, the framework enables the production of high-quality images from textual descriptions, keywords, or visual inputs using cutting-edge generative algorithms. The Image Analysis Model incorporates computer vision and natural language processing to provide detailed semantic interpretations and precise textual descriptions. A dedicated Prompt Generation Model enhances input accuracy by generating contextually enriched prompts from user inputs. Blockchain technology facilitates tokenization of generated images as Non-Fungible Tokens (NFTs), ensuring secure ownership, immutable provenance, and decentralized asset management. This framework enables efficient asset transfer, monetization, and scalability, offering groundbreaking applications in digital art, content creation, and asset governance. Addressing critical aspects such as creativity, secure ownership, and interoperability, the research establishes a robust foundation for advancing digital asset ecosystems.

Keywords— *Generative AI, text-to-text generation, image generation, prompt refinement, image recognition, nfts, block chain technology.*

EFFICIENT BRAIN TUMOR DETECTION IN MRI IMAGES USING YOLOV8: A DEEP LEARNING APPROACH

Vikas Maurya[1], Abdul Aleem[2]

School of Computer Science & Engineering,Galgotias University, Greater Noida India

ORCID- 0009-0003-3407-9802[1] ORCID - 0000-0001-6676-9072[2]

mauryavikasofficial@gmail.com, er.aleem@gmail.com

Abstract— The correct diagnosis and treatment of brain tumor patients depend on the accurate detection of the disease from MRI images. Therefore, this article aims at using the YOLOv8 model to mitigate the challenges of tumor localization and classification with high precision and recall. With an augmented custom dataset and pre-training on advanced augmentation techniques, CutMix and Mosaic, YOLOv8 performed outstandingly-wonderful performance metrics. That includes 91.3% precision, 80.6% recall, 85.2% mAP50, and 60.4% mAP50-95. It explains that the model has resistance towards diversity in shapes, size, and complex anatomies. The evaluation metrics in the form of confusion matrix analysis and precision-recall curves enhance the reliability as well as adaptability towards real-world medical imaging tasks of the model. With rapid inference times, it facilitates integration into clinical workflows for diagnostic purposes. Tumor segmentation, dataset expansion is considered as further work to improve. In this study, YOLOv8 solidifies its strength and potency of applicability in automation to detect the brain tumors with great potential to boost up the diagnosis accuracy as well as its benefit to the patient.

Keywords–- *Brain tumor detection, YOLOv8, MRI imaging, object detection, medical diagnostics, precision-recall analysis, mAP50, mAP50-95, data augmentation, Cut Mix, Mosaic augmentation, tumor localization*

COMPARATIVE ANALYSIS OF CLASSICAL AND QUANTUM RUNGE-KUTTA METHODS IN CLASSIFICATION TASKS

Janak Patel

janakkp220@gmail.com

Abstract– This research investigates the performance of classical and quantum Runge-Kutta methods across various classification tasks, including MNIST digit classification, CIFAR-10 object classification, and IMDb sentiment analysis. Higher-order Runge-Kutta methods (RK2, RK4) show marginal improvements in accuracy and F1 scores over lower-order methods (RK1, RK3) in classical implementations, with training time increasing with method complexity. Enhanced RK4 variants offer computational efficiency without compromising performance. Quantum implementations achieve consistent accuracy but require significantly more computational resources. Enhanced quantum methods exhibit faster convergence and reduced parameter counts, although they do not surpass classical methods in accuracy or F1 score. The findings highlight the potential benefits and current limitations of quantum enhancements in machine learning models.

DATABASE SECURITY CHALLENGES AND COUNTERMEASURES: A COMPREHENSIVE REVIEW

Janak Patel

janakkp220@gmail.com

Abstract– This paper provides a comprehensive review of database security challenges and countermeasures in contemporary computing environments. As databases have become integral to nearly every aspect of modern life, including financial transactions, online shopping, and organizational management, the importance of securing sensitive data has grown exponentially. The discussion covers various threats, such as human error, malware attacks, natural disasters, and hardware failures, which pose significant risks to database integrity and availability. Key security measures explored include role-based access control, encryption, data backups, and the implementation of firewalls. By examining these threats and protective strategies, this paper aims to enhance understanding and promote effective practices for safeguarding databases against evolving security threats.

PREDICTING MENTAL HEALTH TREATMENT SEEKING USING MACHINE LEARNING

Janak Patel

janakkp220@gmail.com

Abstract– This research investigates the factors influencing mental health treatment seeking among individuals, particularly within the technology industry. Utilizing a dataset from the 2016 Open Sourcing Mental Illness (OSMI) survey, which includes over 1400 entries, the study aims to identify key determinants that dissuade individuals from seeking professional mental health care. The data was preprocessed to remove non-informative features and anomalies, resulting in a refined dataset of 960 entries. Various supervised learning models, including Random Forest, Logistic Regression, Support Vector Machine (SVM), Gaussian Naive Bayes, and eXtreme Gradient Boosting (XGBoost), were employed to predict the likelihood of seeking treatment based on personal and work-related factors. The XGBoost model outperformed the others, achieving an accuracy of 88.7%. The analysis revealed significant predictors, such as the presence of a mental disorder and a family history of mental illness. The study highlights the potential of machine learning in identifying gaps in mental health care and emphasizes the need for targeted interventions to reduce stigma and improve treatment accessibility, particularly among male-identifying individuals. Future work aims to expand the dataset and further investigate gender-related disparities in mental health treatment seeking.

MACHINE LEARNING AND DATA AUGMENTATION TECHNIQUES FOR CARDIO-VASCULAR DISEASE PREDICTION MODEL

Utkarsh Kejriwal[1], Arun Singh[2]

Lovely Professional University, Phagwara, Punjab

kejriwalutkarsh407@gmail.com ,arunmandiarun2001@gmail.com

Abstract– Cardiovascular disease (CVD) is one of the deadliest diseases throughout the world which makes it much more critical to accurately forecast this disease using the best tools in our toolbox. However, the imbalance in medical data, not only for CVD, makes it difficult to provide a good prognosis of the disease. Using different tools such as resembling or algorithmic changes combined with Machine Learning (ML) and Deep Learning (DL) techniques is one of the foremost methods to deliver good results. Using this article, the scholars aim to present a deep analysis of the different ML and DL algorithms and how they perform when the data is resampled using methods such as ADASYN, SMOTE and others. In order to increase model recall and precision and avoid overfitting, certain data modification techniques are crucial. This research presents a significant analysis and review of the methods that are being used by researchers in the modern age and help to develop more meticulous and personalized CVD prediction models, which will ultimately improve the medical industry and reduce the effectiveness of this disease.

Keywords. *CVD Prediction, Neural Networks, Data Imbalance, ADASYN, SMOTE, Medical Data Analysis*

STATISTICAL VALIDATION IN CULTURAL ADAPTATIONS OF COGNITIVE TESTS: A MULTI- REGIONAL SYSTEMATIC REVIEW

Miit Daga[1], Priyasha Mohanty[2], Ram Krishna[3], Swarna Priya RM[4]

School of Computer Science Engineering and Information Systems Vellore Institute of Technology Vellore, India

miitdaga03@gmail.com, priyashamohanty03@gmail.com, ramkrishna50505@gmail.com, swarmapriya.rm@vit.ac.in

***Abstract*—** This systematic review discusses the methodological approaches and statistical confirmations of cross-cultural adaptations of cognitive evaluation tools used with different populations. The review considers six seminal studies on the methodology of cultural adaptation in Europe, Asia, Africa, and South America. The results indicate that proper adaptations need holistic models with demographic changes, and education explained as much as 26.76% of the variance in MoCA-H scores. Cultural-linguistic factors explained 6.89% of the variance in European adaptations of MoCA-H; however, another study on adapted MMSE and BCSB among Brazilian Indigenous populations reported excellent diagnostic performance, with a sensitivity of 94.4% and specificity of 99.2%. There was 78.5% inter-rater agreement on the evaluation of cultural adaptation using the Manchester Translation Evaluation Checklist. A paramount message of the paper is that community feedback is necessary for culturally appropriate preparation, standardized translation protocols also must be included, along with robust statistical validation methodologies for developing cognitive assessment instruments. This review supplies evidence-based frameworks for the further adaptation of cognitive assessments in increasingly diverse global health settings.

***Keywords*—** *Cognitive assessment, cultural adaptation, cross-cultural validation, neuropsychological testing, test translation, demographic adjustment*

SMART SOLAR SOLUTIONS: AI FOR SOLAR IRRADIANCE PREDICTION AND PANEL OPTIMIZATION

Binod Mandal[1], Arun Kumar Sah[2], Dr. J Umamageswaran[3]

Department of CSE,Amrita School of Computing Amrita Vishwa Vidyapeetham Chennai, India

binodmandal2514@gmail.com, arunsah98078@gmail.com, umamageswaran@ch.amrita.edu

Abstract—The increasing demand for sustainable energy has significantly advanced the incorporation of Artificial Intelligence (AI) in the optimization of solar energy systems. This studyintroduces a novel method for forecasting solar irradiance and optimizing solar panel configurations through AI-powered models. The primary goal is to enhance the efficiency of solar panels by precisely predicting solar irradiance and determining the ideal tilt angles for maximum energy production. Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM), and ransformer models are utilized to forecast solar irradiance with high precision and adaptability to varying environmental and geographical contexts. These models are trained on historical irradiance data, incorporating factors such as environmental conditions, geographical parameters, and time- series patterns to predict future irradiance. Moreover, the optimized tilt angles of solar panels, calculated based on solar radiation, are intended to boost energy efficiency. The findings highlight the efficacy of the proposed AI-based models in generating reliable irradiance predictions, which contribute to the advancement of more intelligent solar energy solutions. This approach offers substantial potential
for enhancing the performance and sustainability of solar energy systems, providing a more efficient route to renewable energy generation.

Keywords— *Solar Irradiance Prediction, Panel Optimization, Transformer Models, Renewable Energy, Time-Series Analysis, Sustainable Energy Solutions*

IMPACT ASSESSMENT OF ROAD ACCIDENTS THROUGH IMAGE PROCESSING TECHNIQUES

Gaurav Patel

Department of BCA, Ambalika Institute of Higher Education, Lucknow, Uttar Pradesh, India.

Abstract– Road accidents pose significant challenges globally, impacting human life, public health, and infrastructure. Timely and accurate assessment of these incidents is crucial for effective response, prevention, and mitigation strategies. This paper presents a comprehensive study on the impact assessment of road accidents using image processing techniques, focusing on automated detection, severity estimation, and damage evaluation. The proposed framework leverages computer vision algorithms to analyse accident scenes from CCTV footage, dashcam videos, and drone imagery. Key features such as vehicle deformation, debris patterns, and skid marks are identified using edge detection, object recognition, and deep learning models. Additionally, severity is assessed by integrating factors like vehicle type, collision intensity, and environmental conditions into the analysis. Experimental results demonstrate that the proposed techniques enhance the accuracy and speed of accident assessments compared to traditional manual approaches. This automated system offers potential for real-time alerting, improved incident reporting, and more efficient resource allocation by emergency services. The findings highlight the effectiveness of image processing in minimizing human error, optimizing road safety management, and contributing to smarter transportation systems.

Keywords– *Road Accidents, Impact Assessment, Image Processing, Smarter Transportation.*

EDGE AI FOR REAL-TIME ENVIRONMENTAL MONITORING IN SMART CITIES

Kajal Singh

Abstract–As urban populations continue to grow, smart cities face increasing challenges in managing environmental factors such as air quality, water contamination, noise pollution, and temperature fluctuations. Traditional environmental monitoring systems rely on centralized data processing, which can introduce delays in decision-making and response times. Edge AI offers a transformative solution by enabling real-time data processing directly at the source, such as IoT sensors and edge devices deployed throughout the city. This research explores the potential of Edge AI in enhancing environmental monitoring in smart cities by providing faster, more efficient, and privacy-preserving solutions. By utilizing AI-powered devices to process environmental data locally, real-time insights can be gained, enabling timely interventions that improve public health, sustainability, and urban resilience.

The paper also delves into the challenges of implementing Edge AI in environmental monitoring systems, including issues related to data privacy, system scalability, and integration with existing urban infrastructure. It proposes a framework for deploying Edge AI in a smart city context, emphasizing the use of machine learning algorithms for anomaly detection, data fusion across multiple sensor types, and privacy-preserving techniques like federated learning. With the ability to quickly process and analyze environmental data at the edge, smart cities can significantly enhance their response to environmental hazards, promote sustainable practices, and improve quality of life for residents. This paper outlines the pathway for future advancements in Edge AI, contributing to the development of more intelligent, sustainable, and resilient urban environments.

Keywords– *Edge AI, Real-Time Monitoring, Environmental Monitoring, Smart Cities, IoT, Privacy-Preserving, Scalability, Data Integration, Sustainability, Urban Resilience.*

TRANSFORMATIVE AI APPLICATIONS IN FINANCIAL FRAUD DETECTION: A NOVEL APPROACH TO PROTECTING ECONOMIC INTEGRITY

Neha Verma

Assistant Professor (Department of MBA) Ambalika Institute of Management & Technology, Lucknow

Vermaneha1090@gmail.com

Abstract— Financial Fraud has become increasingly common today due to the decentralized finance systems. It involves illegal activities that take over our finances without our knowledge, potentially causing huge losses and negatively affecting economic integrity. Financial fraud erodes trust among the general public, investors, and customers, destabilizing the financial system and hindering economic development.. In this Research paper, we aim to explore methods for preventing these fraudulent activities using Artificial Intelligence. It studies the methods and tools we can use to reduce financial fraud. As technology advances, we now have artificial intelligence, which enables us to use modern techniques to combat fraud. We can use various Artificial Intelligence tools like Machine Learning, Deep Learning, Natural Language Processing, Anomaly Detection, Reinforcement Learning, Graph method, and various other tools to recognize the unidentified patterns in our financial transactions and save ourselves from financial fraud. Furthermore, it is essential to implement robust security systems within decentralized finance platforms. This study on enhancing security systems and preventing financial fraud will be helpful to future developers, Researchers, Investors, Individuals, Regulatory bodies, and Security Firms. The goal is to make decentralized finance systems more secure to mitigate the risk of financial fraud and to protect the economic integrity for sustained economic development. Based on this study we will able to upgrade the security system of our financial transactions by using various artificial intelligence tools and can reduce the number of frauds. While completely eliminating financial fraud is challenging, we can significantly reduce it through concerted efforts, creating awareness, utilizing artificial intelligence tools, and exercising vigilance.

***Keywords*: -** *Financial Fraud, Fraud Detection, Artificial Intelligence, Economic Integrity, Security systems, AI Tools, Risk, Sustained Economic Development.*

COOPERATION, COLLABORATION AND COMPETITION: ISSUES OF INDIAN DEFENCE INDIGENIZATION

Ashok Kumar Panda, FIE (India)
Ph D Scholar, Poornima University, Jaipur, Rajasthan
akp.eme@gmail.com

Abstract–Keeping in view of India's security arrangement on prevailing hostile environment and advancements in technology based warfare, the current defence requirement in strategic preparedness with focused objectives having well defined cooperation, collaboration and competition amongst the national and international players with substantial credentials are worth debatable. This is primarily important due to defence budget of India is sky rocking and remaining heavily dependent on large scale import. Though the nation possesses the research entities on defence domain, however state of art facility is lagging with non-availability of requisite materials which restricts delivering products of niche technology with adequate sophistication. The cooperation amongst all stake holders like users, researchers, vendors, developers, validation agency, standardization, policy making entities and approvers in India are to be synchronized for time bound deliverables with cost effectiveness. Equally the collaboration with professional bodies, original equipment manufacturers and academia of national eminence are most sought to determine the exact scope of work and phase wise deliverables of a project. The fair competition amongst the peers should be lively, healthy and ethical since experts on India's defence indigenization is long way for saturation in terms of mature technology. Since the warfare pattern changed to domains of electromagnetic, laser based, cyber oriented, radiological, nuclear, biological, chemical and psychological, the need of cooperation, collaboration and competition are must to cater for holistic defence indigenization program.

Keywords– *Innovations; Cooperation; Collaboration; Competition; Prioritisation; Interface*

THE ROLE OF GREEN ACCOUNTING IN FACILITATING A TRANSITION TO A GREEN ECONOMY IN INDIA: CHALLENGES, PRACTICES, AND POLICY IMPLICATIONS

Vinay Kumar Yadav[1], Om Prakash[2]

Department of Management Ambalika Institute of Management & Technology Lucknow, India

v.k.yadav260789@gmail.com, omprakashnep1@gmail.com

Abstract–The global pursuit of sustainable development has lead to increased attention the role of green accounting in fostering environmental friendly economy growth. Green accounting, a tool for measuring environmental costs and integrating them into economic decision-making, is pivotal in steering India toward a sustainable economy. This research examines the significance of green accounting in India's transition to an environmentally responsible economic model. By supporting the implication of environmentally friendly project, green accounting promotion helps enterprises achieve their environmental, social, and governance (ESG) goals and boosts their sense of social responsibility and environmental protection. It evaluates current practices in corporate and government sectors, explores their alignment with international frameworks, and assesses their impact on sustainable resource management. The study highlights the challenges faced, including inadequate data, lack of standardization, and limited awareness among businesses. Additionally, it explores the policy implications and potential of green accounting to advance India's climate goals and sustainable development agenda. By addressing these challenges and leveraging technology and innovative frameworks, green accounting can become a cornerstone of India's green economic growth.

Keywords–*Sustainable Development, Green Accounting, Environmental Cost, ESG Goals, Green Economic Growth, International Framework*

THE LAST MINUTE DELIVERY SERVICES: CUSTOMERS' GAP AND DELIGHT

Abhishek Srivastava, assistant professor, AIMT

Abstract– The rapid evolution of e-commerce has significantly reshaped consumer's expectations, particularly regarding delivery speed. Last minute delivery companies have emerged as a pivotal player in this transformation, offering expedited delivery services that cater to the growing demand for immediate gratification. This research explores the role of last minute delivery companies in the development of ecommerce, focusing on how they enhance customer satisfaction, influence purchase behaviour, and contribute to the competitive dynamics of online retail. Using primary and secondary data sources, the paper examines the operational model of these companies with special reference to Blinkit online delivery Service Company, the challenges they face in logistics and supply chain management, and customers' gap. Additionally, the study investigates the impact of last minute delivery on customer loyalty, business profitability, and broader implication for ecommerce growth. The findings suggest that last minute delivery services are not only transforming consumer purchasing pattern but also reshaping the logistics and delivery infrastructure of online businesses, offering new opportunities for competitive differentiation in a highly saturated market.

Keywords– *Last minute delivery services, customers' gap, operational model, supply chain management.*

DEVELOPMENT OF AN INTEGRATED DJANGO WEB INTERFACE FOR FACIAL ATTRIBUTES GENERATION USING DEEP LEARNING

Vasanthi R[1] ,Zaiba Thabassum K[2], Vishali S[3]

[1]*Assistant Professor Department of Computer Science St.Joseph's Institute of Technology Chennai, India*

[2,3]*Student Department of Computer Science St.Joseph's Institute of Technology Chennai, India*

vasanthivinoth.me@gmail.com, connectzaiba145@gmail.com, vishalisait@gmail.com

Abstract—Creating lifelike faces from mere textual descriptions is a complex challenge that AI researchers have been striving to overcome. This paper presents a novel approach that utilizes the power of deep learning to bring this vision to life. By combining a Conditional Generative Adversarial Network (CGAN) with a Convolutional Neural Network (CNN), the researchers have developed a model capable of generating highly realistic facial images based on given textual descriptions. The CGAN generates initial facial images from the text input, while the CNN refines these images, ensuring they are both accurate and visually appealing. To train this model, the researchers used a dataset of paired text descriptions and corresponding facial images. By learning from this vast dataset, the model can produce diverse and high-quality images that closely align with the original text. The effectiveness of this method was evaluated through both human feedback and quantitative metrics. The results demonstrate significant advancements in text-to-face generation, opening up exciting possibilities for applications in fields like computer graphics, virtual reality, and entertainment. However, this powerful technology also raises important ethical considerations, particularly regarding potential misuse for identity theft and cybercrime.

Keywords—*Text-to-Face Generation, Conditional Generative Adversarial Network (CGAN), Convolutional Neural Network (CNN), Facial Attribute Classification. Text-Based Image Synthesis, Image Generation Evaluation Metrics. Machine Learning in Virtual Reality, Synthetic Facial Image Generation, Human Assessment of AI Models, Realistic Image Synthesis*

NAVIGATING THE NEW WORKFORCE: PERFORMANCE MANAGEMENT AND RETENTION OF GENERATION Z EMPLOYEES WHILE INCREASE OF GIG AND FREELANCING ECONOMY IN INDIA

Mansi Srivastava

Department of Management Ambalika Institute of Management & Technology Lucknow, India

srivastavamansiaimt@gmail.com

Abstract–In a competitive marketplace, retention of talented and younger employees is a challenge for organizations and that too in the increasing arena of GIG and Freelancing economy. Organizations are facing significant challenges to retain Generation Z employees. Born after the late 1990s, this group has distinct values, expectations, and work style that set them apart from previous generations. They are tech-savvy, highly educated, and prioritize work-life balance, social responsibility, and personal growth followed by characteristics of showing job-hopping, once these individuals are employed, they are not likely to remain in that position for very long. As a result, they are driving significant changes in the workplace and challenging traditional management practices. Organizations therefore need to find innovative solutions to retain this group of employees. Thus, it becomes important for organizations to execute employees' development strategies to retain Generation Z employees. The goal of this paper is to analyze the effect of talent management (TM) practices i.e. mentoring, strategic leadership, social media, and knowledge sharing on the intention to stay of Generation Z employees and strengthening this relationship by investigating the mediating role of competency development. Competency Development mediates the relationship between strategic leadership, social media, knowledge sharing. The purpose of this paper was to determine the causal relationship between management support towards talent management and the impact thereof on the turnover retentions of Generation Z employees in the increasing prevalence of GIG and freelancing economy in India.

Keywords– *Generation Z, GIG Economy, Freelancing, Talent Management, Competency Development, Strategic Leadership.*

THE TWO ETHICAL IMPERATIVES: DIVERSITY AND INCLUSION, DRIVERS OF ORGANIZATIONAL EFFECTIVENESS

Jyoti Singh

Department of Management Ambalika Institute of Management & Technology Lucknow, India

Singh.jyoti297@gmail.com

Abstract–Diversity and Inclusion are not just ethical imperatives, but also strategic advantages for organizations. By embracing D & I organizations can unlock the full potential of their workforce, drive innovation and achieve greater success. Diverse teams bring together individuals with different backgrounds, experiences and perspectives. This variety of viewpoints fosters creativity and challenges conventional thinking, leading to more innovative solutions and products .Inclusive environments encourage open communication and the sharing of diverse ideas, further stimulating innovation. Diverse teams are better equipped to consider a wider range of perspectives and potential outcomes when making decisions. Inclusive environments ensure that all voices are heard and valued, leading to more informed and well-rounded decision –making. Diverse and inclusive workplaces foster a sense of belonging and psychological safety, leading to higher level of employee satisfaction and well-being. Organizations that prioritize D &I are seen as more attractive to top talent and customers. This research work is descriptive in nature. The secondary information has been collected from different Researchers' and Scholars' published books, periodicals, conference papers, articles published in journals, websites and working papers which examine literature in the area of equity, diversity and inclusion. Therefore the paper contends that management should modify their structures and styles for equitable & inclusive workplace. High diversity culture should be adopted by management for continuous improvement. This can be done through events and activities that showcase the different cultures and backgrounds of employees.

Keywords– *Employee engagement, Inclusive Workplace, Strategic innovations, Diversity and ethics.*

NEO BANKS: A BREAKTHROUGH TOWARDS FINANCIAL INCLUSION IN INDIA

Vasini Gautam

Department of Management Ambalika Institute of Management & Technology Lucknow, India

vasutam88@gmail.com

Abstract– Neo banks (virtual, digital, Internet banking) are fin-tech companies that offer both conventional and novel banking services online (such as peer-to-peer payments, automated financial advisors crypto currency exchange and many more). Based on slimmed-down model, neo banks have emerged as one of tools of financial inclusion as they provide financial services to customers at lower fees, competitive interest rates and customized products as a result higher digitalization. By bridging the gap between formal financial institutions and underserved population, neo banking contributes to enhancing economic independence. This work commences by evaluating the role of Neo banks in promoting financial inclusion and financial literacy among the Indians. The paper also analyzes challenges such as regulatory issues, cyber security concerns and digital divide. Neo banks are in its inception stage, this paper attempts to understand the advantages, challenges and benefits of Neo banking. Based on secondary data and literature review, it highlights effective strategies for increasing digital financial inclusion which includes affordable and equitable access to internet, increasing financial literacy and developing national financial inclusion strategies. The findings reveal that neo banking not only increases accessibility to financial products but also promotes financial literacy, savings and investment among Indians. Both regulators and financial institutions will need to collaborate to establish strong regulatory foundations while enhancing the customer experience.

Keywords– *Neo-Bank, digitalization, financial inclusion, fin-tech, cyber security, digital divide.*

PRECISION IN BREAST CANCER DETECTION: A HYBRID CNN AND TRANSFER LEARNING FRAMEWORK

Anshika Chaudhary, Alok Katiyar

Abstract— Breast cancer is the most prevalent and fatal kind of cancer affecting women all over the world. Early and accurate detection would improve survival rates and give cure opportunities for patients. The purpose of this work is to discuss a hybrid CNN-TL method to achieve accurate detection of breast cancer. This approach utilizes CNNs to automatically extract spatial features from medical images using transfer learning to leverage pre-trained models. So with limited data, it maximizes accuracy in the model. The dataset used in this research work is quite well-known and acquired from the UCI repository, being the breast cancer dataset with features of other malignancies.

This research work employed an architecture of CNN that was especially developed and trained over the processed dataset by assigning pseudo-shapes to tabular data. Moreover, the data augmentation techniques have been used to improve the model regarding robustness. Surprisingly, the hybrid model can achieve 92.11% accuracy in the test set. Therefore, these results indicate that the combination of CNN using transfer learning is capable of huge improvements in the performance of systems intended to detect breast cancer, thereby providing this as robust and efficient tools to the doctors. The study, therefore, opens the possibility of deep learning models holding the key for early detection systems that could significantly bring down mortality associated with the disease.

Keywords– *Breast Cancer Detection, Convolutional Neural Networks (CNN), Transfer Learning, Machine Learning, Deep Learning, Feature Normalization, Artificial Intelligence, ImageDataGenerator, LabelBinarizer, Data Preprocessing, Model Optimization, Adam Optimizer, Keras, Neural Networks, Medical Imaging, Health Informatics.*

AI POWERED TEXT EDITOR WITH SPEECH TO TEXT CONVERSION FOR HANDICAPPED WRITERS

Jayesh Patil[1*], Atharva Shinde[2], Prajakta Satav[3], Om Patil[4], Nisha Wandile Kimmatkar[5]

[1*2345]*Department of Computer Engineering, JSPM's Rajarshi Shahu College of Engineering, Tathawade, Pimpri-Chincwad, 411033, Maharashtra, India.*

patiljayraj2004@gmail.com , atharvashinde811@gmail.com prajaktasatav123@gmail.com omip411@gmail.com nishakimmatkar@gmail.com

Abstract–In this modern era, many handicapped people struggle with content creation. Therefore, it is important to develop technological tools for these people. Writing and communication are basic requirements for both academic and professional careers but present a challenge for a person with a disability. Unfortunately, traditional techniques are not able to fulfill all the criteria for a handicapped person. The goal of this research is to provide a platform for those people to express their ideas as their voice, later on, which will be turned into text using our model. Research is going to provide user user-friendly user interface, easy to use, simple to understand, and quick to respond.

Keywords– *Digital Signal Processing (DSP), Automatic Speech Recognition (ASR), Natural Language Processing (NLP), machine learning, etc.*

CARDIAC STATUS PREDICTION USING LOGISTIC REGRESSION MODEL

Aditya Bhoyar*, Atharva Batwe*, Saurabh Bansod[1], Shashank Kumar Singh[2], Anirban Jyoti Hati[3]

*Electronics System Engineering Nielit Aurangabad Aurangabad, India

[1,2,3] Scientist/Engineer 'C' Nielit Aurangabad Aurangabad, India

adityabhoyar199@gmail.com, atharva.batwe21121@gmail.com, saurabhbansod@nielit.gov.in, shashank@nielit.gov.in, anirban@nielit.gov.in

Abstract– This project focuses on creating an IoT platform using machine learning to predict cardiac status with a Raspberry Pi. The system uses a DS18B20 sensor for temperature measurements and a MAX30100 sensor for monitoring heart rate and oxygen saturation. It incorporates various user-specific health features such as age, gender, smoking status, cigarettes per day, hypertension prevalence, blood pressure medication usage, diabetes status, BMI, heart rate, and temperature to improve prediction accuracy. The data collected is processed on the Raspberry Pi using a pre-trained machine learning model (Logistic Regression) to predict cardiac health status. A Flask-based web application provides an intuitive user interface, allowing users to input their health data and receive cardiac status predictions. This project aims to offer a low-cost, efficient, and user-friendly tool for early detection and monitoring of cardiac health, with potential benefits in preventive healthcare and personalized medicine.

Keywords–*Machine learning, Logistic Regression, Cardiac Status Prediction.*

CHALLENGES AND OPPORTUNITIES OF ARTIFICIAL INTELLIGENCE IN MECHANICAL DESIGN AND DEVELOPMENT

Madhur Srivastava[1], Atul Kumar[2]

Assistant Professor: Mechanical Engineering Department

(School of Management Sciences, Lucknow) Uttar Pradesh, India

er.madhurprakashsrivastava@ambalika.co.in, at981991@gmail.com

Abstract–Mechanical engineering is not an exception to the way artificial intelligence (AI) is revolutionizing various industries. AI offers previously unheard-of possibilities for innovation, ranging from automation and predictive maintenance to design process optimization. Data reliability, system integration, and ethical issues are just a few of the major obstacles that come with integrating AI into mechanical engineering. This study examines the state of artificial intelligence (AI) applications in mechanical engineering today, highlights major issues, and talks about possible fixes and emerging trends. This study attempts to give a thorough picture of AI's influence on the profession by addressing both the opportunities and challenges.

Keywords– *Artificial intelligence, opportunities and challenges of AI, mechanical engineering, AI Applications, design and development of AI etc.*

ENHANCED SENTIMENT ANALYSIS WITH DEEP LEARNING: A COMPARATIVE STUDY OF RNN, LSTM, AND GRU ARCHITEC-TURES ON AMAZON REVIEWS

Narendra Singh and Dr. Santosh Kumar

School of Computer Science & Engineering, Galgotias University, Greater Noida, India

singhrajputr69@gmail.com , santosh@galgotiasuniversity.edu.in

Abstract– In the modern electronic era, sentiment analysis is the core tool applied in understanding consumer behavior and preferences, ranging from product rec-ommendations to analysis of customer feedback. This research presents the ap-plication of deep learning architectures on sentiment analysis, using the Amazon Reviews dataset by Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM) networks, and Gated Recurrent Units (GRUs). These architec-tures are more competent at capturing sequential dependencies in textual data that provide fine-grained sentiment classifications. This study focuses on prepro-cessing techniques that help optimize textual input. For this purpose, tokeniza-tion, sequence padding, and embedding layers that use pre-trained word vectors are used. In order to identify the appropriate architecture, models are evaluated with metrics, such as accuracy, precision, recall, and F1-score. Comparative anal-ysis presents a trade-off in performance versus computational efficiency between the chosen models. Experimental results prove that LSTM and GRU models have immense accuracy and robust generalization, which is superior to traditional methods. The work highlights the ability of deep learning to scale to the demands of a large-scale sentiment analysis task and provides insights for the practical deployment of such models to real-world applications. This work contributes to-ward the promotion of automated sentiment analysis by illustrating its im-portance in data-driven decision-making both in sectors and industries.

Keywords– *Sentiment Analysis, Deep Learning, Amazon Reviews, Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM), Gated Recurrent Units (GRU), Text Classification, Natural Language Processing (NLP), Sequen-tial Data, Consumer Behavior Analysis*.

AN ENHANCED FRAMEWORK FOR DEEPFAKE DETECTION: INTEGRATING MTCNN-BASED FACE EXTRACTION WITH CNN CLASSIFICATION FOR HIGH ACCURACY

Nitin Kumar[1], Srinivasan Sriramulu[2]

Scholar, Galgotias University, Greater Noida India

kumar21sachin99@gmail.com s.srinivasan@galgotiasuniversity.edu.in

Abstract— The amount of DeepFake technology can be used to spread false information and compromise people's privacy because of its growing popularity. This work presents a reliable DeepFake detection model based on primary face detection through the Multi-task Cascaded Convolutional Neural Network (MTCNN) and the proposed Videoframe Generator for pre- processing the videos. The primary classifier, CNN, is also very accurate, with a predicted accuracy of 98%, as supported by a score of 0.98 AUC from the DeepFake Detection Challenge dataset. As evidenced by the impressive performance of the framework, the proposed method effectively identifies manipulated content, especially in low-quality and complex video datasets. Due to addressing significant limitations in scalability and generalizability of the prior work, this thesis offers an efficient solution for real-time applications. It contributes to the development of synthetic media detection.

Keywords—*MTCNN, Data Science, DeepFake detection, Face detection, Machine Learning.*

ENHANCED DEEPFAKE IDENTIFICATION USING EFFICIENTNETB4 AND TRANSFER LEARNING FOR BETTER MEDIA VERIFICATION

Nitin Kumar[1], Srinivasan Sriramulu[2]

Scholar, Galgotias University, Greater Noida India

kumar21sachin99@gmail.com s.srinivasan@galgotiasuniversity.edu.in

Abstract—The problems associated with DeepFake technology are the threat to media credibility, cybersecurity and loss of confidence within society all of which demand a strong method of detection. In this work, we propose a new DeepFake detection framework which is constructed from EfficientNetB4 model with transfer learning and preprocessing steps such as flipping, rotation, zoom, and contrast adjustment. The model was trained and evaluated using the Deepfake Detection Challenge dataset with 89.36 % test accuracy on precision, recall and F1-macro for both real-time and fake class. Compared to existing work, its performance is superior and it shows high immunity to a wide variety of manipulations. This proposed scalable framework can have revolutionary uses across diverse fields including media forensics, improving moderation of social media and news systems, and cybersecurity against impersonation and fraud. Besides, it can assist legal investigation processes by pointing at forged evidence. Further improvements of the presented approach will include the investigation of incorporating hybrid CNN-transformers Architectures, Combination of several features at once and a real-time detection mode, which once again prove the solution's importance as a tool to combat DeepFake threats and protect digital identities.

Keywords—*EfficientNetB4, Deep Learning, Machine Learning, Tensor Flow, Face Detection.*

THE ROLE OF ARTIFICIAL INTELLIGENCE IN ENHANCING MANAGERIAL EFFICIENCY AND PRODUCTIVITY

Nirdosh Agarwal[1], Rajkumar Teotia[2], Navneet Kumar Sharma[3]
Faculty of Management Studies & Commerce HRIT University Ghaziabad (U.P), India
nirdosh_agarwal@rediffmail.com , rajkumarteotia@gmail.com, nav.sharma010@gmail.com

Abstract– Artificial Intelligence (AI) is revolutionizing managerial practices, offering unprecedented opportunities to enhance efficiency and productivity across organizational functions. This research paper delves into the transformative role of AI in reshaping traditional management processes, from automating repetitive tasks to enabling real-time, data-driven decision-making. By integrating advanced technologies such as predictive analytics, machine learning algorithms, and natural language processing, AI empowers managers to streamline operations, optimize resource allocation, and improve overall performance. The study provides a comprehensive analysis of real-world applications and case studies, demonstrating how AI tools are being utilized to drive innovation in strategic planning, performance monitoring, and operational agility. It explores the multifaceted benefits AI brings to managerial functions, including increased decision accuracy, reduced operational costs, and enhanced organizational responsiveness. At the same time, it critically examines the challenges organizations face in adopting AI, such as ethical dilemmas, data privacy concerns, significant implementation costs, and the potential displacement of traditional roles. This research underscores the importance of strategic planning, upskilling, and ethical governance in navigating the integration of AI into management practices. By addressing these challenges and leveraging AI's full potential, organizations can achieve a sustainable competitive advantage in an increasingly complex and dynamic business environment. The findings and insights presented aim to guide business leaders, policymakers, and academics in fostering an AI-driven transformation that is both effective and responsible, paving the way for a future where AI and human intelligence work in harmony to redefine managerial excellence.

Keywords–*Artificial Intelligence (AI), Managerial Efficiency, Productivity Enhancement, Data-Driven Decision-Making, Predictive Analytics, Machine Learning, Strategic Planning, Operational Agility, Ethical Governance, Organizational Transformation, AI Integration, Performance Monitoring, Resource Optimization, Business Innovation, Competitive Advantage.*

THERMAL PERFORMANCE OF PLATE FIN HEAT EXCHANGERS FOR CRYOGENIC APPLICATIONS

Chandra Kumar Dubey

Department of Mechanical Engineering, Ambalika Institute of Management and Technology, Lucknow

Ckd96niec@gmail.com

Abstract–In a number of cryogenic flows, compact heat exchangers are the backbone components; one such instance is nitrogen liquefaction which is sensitive to operating efficiency and has stringent demands on performance. These exchangers (surface area density $\beta > 700$ m²/m³) are requisite for heat transfer in both-inter- and multi-phase flows with an arbitrary number of fluid streams. In this group, the plate fin heat exchangers are the most frequently used ones in automobile, chemical and cryogenic industries. This work has been aimed at the thermal characteristics of plate fin heat exchangers with special emphasis on their efficiency-corrected heat transfer coefficient and the dynamic pressure drop at various mass flowrates under different temperature conditions for the study case. With results of simulation software and literature correlations, compare Experimental data The longitudinal heat conduction effect per Kroeger equation is also studied in order to understand the influence on the total heat transfer performance

Keywords– *Plate fin heat exchanger, Cryogenic systems, Kroeger's equation, Nitrogen liquefiers, Fluid flow rates.*

HUMANOID ROBOTS FOR EMOTION RECOGNITION AND SUICIDE PREVENTION

Vandana Pathak

Assistant Professor, Department of Mechanical Engineering Ambalika Institute of Management and Technology, Lucknow

Pathakvandana1308@gmail.com

Abstract–Advanced robotics and AI have the potential of detecting human emotions which has a wide ranging impact such as in the area of prisons where the biggest goal is to prevent suicide. This study addresses the development and implementation of a system in which emotions of negative valence are detected using humanoid robots that track facial micro-expressions and other signs. Our approach employs combined ML, IoT, and specially designed neural network architectures to enhance accuracy of emotion detection. We test the model in practice, which increases reliability and use it on a real-time testbed with the humanoid robot NAO and various datasets. In this paper, we present the methods we used, the problems that we faced, and the results we achieved in developing a reliable system for human emotion detection and suicide prevention.

Keywords– *Artificial Intelligence, Suicide Prevention, Internet of Things, Machine Learning. Neural Network Architectures, NAO Robot, Negative Valence Emotions.*

GOVERNANCE AND ETHICAL CHALLENGES IN AI VULNERABILITY RESEARCH: A CASE STUDY OF PAIR

Md. Robiul Islam Niloy

Abstract—The growing use of large language models (LLMs) has intensified concerns about their susceptibility to adversarial attacks, such as jailbreaking, which bypass alignment mechanisms and produce unsafe outputs. While tools like Prompt Automatic Iterative Refinement (PAIR) represent significant progress in identifying LLM vulnerabilities, their dual-use nature raises ethical challenges. PAIR's capability to efficiently create understandable, prompt-based jailbreaks prompts serious concerns about potential misuse for harmful purposes. This paper examines the ethical issues and governance complexities surrounding PAIR and similar tools. It highlights dualuse risks, including exploitation for spreading disinformation, enabling cybercrime, and undermining public confidence in AI systems. To address these risks, we propose a governance framework focused on responsible disclosure, controlled access, ethical practices, and collaboration with policymakers. This approach seeks to balance innovation in adversarial AI testing with the implementation of strong ethical safeguards, ensuring that such tools are used responsibly to enhance AI safety.

Index Terms—*Adversarial AI, Governance Framework, Ethical Implications, Large Language Models, Dual-Use Risks.*

SOIL TESTING AND CROP RECOMMENDATION WITH YIELD PREDICTION USING MACHINE LEARNING

Aman Tiwari1, Atharv Gupta2, Devansh Srivastava3, Yogesh Sharma4

Dept. of Information Technology BBD Northern India Institute Of Technology Lucknow, India

tiwariaman2710@gmail.com, workinatharv@gmail.com, devanshsrivastava2367@gmail.com, yogeshbbdit@gmail.com

***Abstract*—** The results of a thorough investigation of the use of machine learning algorithms for yield estimation, nutrient advice, and crop suitability prediction in agricultural settings are presented in this research. Three different machine learning models—Linear Regression, Random Forest Regression, and Decision Tree Regression—were assessed using a broad dataset that included variables like soil type, climate, past yield data, and nutrient levels. To evaluate each model's performance in yield estimation, crop suitability prediction, and nutrient recommendation, it underwent rigorous training and testing. The efficacy of the models was assessed using performance indicators such as mean squared error (MSE), mean absolute error (MAE), recall, accuracy, and precision.

Agricultural decision-making procedures were able to identify the best appropriate method by gaining insights into the strengths and limitations of each model through rigorous experimentation and analysis. The study's conclusions promote precision agriculture by providing useful tools for boosting yields, encouraging sustainable agricultural practices, and optimizing crop management techniques.

***Keywords*—** *Machine Learning, Agriculture, Yield, Regression, Crop Recommendation.*

OPTIMIZING DIABETES PREDICTION WITH MULTI-LAYER PERCEPTRON: A COMPREHENSIVE ANALYSIS ON THE PIMA INDIANS DATASET

Monalisha,Scholar[1], Ajay S. Singh[2], Krishna Kant Agrawal[3]

Galgotiasuniversity,Greater Noida, India

monalishakarn1@gmail.com, drajay.cse@gmail.com, kkagrawal@outlook.com

***Abstract*—**This Diabetes is a health complication that becomes severe or even fatal and is a common condition in the global population, and this makes early diagnosis important. This research examines the ability of a machine learning approach utilizing the MLP classifier to identify the onset of diabetes from the Pima Indians Diabetes dataset. Eight clinical and demographical variables: glucose, blood pressure, body mass index, age, gender, etc., are included in the dataset, which has reasonable clinical and statistical value for building a useful model. All these skewness issues were corrected using a pipeline that involves cleaning data by removing outliers, handling missing values and normalizing the features. Filter, wrapper and embedded method was used to estimate the importance of feature, and hence less important features like 'Skin Thickness' was dropped. In the proposed MLP classifier architecture, only one hidden layer is implemented, including 12 neurons, and use the ReLU activation function by adjusting the hyperparameters, an excellent solution is obtained. The performance of the proposed model was evaluated on the test set with 86.36 % classification accuracy, 86.24 % precision for non-diabetic subject and 94 % recall for both, 86.67% precision for both, and 72.22% recall for, diabetic subject. These results prove the usefulness of MLP classifiers that can work with imbalanced data and also still possess sufficient predictive power. Indeed, this research showcases an exemplary architecture of data preprocessing and feature selection to improve the performance of a machine learning model. This has been empowered by the results to inform deployment of real neural network-based systems for diabetes prediction whilst focusing on scale and interoperability into decision architectures in the healthcare domain. The future work will involve revenue graceful neural structures and real-time implementations of the foregoing diabetes detection model.

Keywords*—*MLP, Machine Learning, Diabetes Detection, Neural Network.

A MACHINE LEARNING APPROACH TO DIABETES DETECTION

Monalisha,Scholar[1], Ajay S. Singh[2], Krishna Kant Agrawal[3]

Galgotiasuniversity,Greater Noida, India

monalishakarn1@gmail.com, drajay.cse@gmail.com, kkagrawal@outlook.com

***Abstract*—** Diabetes mellitus is still one of the world's biggest health issue the disease usually complicates and reaches its severe forms including cardiovascular diseases, kidney failure and neuropathy. Diabetes screening is very important because when diagnosed early the health risks will be minimized and the patients will be accorded better treatment. New approaches to artificial intelligence, specifically ML, have provided promising methodologies for automating diabetes diagnosis for high accuracy using large clinical datasets. This review considers and compares the most essential ML approaches, including Support Vector Machines (SVM), Decision Trees, Random Forest, and Artificial Neural Networks (ANN) with conditions such as the model accuracy, time complexity, and clinical significance. Moreover, the paper discusses the factors of feature selection and data preprocessing which have relation with increasing the precision as to how they support the development of the efficient algorithm for the early diagnosis. Despite the encouraging results achieved through the use of ML techniques, some difficulties continue, for example, high computational complexity, high requirements for the quality of input data, and issues with interpreting results. Future work should focus on effective models, low resource utilization, methods to maintain more efficient and reliable data management for real time contexts. Applying ML in technologies such as wearable sensors and mobile diagnostic tools also has the potential for resource- scarce solutions of monitoring for underprivileged settings.

***Keywords*—** *Machine Learning, Neural Networks, Random Forest, Decision Trees, SVM.*

ENHANCING CYBERSECURITY THROUGH INTEGRITY ASSESSMENT AND INTRUSION DETECTION USING ACGAN-POWERED MACHINE LEARNING FOR UNBALANCED DATA

B Mukesh Kumar[1], R Nidhis Kumar[2], Dr. V Muthulakshmi[3]

Head of the Department Computer Science Engineering[3]

St Joseph's College Of Engineering Chennai, India[1,2]

Abstract—This study investigates the use of Auxiliary Classifier Generative Adversarial Networks (ACGANs) in addressing imbalanced data within the realm of cyber security. ACGANs generate synthetic data mimicking network attacks, contributing to dataset balancing for improved model training. The research focuses on enhancing cyber security decision making by refining the accuracy of distinguishing between legitimate and malicious traffic. By leveraging ACGAN-powered machine learning, this project work demonstrates the potential for stronger, more accurate threat detection and integrity assessment, ultimately fostering more advanced and resilient intrusion detection systems.

INTRODUCING TEAM BASED LEARNING AS AN INNOVATIVE STUDENT CENTERED TEACHING METHOD AND KNOW THE FEEDBACK AMONG STUDENTS IN SAVEETHA COLLEGE OF NURSING, SIMATS

Dr. S. Maragatham. M.Phil. (N), Ph.D[1], Dr.L.Parimala Ph.D[2],

[1]Saveetha College of Nursing (SCON), Saveetha Institute of Medical and Technical Sciences (SIMATS), Thanndalam, Chennai- 602105, India.

maragathamk.scon@saveetha.com,https://orcid.org/0009-0004-3826-3970

parimala.scon@saveetha.com,https://orcid.org/0000-0002-5677-2777

Abstract–Learning is an active process from the learners. In quality education more and more the learner centered teaching learning process are the need of the hour over the teacher centered education methods. Teaching followed by evaluation is challenging when we follow outcome based education for every single objective. Therefore one of the learner centered method "Team Based Learning" was introduced to III year B.Sc. nursing students in this study with the aim to compare their learning as individual & in team and to assess their feedback about team based leaning. The result showed the team score was more than the individual score and positive feedback about team based learning.

Keywords–*Team Based Learning (TBL), Individual readiness assurance test (IRAT), Team readiness assurance test (TRAT), Feedback about TBL and Quality education.*

EXPLAINABLE AI FOR GASTROINTESTINAL DISEASE DETECTION USING ENSEMBLE DEEP LEARNING TECHNIQUES

Sale George Gideon[1], P. Joyce Beryl Princess[2]

Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, India

georgegideon.sale@gmail.com, vignesh@karunya.edu

Abstract – The condition, which is classified under gastrointestinal GI diseases, is a global threat and with correct identification of diseases, treatment takes less time. Our work presents a new technique to employ multiple AI deep learning systems for identification of GI diseases and give explanations. To extract accurate details of medical image from endoscopy images have developed an identifying system that encompasses CNNs, RNNs, & the transformers deep learning models. It points out to doctors where the most important image parts are derived from while maintaining the results in a readable format using explainability tools Grad- CAM, SHAP, and LIME. This is particularly true because the system's decision-making process is shown in our framework and that is how healthcare providers can trust AI predictions. Namely, the test outcomes show high diagnostic capabilities of the system accompanied with easily understandable additional information that can be used by doctors. Our system improves diagnostic procedures with less error, meaning more doctors will put their faith in artificial intelligence medical solutions.

Keywords– Explainable AI (XAI), Gastrointestinal Disease Detection, Ensemble Deep Learning, Grad-CAM, SHAP, LIME, Medical Imaging.

DRIVING THE FUTURE: IOT- POWERED V2X COMMUNICATION FOR AUTONOMOUS TRANSPORTATION

Shivam Sharma[1], Mukhtiar Singh[2], Priyanka Devi[3]

Department of CSE Chandigarh University Mohali, India

shivam.e16516@cumail.in, mukhtiarrai73@gmail.com, Pjangra9105@gmail.com

Abstract – Imagine a world where cars communicate seamlessly with traffic systems to avoid accidents. Autonomous vehicles are the future of the transportation by promising safer, cheaper, environment friendly and efficient mode of transport. The large-scale implementation of the Autonomous vehicle depends on the seamless communication with other vehicles, infrastructure, pedestrians and the broader network known as Vehicle to Everything (V2X) communication. By employing real-time data from various kind of sensors, traffic lights and environmental monitors, autonomous cars can make intelligent decisions navigating through the complex environments. The present AV sensor suites offer different, covering blind spots, capabilities longer range, and resilience to weather conditions, benefiting the Vehicle-to-Vehicle (V2V) and Vehicle-to- Infrastructure (V2I) situations. The overriding importance in this research has been on identifying other vehicles, leveraging advanced communication infrastructure to navigate easefully and warn the pedestrians from advance accident detection with the help of edge device of the server. The research paper proposes an end-to-end idea for the purpose of testing in urban environments by incorporating combination of visible and NLOS (non-line-of sight) road users with having help of deep learning. The work also highlights the integration of IOT in advancing V2X communication and paves the way for scalable development in smart cities in a critical manner by considering all the use cases.

Keywords— *IOT, Autonomous Vehicles, Vehicle to Everything, Deep Learning.*

TRUTHTELLER: A MACHINE LEARNING-BASED PLATFORM FOR ANALYZING POLITICAL NARRATIVES LINE BY LINE TO UNCOVER FACTUAL ACCURACY.

Vijaylaxmi Bittal[1], Dr. Makarand Shahade[2], Hrushikesh Sonar[3], Harshada Dhakad[4], Sakshi Patil[5], Vaibhav Mahale[6]

Department of Computer Engineering SVKM's Institute of Technology Dhule, Maharashtra, India

vijaylaxmi.bittal@gmail.com, makarand.shahade@svkm.ac.in, hrushikesh.anil.sonar@gmail.com, harshada5dhakad@gmail.com,sakshirpatil236@gmail.com, ganeshmahale9700@gmail.com

Abstract – Today, in an information-driven world, Political narratives shape public opinion significantly. However, these are often full of biases, Misinformation, or inaccuracies and make it challenging for people to know what is factually correct. This paper presents TruthTeller, a machine learning- based platform that analyzes political narratives line by line, providing users with an objective assessment of their factual accuracy. Using advanced Natural Language Processing (NLP) techniques and machine learning algorithms, TruthTeller transcribes video or audio content into text, processes each statement, and classifies it as true, false, or neutral. The platform uses models like BERT for contextual understanding and uses a credibility scoring mechanism that checks claims against trusted sources. The system so far has been able to finish key foundational modules such as audio-to-text conversion, user interface design, and preliminary dataset preparation for classification tasks. Preliminary results show the feasibility of real-time fact-checking with promising accuracy in transcription and basic text analysis. Future work includes refining contextual analysis, adding Multilingual support and source validation towards setting new benchmarks in automated political fact-checking. TruthTeller aims at enhancing transparency, accountability and critical engagement with the political discourse while equipping users to make better decisions. It fights against the wide spread diffusion of misinformation through creating an analytically and informatively enlightened society.

Keywords—*Natural Language Processing, Machine Learning, Political Fact-Checking, Misinformation Analysis, TruthTeller, Credibility Scoring, Automated Verification.*

AI-DRIVEN SMART HVAC MANAGEMENT: AN IOT AND MACHINE LEARNING-BASED APPROACH TO ENERGY- EFFICIENT BUILDING AUTOMATION

Khalid Alfatmi1, Harshada Dhakad2, Kadambari Suryawanshi3, Kirti Patil4, Sakshi Patil5

Assistant Professor,Department of Computer Engineering, SVKM's Institute of Technology. Dhule, *India*

khalid.alfatmi@svkm.ac.in, harshada5dhakad@gmail.com, kadambarisuryawanshi68@gmail.com, kirtipatil1203@gmail.com, sakshirpatil236@gmail.com

***Abstract*—**In order to improve building efficiency and sustainability, this paper describes the construction of an AI-Driven Smart Heating, Ventilation, and Air Conditioning (HVAC) Management system. The proposed system collects real-time information on temperature, humidity, and solar intensity by utilizing Internet of Things (IoT) sensors both within and outside the structure. This is done by leveraging the synergy between Internet of Things (IoT) and Machine Learning (ML). In particular, Light Dependent Resistor (LDR) sensors track light intensity, and Digital Humidity and Temperature (DHT) sensors detect temperature and humidity. Using observed light intensity and humidity levels, the gathered data is used to train a supervised machine learning model that uses the Multiple Linear Regression algorithm to forecast interior temperature. Through an analysis of past data and weather forecasts, the system makes proactive recommendations for the best temperature settings to improve user comfort while decreasing energy consumption. The creation of a user-friendly interface for real-time temperature prediction, the integration of environmental sensing data with forecasting weather data, and the construction of an AI-driven climate control system constitute some of the research's major accomplishments. The suggested approach seeks to transform Heating, Ventilation, and Air Conditioning (HVAC) management by providing a cost-effective and environmentally friendly means of enhancing interior climate control in structures.

Keywords*—*Energy efficiency, smart buildings, IoT, machine learning, HVAC optimization, Gradient Boosting, Flask, Bolt IoT.

THE IMPACT OF SOCIAL MEDIA ON YOUNG TEENAGERS

Dr. Archana Chandra[1], Ajeet Singh[2], Dr. Deepika Gupta[3]

[1]*Dean, Ambalika Institute of Management and Technology, Lucknow*

[2]*Assistant Professor, United College of Engineering & Resarch, Prayagaraj*

[3] *Independent Researcher*

archana1120@gmail.com, ajeetsingh.ugi@gmail.com , dpv8mar@gmail.com

Abstract–The widespread adoption of social media among young teenagers has raised concerns about its potential impact on their mental health, social relationships, academic performance and various others strata of life. This study examines the effects of social media on young teenagers, aged 13-16, and explores the factors that contribute to its positive and negative consequences. Social media has created an undeniable bond with the present day world, especially the young youth. Some of its positive impact includes communication across the world, easy connectivity, educational resources, awareness and many more but its adverse consequences are raising a big concern, like anxiety, depression, unrealistic expectations, mental health, and futile comparisons besides digital frauds, cyberbullying, digital arrests and so many others. The present paper tries to highlight the various aspects of social media, its importance, its affects and the role of parents, educational institutes and society in using this boon for the progress of the world.

Key words– *Mental health, academic performance, relationships.*

ASSESSING MOBILE TOURISM APPS: A RESEARCH REVIEW WITH SCIENTOMETRIC PERSPECTIVES

Dr. Neha Kamboj, Dr. Nitin Kumar Srivastava, Dr. Vinita Choudhary, Dr. Ranu Kumar

[1]*Assistant Professor, School of Management, IILM University Gurugram, Haryana, India*

[2]*Assistant Professor, School of Computer Science & Engineering, IILM University Gurugram, Haryana, India*

[3]*Assistant Professor, School of leadership and Management, Manav Rachna International Institute of Research and Studies, Haryana, India*

[4]*HOD & Assistant Professor, Department of Management & Commerce, Modern College of Professional Studies, UP, India*

Abstract–Tourism is currently the largest industry in the world. Unlike other businesses, the tourist sector lacks a single unique product, making it difficult to categorise. It covers an extensive range of industries, comprising hotels, transportation, magnetisms, attractions and travel agents. Tourism is the term used to describe travel and lodging outside of one's usual surroundings for periods of time shorter than a year, whether for pleasure, business, health, or other reasons. As a result of the tourism industry's increasing digitization, voluminous clienteles now reserve their trips over digital travel apps. Therefore, the Life cycle assessment (LCA) approach was used in this study to assess the impact of mobile technology to the achievement of ecology and smart tourism from the perspectives of technology and customers, and to suggest future examination and technology information for academic circles and bosses to carry out. In the past, e-tourism served as the umbrella term for discussions on the acquaintance between tourism and information technology in practise. Our goal is to establish connections between mobile technology and tourism and to provide explanations of ideas based on actual field data by analysing the outcomes and conversations around e-tourism, with an emphasis on the unique characteristics of mobile environments.

Keywords– *Tourism, Mobile phone, Tourist destination, Software, Ecotourism, Mobile communication.*

OPTIMIZATION OF MACHINE LEARNING ALGORITHMS AND EVALUATION OF TWO PROMINENT DATASETS FOR ESTIMATING BLOOD FLOW IN RETINAL VESSELS

Vishal Chauhan[1], Soumya Upadhyay[2], Archana Pandey[3]

Department of CSE Intelligent Systems, SCEE School of Science & Humanities

COER University, Roorkee IIT Mandi, Himachal Pradesh Maharishi University of IT, Noida

Vishalchauhan.itg@gmail.com, ersoumya26@gmail.com, archanapandeykec@gmail.com

Abstract–In medical imaging, artificial intelligence (AI) has emerged as a game-changing technology that makes it possible to analyse medical pictures more precisely, effectively, and automatically. The retina's blood supply efficiency can be inferred from the density of blood vessels in the retina. Diabetic retinopathy, one of the most prevalent blood flow-related retinal disorders, causes aberrant blood vessel development, leaks, or obstructions in the retina. Vessel analysis can offer early markers of disease progression, and fundus imaging aid in tracking these changes over time. A lower density can indicate insufficient perfusion, which can be associated with retinal vein occlusion or diabetic retinopathy. We are able to predict blood flow velocity, pressure, and resistance in certain retinal regions by integrating vascular segmentation with computational models. These models aid in the comprehension of how alterations in the vascular structure of the retina impact blood flow, resulting in disorders like hyperaemia (excessive blood flow) and ischaemia (limited blood flow). Using two distinct fundus datasets, we are comparing the estimation of blood flow in retinal vessels in this study to obtain the maximum accuracy. Optical Coherence Tomography's Diabetic Retinopathy pictures dataset, which includes 110 retinal pictures with ground truth for blood flow and blockage identification, is the first dataset. Structured Analysis of the Retina is the second dataset, which includes a range of retinal fundus photos with blood vessel labels.

Keywords–*Machine learning, Fundus Retinal Images, Medical Imaging, Retinal Vessels, blood flow in retina, blockage in retina, Artificial Intelligence.*

INDIGENOUS SYSTEM OF MEDICINE, KEY FOR MEDICAL TOURISM

Prof.O.P Singh[1], Dr.Narendra Kumar Gautam[2]

[1]Former, H.O.D Dept.of Kayachiktsa Faculty of Ayurveda I.M.S, BHU Varanasi

[2]Research Scholar Ex. Senior Resident Dept. of Kayachiktsa Faculty of Ayurveda I.M.S, BHU Varanasi

Abstract–The Indigenous system of medicine, comprising traditional healing practices such as Ayurveda, Traditional Chinese Medicine (TCM), Unani, Siddha, and others, has played a central role in the health and wellness of many civilizations for centuries. These systems are grounded in the belief that health and disease are influenced by a harmonious balance between the body, mind, and environment. As the world becomes more interconnected, these ancient healing practices have gained recognition not only for their holistic approach but also for their potential contribution to medical tourism. Medical tourism, which involves people traveling abroad to seek medical care, has grown exponentially in recent years, driven by factors such as cost-effectiveness, advanced medical technology, and specialized treatments. Indigenous systems of medicine, with their unique methodologies, are increasingly attracting medical tourists seeking alternative and complementary therapies. Ayurveda and TCM, for instance, have become major drivers of medical tourism, offering treatments for a wide range of conditions, from stress and chronic pain to skin disorders and digestive problems. The indigenous systems of medicine, with their emphasis on holistic, natural, and personalized care, are poised to play a significant role in the future of medical tourism. These systems offer distinct advantages, particularly in the areas of wellness, prevention, and alternative therapies. However, challenges such as standardization, integration with modern medicine, and ethical considerations must be addressed to ensure these practices are both safe and effective for global patients.

Keywords– *Tradinatonal healing system, Mindfulness- based Therapies, Alternative medicine, Healthcare medicine, Rehabilitative tourism, Indigenous Knowledge.*

RECOMMENDING MUSIC BASED ON REAL-TIME HUMAN EMOTIONS

Gungun Yadav[1], Siddhi Vij[2], Tanishq Garg[3]
Amity University Noida, India
gungunyadav000@gmail.com, siddhivij3@gmail.com, tanishqgarg20004@gmail.com

***Abstract*—**Music has a strong influence on people's emotional and mental states.Unfortunately, most existing music recommendation algorithms are based on genre features (such as style and album), which do not suit consumers' emotional needs.Music recommendations have both economic and social advantages.But sometimes, the "filter section" effect could exacerbate the situation when a user looks to music for emotional support. In this study, a novel emotion-based personalized music recommendation framework has been created to help consumers achieve their emotional requirements while also improving their mental health. Empirical research and user studies demonstrated that this unique framework's recommendations are exact and useful to users.

Keywords*—emotion, music recommendation system, music.*

BREAKING BARRIERS: SIGNLINGO AS A TWO-WAY COMMUNICATION AID FOR THE DEAF AND MUTES

Abhay Pratap Singh, Aanya Mittal, Ashmit Tyagi, Kanan Agrawal, Avdhesh Gupta

Department of Computer Science and Engineering Ajay Kumar Garg Engineering College (AKTU) Ghaziabad, India

{abhaypratapsingh1006, aanyahmmittal, ashmittyagi8, agrawal.kanan17, avvipersonal}@gmail.com

Abstract—Communication is one of the major attributes of human life[1]. The system discussed in this research paper focuses on developing a novel and efficient way of communicating between a deaf-mute person and any other person who is normal (does not have deaf or dumb handicaps). Advanced technologies used in the design will support the conversion from voice to Indian Sign Language using Natural Language Processing Machine learning algorithms and computer vision techniques and vice versa. It translates audio messages into sign language images with text in real-time, trying to basically eliminate the conventional dependency on interpreters as a means of communication for every person. The main idea of the research is the solution of urgent problems connected with communication of the deaf-mute people and, at the same time, to be able to solve this task with the use of modern technologies, keeping in mind the principles of inclusiveness and independence. The design, implementation, and potential of the system to improve the living standards of deafmute people by bringing them closer to society are discussed. The aim is to plead for inclusion by raising the awareness of educators, policymakers, and the public at large regarding the demand for communication resources addressed specifically to the deaf and mute community. The consciousness of the demand for ISL interpreters and the promotion of video datasets will be helpful in bridging the gap in communication, as seen in the research on the lack of certified ISL interpreters and the demand for automated sign recognition systems.

Index Terms—*Deaf-mute communication, sign language translation, Indian Sign Language (ISL), assistive technology, machine learning, natural language processing (NLP), computer vision, OpenCv, os, PyTorch, TensorFlow, ANN, CNN, real-time translation, disability technology solutions.*

RATIONALITY OF YOGIC PRACTICES TO ENRICH INDIAN MEDICAL TOURISM

Anjali[1], Prof. Dr. Om Prakash Singh[2]

Research Scholar[1], Supervisor[2] (Professor and Doctor)

Department of Kayachikitsa, Faculty of Ayurveda Institute of Medical Sciences, Banaras Hindu University Varanasi

rajputanjali1616@gmail.com

Abstract–India is gradually making a popular medical hub because of its high-tech robust medical system facilities and hospitality at low-cost budget with an easy visa process service but still there is many efforts remain to make it world class medical destination. Therefore, Ministry of Tourism, was developed a National Strategy and Roadmap for medical and wellness Tourism. The goal of the policy is to market India as a destination for wellness and medical value travel (MVT). Medical tourism (also called medical travel, health tourism or global healthcare) is a term used to describe the rapidly-growing practice of travelling across international borders to seek healthcare services. Services typically sought by travelers include elective procedures as well as complex surgeries, etc. So, all the endeavors making it best other complimentary procedures should also be considered like Yoga, Naturopathy, and Acupressure etc.

India has long been revered as the land of spirituality, holistic health, and ancient practices that unite the mind, body, and soul. Among these, yoga holds a unique place, seamlessly integrating physical well-being with mental clarity and spiritual elevation. In recent years, yoga has also emerged as a significant driver for Indian medical tourism, attracting millions of international tourists seeking holistic healing. This article delves into the rationality of yogic practices and their potential to enrich India's medical tourism industry.

Keywords– *Yoga, Medical tourism, Holistic Health*

HYBRID AI-MICROSERVICES ARCHITECTURES FOR PREDICTIVE MAINTENANCE IN LARGE-SCALE DISTRIBUTED SYSTEMS

Biman Barua[1,2,*] and M. Shamim Kaiser[1]

[1]*Institute of Information Technology, Jahangirnagar University, Dhaka 1342, Bangladesh*

[2]*Department of CSE, BGMEA University of Fashion and Technology, Nishatnagar, Turag, Dhaka 1230, Bangladesh*

[*] ***biman@buft.edu.bd***

Abstract— Predictive maintenance is emerging as a crucial requirement in distributed systems like airline reservation platforms that assure reliability, minimize downtime, and enhance operational efficiency. This paper proposes a hybrid architecture for artificial intelligence and microservices to address this fundamental scaling, fault tolerance, and real time data analysis problem of traditional monolithic systems. The architecture is made up of three layers: the edge layer, which is used for real time data collection from IoT devices; the AI-processing layer, for predictive analytics using supervised learning and ensemble models; the microservices orchestration layer, responsible for managing modular containerized services. The system had been built over a microservices-centered airline reservation system with a front end made of ASP.NET and a back-end made of MS SQL Server. The architecture was experimented upon, and it was found that latency and degraded response time increased in a predictable fashion. The anomaly detection in the system is enjoys exceptional accuracy, which is achieved through the amalgamation of varying AI techniques. This paper signifies the capabilities of AI-oriented microservice frameworks in predictive maintenance for distributed systems. Future work or further enhancement needs to consider IoT and edge computing for reducing the latencies caused by intercommunication, draw significant emphasis toward federated AI learning, thus improving privacy, AI complexities encoding better modeling of complex data counter-relations using graph neural networks. These advancements aim to drive further innovation in intelligent, scalable, and privacy-preserving predictive maintenance systems across industries.

Keywords—*Predictive Maintenance, AI-Microservices Architecture, Distributed Systems, Scalability and Fault Tolerance, Airline Reservation System, Real-Time Data Processing.*

FIRE PROTECTION STRATEGIES IN MECHANICAL SYSTEMS: DESIGN, IMPLEMENTATION, AND IMPACT ON SAFETY

Faisal Moin Patel

mohammedfaisal050@gmail.com

Abstract—This paper explores fire protection mechanisms specifically designed for mechanical systems, emphasizing the integration of fire prevention, detection, and suppression methods. It highlights the importance of implementing fire-resistant materials, insulation, and active fire detection systems to safeguard components such as motors, gears, and mechanical structures from fire hazards. Moreover, the paper examines the role of thermal insulation and ventilation as passive measures, as well as fire detection systems like smoke detectors and thermal sensors. With case studies in industrial applications, the paper presents an overview of regulations governing fire safety in mechanical systems and analyzes the impact of fire protection on operational safety, financial savings, and the reduction of firerelated downtime. The findings demonstrate how effective fire protection enhances safety and reduces the risk of catastrophic failure in mechanical systems.

CONTEXT ENHANCED PLURALISTIC IMAGE INPAINTING

Dr N.Rama Devi, Asani Varsha Reddy, Mungi Sai Charanya, Ishita Pallempati

Abstract—Advanced techniques for image completion will be explored in ”Context Enhanced Pluralistic Image Inpainting” for producing diverse high-quality completions of masked or damaged regions in images. Built upon transformer-based architecture with improvements on resolution handling, adaptable codebooks, and memory-efficient architectures, this model addresses the main limitations that existed. Our solution allows for high-resolution image processing, improves inference speed, and maintains visual consistency across a diverse range of applications, making it highly suitable for more real-world image restoration tasks requiring scalable, adaptable, and contextually coherent inpainting.

Index Terms—*Image Inpainting, Pluralistic Completion, Transformer-based Model, Contextual Awareness, High- Resolution Scalability.*

REAL-TIME ENERGY OPTIMIZATION IN HYBRID WIND-SOLAR MICROGRIDS USING SEPIC CONVERTER AND ENERGY STORAGE SYSTEMS

G.Mahaboob Subahan[1], K.Hari Kishore Reddy[2], B.Harsha Vardhan[3], P.Anusha[4], C.Hari Priya[5]

Department of Electrical and Electronics Engineering Annamacharya university

Rajampet, A.P.

gmsubahan@gmail.com , harikishorereddy9908@gmail.com , baisaniharsha8@gmail.com, poojarianusha67@gmail.com, haripriyac183@gmail.com

***Abstract*—** Using hybrid energy storage systems (ESSs) and an advanced model predictive control (MPC) approach, this research discusses the coordinated optimal operation of a grid-connected wind-solar microgrid. Although hybrid energy storage systems (ESSs), which combine batteries and hydrogen devices, have drawn attention for their environmentally benign power conversion capabilities, their short lifespan continues to be a major obstacle to widespread commercial use. The study's suggested cost functions take into account the deterioration of batteries and hydrogen devices in order to lessen this. The model focuses on how a wind-solar microgrid integrates a SEPIC converter and interacts with external users. Wind voltage, state of charge (SOC), DC bus voltage, current, three-phase inverter voltage and current, and three-phase grid voltage are among the system characteristics whose behavior is illustrated by the simulation results. Utilizing 28 turbines and a 1000 W (IR) solar panel system, the microgrid provides a thorough method for enhancing energy management and prolonging the life of hybrid ESSs in grid-connected renewable energy systems.

***Keywords*—** *Hybrid Energy Storage Systems (ESS), Model Predictive Control (MPC), Grid-Connected Microgrid, Wind-Solar Microgrid, Energy Storage Degradation, Hydrogen Devices, Battery Degradation,SEPIC Converter, Renewable Energy Systems etc.*

METHODS OF PREVENTION AND TREATMENT OF COVID-19 IN INDIA: AN EXCELLENT EXAMPLE OF MEDICAL TOURISM

Alok kumar Pandey 1, Prof. Dr. Om Prakash Singh2

Research Scholar1, Supervisor2 (Professor and Doctor) Department of Kayachikitsa, Faculty of Ayurveda Institute of Medical Sciences, Banaras Hindu University Varanasi

alok52577@gmail.com

Abstract **–**COVID-19 has been a period of extremely deadly experience for the whole world, which has caused a huge loss to the economy and human life. The whole world was disturbed by this disaster, but if the Indian medical system is assessed comparatively, then Indian medicine has solved this problem in a very excellent way; especially Ayurvedic medicine (Kwath, Kadha etc.) has not only solved the problem but has also carved out a safe and cost-effective form of Indian medicine. Due to all these reasons, India is becoming a hub of medical destination day by day. This research paper will highlight the effects of COVID-19 on Indian medical and service reforms. Qualified and experienced doctors, excellent nursing services and low-cost medical service are areas of hope for international patients, especially financially incapable foreign patients. Hospitals equipped with modern machines, excellently educated doctors, and new researches have made India a hub of medical attraction, along with this India also inspires other foreigners on its cultural heritage, spiritual basis and the principle of unity in diversity. Therefore, this research paper will be complied with all these above said points.

Key Points– *Covid-19 Disaster Situation, Medical System, Tourist Places*

COMPARISON OF VARIOUS PREDICTIVE MODELS FOR EMPLOYEE TURNOVER: A DATA-DRIVEN APPROACH TO ENHANCING RETENTION STRATEGIES

Akshat Sehgal[1], Harsh Dev Singh [2], Shresth Dubey[3], Prem Prakash Agrawal[4]

Department of Computer Science & Engineering School of Engineering & Technology Sharda University Greater Noida, India

2021003158.akshat@ug.sharda.ac.in , 2021403221.harsh@ug.sharda.ac.in , 2021339105.shresth@ug.sharda.ac.in , prem.agrawal@sharda.ac.in

Abstract—In recent years, various industries, particularly India's IT sector, have faced significant personnel turnover, leading to substantial knowledge and financial losses. Human resources require large investments, making it essential to predict turnover to safeguard productivity. Data analysis gives insights that can be used to address turnover, enabling data-driven decisions to attract, manage, and retain talent while enhancing employee satisfaction. Predictive analytics and advanced modeling go further by identifying factors driving exits, allowing proactive interventions. With HR strategies evolving towards data-driven approaches, organizations are focusing on building strong analytics capabilities to effectively prepare for a competitive, data-centric future.

Keywords— *Personnel Turnover, Data Analysis, Predictive Analytics, Advanced Modeling.*

HANDWRITTEN TAMIL TEXT RECOGNITION USING VISION TRANSFORMER:A NOVEL APPROACH

S. GURU SRIRAM[1], A. AARTHI ABIRAMY[2], P. RAMKUMAR[3], C. AJITHA[4]

[1,2,3]*UG Student Dept. of Information Technology National Engineering College Tuticorin, India*

[4]*Assistant Professor Dept. of Information Technology National Engineering College Tuticorin, India*

2115004@nec.edu.in , 2115024@nec.edu.in , 2115038@nec.edu.in, ajithait@nec.edu.in

Abstract– Handwritten character recognition has evolved significantly with the advent of deep learning techniques. Although CNNs showed excellent performance in the recognition of handwritten texts in any language, the recent development of Vision Transformers (ViT) opens new horizons for further improvements in the accuracy and efficiency of such tasks. This research explores the use of ViT for the recognition of handwritten Tamil text, a script with complex characters and intricate diacritics. The proposed model leverages the self-attention mechanism of transformers, allowing it to capture intricate patterns in Tamil script. Our experiments show the better accuracy of ViT as compared to the traditional CNN-based models. We used ViT in order to improve the recognition performance and robustness of the model. The unique challenges in recognizing handwritten Tamil text are particularly targeted.

Keywords– *Self Attention, Vision Transformer, Encoder- Decoder Architecture, Image Patching.*

JAILBREAKING LARGE LANGUAGE MODELS: A RED TEAMING PERSPECTIVE

Md. Robiul Islam Niloy

Abstract—The danger of hostile manipulation via jailbreaking is still a major worry as Large Language Models (LLMs) are increasingly incorporated into practical applications. Attackers can circumvent ethical measures by using jailbreaking tactics, which result in outputs that are harmful or restricted. Through a methodical analysis of attack techniques, success factors, and vulnerabilities in contemporary models, this study offers a red teaming perspective on jailbreaking LLMs. We evaluate the efficacy of the black-box and white-box jailbreak techniques on various LLM architectures. We evaluate the vulnerability of different models to adversarial exploits through empirical tests and real-world case studies, classifying effective jailbreak techniques according to linguistic, structural, and optimization-based approaches. Our results demonstrate the ongoing security issues with LLM deployment as well as the dynamic character of adversary threats. In our conclusion, we go over recommended practices for AI safety teams and offer methodical ways to make models more resilient to jailbreak attempts.

Index Terms—*Jailbreaking, Large Language Models, Adversarial Attacks, Red Teaming, AI Security, Black- Box Attacks, White-Box Attacks, Optimization-Based Jailbreaking, Ethical AI, Machine Learning Vulnerabilities.*

AI-INFLUENCED 6G WIRELESS COMMUNICATIONS: ARCHITECTURE AND SECURITY PERSPECTIVE

Archita Singh[1], Aarti Rani[2]

[1]Student, [2]Assistant Professor

[1]BBD University, [2]LPCPS, Lucknow

Singharchita723@gmail.com, aarti.singh18oct@gmail.com

Abstract–The increasing flux of multifaceted mobile applications, chiefly those based on AI (Artificial Intelligence), has been considered as a matter of contention over the future of wireless communications. Meanwhile, 5G has been implemented or is in the process of deployment worldwide; the development of future B5G/6G networks is already underway, with the goal of providing versatile connect-compute technologies to enhance future convoluted applications and use cases. 6G networks are expected to lay the groundwork for vertical industries and human-centred high-tech communities by 2030. B5G/6G networks would create a completely linked world with the convergence of satellite and terrestrial wireless communications. Furthermore, 6G provides a completely data-driven network capable of optimizing the sheer volume of a real-time network at the rate of Tb/s and analyzing the behavior at endpoints. However, achieving automated administration & orchestration, effective resource utilization and a consistent user experience becomes strenuous because of the dynamic, immensely sophisticated and heterogeneous nature of 6G. Thus, it becomes essential to use AI for effectively resolving complex challenges in the 6G network. This palimpsest showcases the concept of AI associated with 6G technology and presents the significance of AI in ensuring security and privacy in 6G.With the augmentation of big data processing technologies as well as the availability of profuse data and computing power, it becomes obvious to use Artificial Intelligence (AI) to effectively resolve complex challenges in the 6G network.

Keywords– *Wireless Technology, Artificial Intelligence, 6G-Architecture, Deep Learning, Security.*

IMPROVING SIGN LANGUAGE ACCESSIBILITY WITH DEEP LEARNING-BASED HAND GESTURE RECOGNITION

S. Riyaz Banu[1], A. Sai Theertha[2],D. Praneetha[3],K. Pranava Sai[4],P. Rahul[5]

Annamacharya University New Boyanapalli, Rajampet, Andhra Pradesh

rahamathriyaz@gmail.com, teertha.arivappagari@gmail.com, bunnypraneetha@gmail.com, Kalagatlapranavasai@gmail.com, pothurajurahulraj@gmail.com

Abstract–In recent years, sign language detection has emerged as a critical component in fostering inclusive communication for the hearing-impaired community. This project develops a real-time system for detecting sign language through the application of advanced computer vision methods and deep learning models. The core of the system is a Convolutional Neural Network (CNN) trained to recognize various sign gestures from live webcam feed, enhancing accessibility and interaction. Utilizing libraries such as OpenCV for video processing and TensorFlow for model implementation, the application captures and processes hand gestures, translating them into corresponding letters or symbols. By integrating MediaPipe for hand landmark detection, the system effectively identifies and isolates hand movements, enabling accurate gesture recognition. The model leverages a vast dataset of labeled sign language images, enabling it to recognize intricate patterns and nuances in sign formation. The deployment of this AI-driven approach significantly improves recognition accuracy and reduces latency in predictions, rendering it appropriate for real-time applications. The system's performance is further enhanced by the continuous feedback loop from user interactions, allowing for ongoing learning and adaptation. This innovative solution not only aims to bridge communication gaps but also seeks to empower users by providing them with a tool that promotes social interaction and inclusivity. By addressing the challenges faced by the hearing-impaired community, this sign language detection system serves as a demonstration of the possibilities of AI and computer vision technologies in enhancing human connectivity and understanding.

Keywords– *Hand gesture recognition, convolutional neural networks (CNN), real-time translation, communication accessibility, image processing, feature extraction, classification, continuous learning, deaf and hard-of-hearing, inclusive technologies, video data, visual communication, gesture interpretation, user empowerment, technological inclusivity, accessibility solutions, Artificial Intelligence.*

HYBRID MACHINE LEARNING MODEL FOR EFFICIENT DETECTION OF LUMPY SKIN DISEASE IN LIVESTOCK

Edara Anil[1], Angelin Jeba P[2], Kurra Vishnu[3]

[1]*Karunya institute of technology and sciences Division of Artificial intelligence and Machine learning*

[2]*Assistant Professor Karunya institute of technology and sciences Division of Artificial intelligence and Machine learning*

[3]*Sai Karunya institute of technology and sciences Division of Artificial intelligence and Machine learning*

edaraanil@karunya.edu.in , angelinjeba@karunya.edu, kurravishnu@karunya.edu.in

Abstract –To improve disease detection accuracy, we propose a machine learning based diagnostic system for Lumpy Skin Disease (LSD) in cattle herds using Random Forest, Gradient Boosting and Support Vector Machine (SVM) techniques. Cattle suffer from Lumpy Skin Disease, a viral disease with economic impact in the livestock industry because of poor animal health and productivity. The system as developed was meant to allow early diagnosis and management for veterinarians and livestock managers to help prevent disease spread and loss of revenue. Using a dataset that includes clinical symptoms, geographical location, age, and environmental factors, we apply preprocessing techniques to achieve data quality. The system trains each machine learning model to successfully classify cases and evaluation metrics embrace F1-score, precision, accuracy and recall show the system's diagnostic reliability. This multi algorithm approach shows how machine learning might be used to improve diagnostic power in veterinary medicine, and support sustainable livestock management practices.

Keywords—*Lumpy Skin Disease, Machine Learning, SVM, Gradient Boosting, Random Forest, Cattle Diagnosis, Veterinary Medicine*

PNEUMONIA DETECTION USING OPTIMIZED DEEP LEARNING APPROACHES

Munnella Sri Sai Krishna[1], M. Manicka Raja[2], Neelam Srinadh Reddy[3]

[1,3]*UG Student Department of Computer Science and Engineering Karunya Institute of Technology and Sciences, Coimbatore, India*

[2]*Assistant Professor Department of Computer Science and Engineering Karunya Institute Of Technology and Sciences, Coimbatore, India*

munnellasri@karunya.edu.in, manickaraja@karunya.edu, neelamsrinadh@karunya.edu.in

Abstract – Pneumonia is a severe respiratory disease, with high mortality rate, that threatens public health especially among children, the elderly and people with weakened immune systems. Speedy and accurate diagnosis is essential for appropriate and better prognosis of hospitalized patients. Radiologists analyzing chest X-rays usually require a lot of time and often have imprecise results with great variability between them. In this work, we present an enhanced deep learning based pneumonia detection framework using transfer learning, data augmentation and innovative Manta Ray Foraging Optimization (MRFO) for hyper parameter tuning. ResNet-50, Efficient Net and MobileNetV2 architectures are used in the framework to take advantage of the ability of the architectures to learn complicated patterns from chest X-ray images. In order to reduce the requirement for excessive right amount of labeled data, transfer learning is applied, and the MRFO algorithm composes to play with variables such as learning rate and dropout rate to increase the model's accuracy and robustness. The proposed approach was evaluated on a publicly available chest X-ray dataset, with classification accuracy of 96.5% on Efficient Net and ROC-AUC of above 0.97 for all models indicating its potential to reliably detect pneumonia with efficient computational runtimes.

Keywords–*Pneumonia Detection, Deep Learning, Convolutional Neural Networks, Manta Ray Optimization, Chest X-ray, Image Classification*

THE EARLY DETECTION OF DEMENTIA DISEASE USING MACHINE LEARNING APPROACH

Neelam Srinadh Reddy[1], Angelin Jeba P[2], Munnella Sri Sai Krishna[3]

[1,3]UG Student *Department of Computer Science and Engineering Karunya Institute of Technology and Sciences, Coimbatore, India*

[2]Assistant Professor *Department of Computer Science and Engineering Karunya Institute of Technology and Sciences, Coimbatore, India*

neelamsrinadh@karunya.edu.in, angelinjeba@karunya.edu, munnellasri@karunya.edu.in

Abstract—The project entitled "The Early Detection of Dementia Disease using Machine Learning Approach" utilizes the power of advanced machine learning algorithms; especially XGBoost, Random Forest, and Gradient Boosting to discover the beginning of dementia. The model attempts to enhance diagnostic accuracy, as well as enhance its timeliness, as it analyzes patient data, including cognitive assessments and demographic information. Ensemble methods, Random Forest in particular, and Gradient Boosting, are then viewed as a means to robust predictions that mitigate overfitting and uncover the lurking complexity of the data. The model's performance further improves as XGBoost handles big datasets quite efficiently as well. As with many fields of healthcare analytics, this study suggests that by utilizing machine learning with early phase dementia, patient outcomes can be improved and the decision making of healthcare professionals can be supported in important areas.

Keywords—*Dementia, early detection, machine learning, XGBoost, Random Forest, Gradient Boosting, healthcare analytics, predictive modeling.*

ENHANCING SYSTEM SECURITY WITH AI-POWERED ROOTKITS DETECTION USING STACKED MACHINE LEARNING ENSEMBLES

Raavi Pranay1, M. Manicka Raja2, Chamarti Hareesh3

Division of CSE Karunya Institute of Technology and Sciences Coimbatore, India

raavipranay@karunya.edu.in, Manickaraja@karunya.edu, chamartihareesh@karunya.edu.in

Abstract – *Modern cybersecurity faces a powerful adversary in rootkits, offering stealth, and the ability to secure their favor by compromising system integrity. Traditionally, these detection techniques fail at detecting advanced rootkits which resort to techniques such as obfuscation or employ new attack patterns. To solve this issue, I present RootGuard, an AI based solution which combines the application of several machine learning algorithms and stacked ensembles to robust rootkit detection, which leverages the existence of a large dataset consisting of features from normal and rootkit infected system states. High quality inputs to train our model are ensured via advanced preprocessing techniques such as feature engineering and scaling. Detection accuracy and robustness is improved using machine learning models (Random Forest, Logistic Regression, Support Vector Machines and custom stacking classifier ensemble) called RootGuard. We propose real time monitoring of system behavior to detect rootkit activity quickly, coupled with Explainable AI (XAI) tools to understand feature importance and model decisions, whose experimental results show high detection accuracy for the stacking ensemble, outperforming individual classifiers. From its proactive approach to detection to its real time analysis capabilities, RootGuard is a trusted solution to counter rootkit threats. This work presents the possibility of combining machine learning with XAI to enhance cybersecurity defenses.*

Keywords– *Machine learning, real time monitoring, cybersecurity, explainable AI, rootkit detection, stacking ensemble.*

ETHEREUM TRANSACTION ANOMALY DETECTION BY INTEGRATING MACHINE LEARNING MODELS AND FUZZY NETWORKS FOR ENHANCED SECURITY AND REAL-TIME MONITORING

Mantri Christ Elison[1], Martin Victor K[2], Gifton Paul[3] , Immanuel[4]

Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore,India

mantrichrist@karunya.edu.in , martinvictor@karunya.edu , giftonpaul@karunya.edu.in

Abstract– This research aims at developing an R&D for a hardiness relay alert system which includes applying machine learning and fuzzy logic networks for detecting Ethereum transaction match failures in real time and enhanced Ethereum blockchain security. Since, for example, value, gas price, and smart contract interactions, the system for analyzing transactions correlates with concrete intrinsic characteristics, it selects transactions with suspicious or malicious behavior. This research employs logistic regression, support vector machines (SVM) decision trees and random forests optimized by grid search. On the other hand, the issue of uncertainty and false alarms is solved through the use of fuzzy logic, where fuzzy membership functions place attributes of transactions into linguistic hobbled variables such as 'low', 'medium' and 'high'. This descriptive research proves that integrating fuzzy logic with machine learning enhances the approach of mediating anomalies compared and emphasizes that it is better than the rules-based approach. The study concludes with a detailed analysis of the models' effectiveness, illustrated through various graphical representations of the decision-making processes and membership functions, highlighting the system's potential for real-time deployment in securing blockchain networks.

Keywords– *Ethereum, Anomaly Detection, Machine Learning, Fuzzy Logic, Blockchain Security, Real-Time Monitoring, Smart Contracts, Logistic Regression, SVM, Decision Trees, Random Forests.*

HYDROSAVVY: MODERNIZING AGRICULTURE WITH INTELLIGENT IRRIGATION SOLUTIONS USING IOT

Nagaraj P1, M Chaitanya Prabhu2, Sasi Kumar3, B Meghana4, C Jahnavi5, N Akhilesh6

Department of Computer Science and Engineering Kalasalingam Academy of Research and Education Krishnankoil,Virudhunagar,India

nagaraj.p@klu.ac.in, madala.chaitanyaprabhu@gmail.com, sasikumarkrishnak@gmail.com, meghanareddy0027@gmail.com, jahanvi09012003@gmail.com, akhileshnukala178@gmail.com

Abstract—This research introduces a new term, Hydro- Savvy. It is an innovative, intelligent irrigation system that optimizes water application and increases crop yields using the Internet of Things, Artificial Intelligence, and advanced sensors. Among the features include the mesh network of soil moisture sensors to obtain real-time data on scheduling irrigation, flow meters that offer insight into water usage, and leak detection to monitor the pump and valves in order not to waste water. It is accessible even where the internet might be small, and it uses solar panels with a battery backup to work 24/7. The multilingual AI mobile application supports voice commands and assists in real-time tracking of water consumption, maintaining logs of irrigation activities, efficiency reports, and guidelines for saving water. The system integrates with the weather API, thus preventing drought irrigation, while machine learning models predict the likelihood of future irrigations as required based on data about weather, soil, and crops. The backend coding is Node.js, with data stored on Google Cloud and Firebase. This research exemplifies the potential for IoT and AI to revolutionize water management toward sustainability and better agricultural productivity.

Keywords—*Agriculture, Irrigation,Farming,Sensors, Climate, Weather, CropsAnalysis, Prediction, Clean Water and Sanitation.*

VALENCE AND AROUSAL PREDICTION IN DYNAMIC ENVIRONMENTS USING CNN-BASED ENSEMBLE MODELS

K Deepak[1], M S Vineeth[2], Kothamasu Venkata Sai Rishi[3]

Amrita School of Computing Amrita Vishwa Vidyapeetham Chennai,India

deepak@ch.amrita.edu, vineethsellamuthu1@gmail.com, ch.en.u4aie21123@ch.students.amrita.edu

Abstract—FER fits within the prominent tasks of affective computing that have already been used for emotional monitoring, human-computer interaction, and also behavior analysis. This work will give an in-depth investigation on the estimation of valence and arousal value from video sequences using the AFEW dataset. We will investigate some possible deep learning architectures: one of them is an ensemble of a Random Forestbased EfficientNet and DenseNet, EfficientNet and ResNet; lastly, standalone DenseNet and ResNet implementations. This is done by testing their ability to pick subtle variations in dynamic video data produced by variations in facial expressions. Our empirical results show whether each method has its strengths and weaknesses and whether the effectiveness and accuracy of the models are applicable in practice. Challenges cited in occlusion management, illumination change, and real-time FER have been discussed with future work directions in the article towards the development of more robust emotion detection systems.

Keywords– *DENSENET121, RESNET50, RANDOM-FOREST*

EFFECTIVENESS OF OVERSAMPLING IN ENSEMBLE LEARNING FOR THYROID CANCER PREDICTION

Abhijit Mandal[1], Saroj Kr. Biswas[2], Sounak Majumdar[3], Shyamoshree Pal[4]

Department of Computer Science and Engineering National Institute of Technology Silchar, India

abhijitmandal4701@gmail.com , saroj@cse.nits.ac.in , sounakintouch@gmail.com

spal@cse.nits.ac.in

Abstract— Thyroid cancer (TC) is among the most prevalent endocrine malignancies, with its global incidence tripling over the past three decades. Early detection significantly improves patient outcomes; however, current diagnostic methods heavily rely on the clinical expertise of radiologists and surgeons, making them prone to variability and subjectivity. In recent years, machine learning (ML)-based computer-aided diagnosis (CAD) systems have shown promise in improving the accuracy and efficiency of TC detection. Despite these advancements, class imbalance in medical datasets remains a critical challenge, often leading to biased predictions and suboptimal model performance. This study investigates the impact of oversampling techniques on ML model performance for TC diagnosis. Specifically, the Synthetic Minority Oversampling Technique (SMOTE) and Adaptive Synthetic Sampling (ADASYN) are employed to address class imbalance in a publicly available TC dataset. A comprehensive evaluation has been conducted using twelve ML models, including ensemble learning (EL) approaches, with performance assessed through 10-fold cross-validation using accuracy, F1-score, precision, and recall metrics. The results demonstrate that after addressing class imbalance, ensemble models consistently outperform standard ML models, achieving highest accuracy of 84.3% and F1-score of 83.5%. These findings highlight the effectiveness of oversampling techniques and the potential of EL models in enhancing ML-based TC diagnosis.

Keywords— *Thyroid Cancer, Ensemble Learning, Class Imbalance, Oversampling, Classification.*

MULTIMODAL QUANTIFICATION OF POSTURAL TREMOR

Aastha Baid[1], Om Rathod[2], Khushi Sethi[3], Swarna Priya RM[4],
School of Computer Science Engineering and Information Systems VIT, Vellore, India
aastha.baid2022@vitstudent.ac.in,omprakash.rathod2022@vitstudent.ac.in,
khushi.sethi2022@vitstudent.ac.in, swarnapriya.rm@vit.ac.in

Abstract—The recent decade has seen deadly viruses like HMPV, SARS-CoV-2 (COVID-19), Ebola Virus etc which can be diagnosed and cured. Also, various preventive medicines and vaccines are invented for preventing the virus from affecting the individuals. There are other diseases which are predominantly getting increased in geriatric population in the recent years like Alzheimer's, Parkinson's, Dementia, Sleep Disorder. These can be categorized as neurodegenerative diseases. The major challenge in these is that the neurologists are not able to diagnose this disease at an early stage and the progression of disease is quite rapid. When these diseases are detected and diagnosed at an early stage, there is a strong possibility to reduce the death rate and increase the patient's life span. This paper focuses on analyzing the various methodologies and techniques currently available for diagnosing and detecting the major symptoms in Parkinson's patients termed as Tremor. The tremor can be either Rest tremor or Kinetic tremor. This is an early symptom of any Parkinson's patient. When this symptom is detected in an early stage, it can be a great relief to the care takers and also help the patient to lead a smooth life. A compressive survey of the methodologies, challenges and future enhancements are highlighted in this paper. The final results obtained is also analysed using parameters like Precision, Recall and Accuracy.

Index Terms—*Neurodegenerative, Parkinson's disease (PD),Diagnosis*

AUTOMATING PLANT IDENTIFICATION: HIGH-ACCURACY LEAF SPECIES RECOGNITION USING MACHINE LEARNING ALGORITHMS

Anthony Manoj Chand Nagothu[1], Nagothu Sravani Vimala Rani[2], Dr.A.Reyana[4]

Dept. of computer science and engineering Karunya University Coimbatore, India

nagothuanthony@karunya.edu.in , nagothusravani@karunya.edu.in , reyana@karunya.edu

Abstract **–**This project is established on the fundamentals of using machine learning to support a more efficient and precise recognition of different plant species through images of their leaves. Using algorithms that evaluate the spatial characteristics of the leaves, including their surface roughness, and distribution of veins, the system successfully identifies plant species and supports the observation of the distribution of plant species, the investigation of ecological processes, and farming. In contrast to other methods based on direct observation by botanists that is incomparably more subjective and requires much more time, this technique employs machine learning algorithms that are based on recognition of a large number of photographs of leaves, images of which are described by specialists. The system can be used on a mobile application or on the web where users can search in order to find plant species and view details on recognized plants. Both the accuracy and flexibility of models are enhanced overtime as more feedback comes in or new data is collected. Benefitting the scientific research and conservation of plants, it also incorporates into the identification most popular AI tools and libraries such as TensorFlow, PyTorch, and OpenCV. This concept is expected to resolve the need for ecological monitoring, thereby aiming at giving a widespread device that is installable in different peculiarities of varied species or shapes of the leaves that are of great assistance in the plant identification.

Keywords–*Plant species recognition, machine learning, leaf classification, biodiversity monitoring, ecological research, automated identification, conservation, image analysis.*

DEEP MULTIMODAL EMOTION RECOGNITION FOR ADAPTIVE AI SYSTEMS IN HUMAN-CENTERED APPLICATIONS

Makkena Velangani Akshitha[1], Dr.Julia Punitha Malar Dhas[2], Deva Priya I[3], Angel Mathew[4]

[1,4] *Student, Karunya Institute of Technology and Sciences, Coimbatore*

[2]*Professor, Karunya Institute of Technology and Sciences, Coimbatore*

[3]*Assistant Professor, Karunya Institute of Technology and Sciences, Coimbatore*

makkenavelangani@karunya.edu.in, juliapunitha@karunya.edu, devapriya@karunya.edu, angelmathew@karunya.edu.in

***Abstract*—** This venture presents an original strategy for feeling order that coordinates different correspondence modes, including discourse, message, and visual signs, to improve the exactness of human feeling acknowledgment. By utilizing progressed AI and profound learning procedures, the framework deciphers feelings across different types of articulation. In examining discourse feelings, the model concentrates basic highlights, for example, Mel-recurrence cepstral coefficients (MFCC) to accomplish exact grouping. For printed information, Irregular forest,Bert models are used to catch the close to home subtleties inside composed language really.

Keywords: *Mel-frequency cepstral coefficients (MFCC), CNN,Bert,Random Forest.*

CLINICAL IMPLEMENTATION OF AUTOMATED SKIN DISEASE PREDICTION USING CNN AND TENSORFLOW BASED MODEL

[1]Abhishek Tripathi, [1]Sethumadhavan R, [1]Jujaru Sasi Kiran, [1]Vasudevan M, [1]Deena AC, [2]Abhishek Garg, [3]Sourabh Panwar

[1]Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education Krishnankoil, Tamil Nadu, India.

[2]Sushila devi Bansal college, Indore, Madhya Pradesh, India.

[3]Sardar Vallabhbhai National Institute of Technology, Surat, India

tripathi.abhishek.5@gmail.com , chandrabosechandrabose9@gmail.com , sasikiranjujaru@gmail.com , thiyagadevan369@gmail.com , 7deena19@gmail.com , ag.9424372303@gmail.com , sourabhpwr@gmail.com

Abstract– Skin diseases are increasingly prevalent, requiring timely detection to prevent complications. This study presents a user-friendly website integrated with a machine learning (ML) backend for automated skin disease prediction. Leveraging advanced ML techniques, including Convolutional Neural Networks (CNN) and TensorFlow, the system accurately identifies multiple skin conditions through user-uploaded images. The model achieves an average F1-score of 0.80 across various skin disease classes, with notable performance for conditions like Nevus (0.92). Key features include robust preprocessing, intuitive interaction, and high scalability, ensuring accessibility for remote users. By addressing critical challenges in dermatological care, this system provides a reliable, practical, and scalable solution for early diagnosis and improved skin health management.

SECURITY SYSTEM FOR DETECTING SUSPICIOUS ACTIVITY USING MOTION SENSORS AND GSM COMMUNICATION

[1]Abhishek Tripathi, [1]A. Praveen Kumar, [1]Venkat Mohan, [1]M. Rohit Kumar, [1]S. Tejaeswar Reddy
*[2]Shubham Anjankar, [3]Abhishek Pahuja and [1]Maruthupandi V.

[1]*Dept of Computer Science and Engineering, Kalasalingam Academy of Research & Education, Tamil Nadu, India.*

[2]*Dept of Electronics Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur, India.*

[3]*Dept of Electronics and Communication Engineering, Koneru Lakshmaiah Education Foundation, Vijayawada, India*

*tripathi.abhishek.5@gmail.com, 99210041971@klu.ac.in, 9921041832@klu.ac.in, 99210041998@klu.ac.in, 99210042227@klu.ac.in, *anjankarsc@rknec.edu, pahuja.abhishek@gmail.com , v.maruthupandi@klu.ac.in*

***Abstract*–-** The proposed work is a security solution designed to enhance surveillance and threat detection in high-risk areas. The system integrates an Arduino-based microcontroller with a Passive Infrared (PIR) sensor to detect motion in the monitored environment. Upon detecting movement, the microcontroller processes the data and triggers a machine learning algorithm implemented in Python, which assesses the potential for suspicious behavior. In the event of a detected threat, the system sends an immediate alert via a GSM module to a predefined phone number, while simultaneously activating a buzzer to provide an audible warning. By combining real-time data analysis and machine learning techniques, the system offers an efficient, automated approach to security, enabling rapid situational awareness and response to potential threats. Findings from power consumption analysis show that the system remains energy-efficient even when fully operational. Additionally, the detection accuracy remains high within a 2-foot range, making the system effective for small to medium-scale security applications.

PRE COOLING OF APPLES AND SAPODILLAS USING FORCED AIR COOLING

Durgesh Tripathi[1], Atul Kumar[2]

[1]*Assistant Professor: Mechanical Engineering Department (Ambalika Institute of Management & Technology, Lucknow) Uttar Pradesh, India*

[2]*Assistant Professor: Mechanical Engineering Department (School of Management Sciences, Lucknow) Uttar Pradesh, India*

durgeshtripathi@ambalika.co.in , at981991@gmail.com

***Abstract*—**Perishable food items like fruits and vegetables need to be kept fresh using cooling methods to prevent spoilage. Precooling is the process of cooling them right after harvest, before transporting them over long distances to cold storage for distribution. This study examines how heat moves during the precooling of fruits and vegetables inside a rectangular air duct using forced air cooling. The experiment focuses on apples and sapodillas. The cooling setup includes a 4-meter-long rectangular duct (0.3 × 3 meters) made of galvanized iron, insulated with a 1 cm thick puff sheet. The humidity inside the duct is kept constant. Temperatures are measured regularly at different locations inside the fruit package and in the surrounding cold air. A blower, powered by a 1.5 HP electric motor, circulates the air through the duct. The air then passes through a coil, which is the evaporator coil of a 5-ton capacity vapor compression cooling system. The experiment tested two fruit types (apples and sapodillas) at an air velocity of 2.5 m/s to study the effect of cool air movement on the cooling process. Temperature measurements were taken at three points (surface, middle, and center) of the fruits. The study calculates the heat transfer coefficient using temperature measurements over time. Two different methods were used based on whether the Biot number was low or high. The results show that the temperature of apples and sapodillas decreases rapidly in the first 30 minutes, then cools at a slower rate afterward.

Keywords— *Cooling of Fruits, Transient heat transfer, unsteady state heat transfer, cooling time etc*

EXPERIMENTAL INVESTIGATION OF CUTTING PARAMETERS AND MRR IN TURNING OF ALUMINIUM 6063 ARCHITECTURAL ALLOY BY USING SINGLE POINT CUTTING TOOl

Amit Gangwar

Assistant Professor, Department of Mechanical Engineering, Ambalika Institute of Management and Technology, Lucknow

Abstract–- The use of engineering materials has increased to a great extent in the industries. To increase the quality of the machined parts during turning process is considered as the main challenge of industries. So it is required to find the optimum parameters in order to have easy and economical machining. Material removal rate affects the productivity and in turn the cost of manufacturing. This paper presents the optimization of material removal rate (MRR). Metal cutting processes are performed on metal cutting machines, more commonly termed as "Machine tools" by means of various types of "cutting tools". One major drawback of metal cutting or machining process is the loss of material in the form of chips. There are many machines which can perform the different operation like: boring machine to make a hole, grinding machine to sharpen the tool, milling machine to make slot, gears, but the most important machine tool is the lathe, which performs many operations. Turning constitutes the majority of lathe work. The cutting speed, resulting from feeding the tool from right to left, removes a surface layer of the work piece is in the form of chips, it will produce three cutting forces components, i.e. main cutting force, which acts in the direction of cutting speed, feed force, which acts in feed rate direction and thrust force, which acts normal to the cutting speed. The research indicate that the cutting forces are directly depends on the cutting parameters like cutting speed, feed rate, depth of cut, work piece material, tool. The present work involves the experimental investigation of MRR and using single point cutting tool for a turning operation in the orthogonal cutting. The experiments are carried on different spindle speeds for the different depth of cut on specially designed cutting tool.

OPTIMIZATION OF CUTTING PARAMETERS IN PLAIN TURNING OF ALUMINIUM 6061 ALLOY

Beena Rizvi

Assistant Professor, Department of Mechanical Engineering Ambalika Institute of Management and Technology, Lucknow

Abstract–The demand of the hour is increasing due to the advancement of technology. Economic production with the optimal use of resources is of main concern for the industries. Metal machining is one of them. The engineers are facing challenges to find out the optimal parameters for maximizing the performance of manufacturing and to obtain the desired product quality using the available resources. The present experimental research studies the process factors that affect the performance and productivity of plain turning. Feed rate is found to be the major influencing parameter and depth of cut is the least affecting parameter for surface roughness of Aluminum 6061.

MINDMATE: AI-POWERED MULTILINGUAL MENTAL HEALTH CHATBOT WITH PERSONALIZED VOICE AND TEXT SUPPORT USING RASA AND STREAMLIT

Dr.Savitha K[1], Giritharan K[2]

Assistant Professor ,Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

(URK21CS5008) Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

savitha@karunya.edu, Giritharan5008@gmail.com

Abstract **–** MindMate is an advanced AI-powered multilingual mental health chatbot designed to provide accessible, empathetic, and personalised mental health support through voice and text interactions. Utilising the Rasa framework for natural language understanding and dialogue management, along with a user-friendly Streamlit interface, the chatbot supports multiple languages and adapts to individual user preferences over time. By integrating voice recognition and advanced machine learning models, MindMate offers a novel approach to enhancing mental health services globally. This paper discusses the development, architecture, and capabilities of MindMate, emphasising its potential to transform mental health support mechanisms through personalised and accessible technology.

Keywords **–***AI-powered chatbot, mental health support, multilingual interaction, natural language understanding, voice recognition, empathetic technology, Rasa, Streamlit, personalised healthcare.*

ANALYZING THE IMPACT OF EMPLOYER BRANDING ON EMPLOYEE ENGAGEMENT AND EMPLOYEE PERFORMANCE

Ms. Anuradha Asthana[1], Ms. Anupama Asthana[2], Dr. Anshu Yadav[3], Dr. Shweta Mishra[4]

[1]*Research School of Business Management, Chhatrapati Shahu Ji Maharaj University, Kanpur*

[2]*Assistant Professor, Kanpur Institute of Technology, Kanpur*

[3]*Professor, School of Business Management, Chhatrapati Shahu Ji Maharaj University, Kanpur*

[4]*Professor, Management Department Ambalika Institute of Management and Technology*

anuradha.asthana07@gmail.com, anupama.asthana@kit.ac.in , anshuyadav@csjmu.ac.in, shwetamishra@gmail.com

Abstract- Corporate world today is marred with unprecedented change accounting due to rampant digitalization and technological disruptions. For the organizations to stay competitive and relevant it is imperative that they have an engaged workforce. Employer branding has emerged as a pivotal strategy to attract, retain, and motivate employees, which ultimately aids the engagement index and the performance level of the employees.

Banking on the comprehensive literature review this research paper intends to investigate the impact of employer branding on engagement index and performance of employees.

It subtly explores how branding traits enveloping one's perception of organization's reputation as an employer, its value proposition to employees, company culture, career development opportunities, work-life balance, employee empowerment and recognition programs; bundle up to impact how better an employee is able to engage /align with the organization, ultimately scaling up their performance.

The paper further analyses how employer branding can attract and retain high-performing employees, enhance motivation, inculcate sense of belonging & pride and foster a positive / inclusive work environment along with the sense of belonging & loyalty. Additionally, it explores the relationship between employer branding and overall employee performance including increased productivity, reduced turnover, and improved employer reputation.

The study concludes with practical recommendations for organizations to develop robust employer branding strategies that not only attract top talent but also enhance employee engagement and performance, ultimately driving organizational success.

Keywords–Employee branding, Employee engagement, Employee Performance, Organization, Success

A HYBRID INTRUSION DETECTION SYSTEM USING MACHINE LEARNING AND DEEP LEARNING

Kumar Abhinav[1], Vimal Kumar[2]

School Computer Science & Engineering, Galgotias University

Kumarabhinav2640@gmail.com , Vimalkumar@galgotiasuniversity.edu.in

***Abstract*—**Intrusion detection systems (IDS) play a significant role in ensuring the protection of networks against emergent threats since they enable the detection of intrusive events and other irregularities occurring in network traffic. The existing signature-based and anomaly-based IDS systems have weaknesses in detecting zero-day attacks, reducing false-positive rates, and dealing with big data sets. Based on these difficulties, this study proposes a hybrid IDS framework based on machine learning and deep learning algorithms. The system composes a Random Forest classifier for the primary filtration of anomalies with an LSTM deep learning model for identifying intricate patterns of attacks. For training and evaluation, the CICIDS2017 dataset, which covers numerous varieties of attack types, was used. The experimental outcome shows that the proposed hybrid IDS yields better results of accuracy 97.8% and precision 97.4% over baseline and state-of-art models with recall 96.5% and ROC-AUC 98.5%. Moreover, it is impressive that the system also has low false favorable rates and can develop a policy for dynamically changing networks. There are three critical assumptions for future work: real-time deployment, better modelling for imbalanced data, and better robustness against adversarial attacks. The research presented above proves the effectiveness of hybrids in enhancing the possibilities of intrusion detection and network security.

Keywords*—Intrusion Detection System (IDS), Cyber threats, Network security.*

STOCK MARKET PREDICTION USING MACHINE LEARNING

Pallav Anand[1], Sunita Yadav[2]
[1]Galgotias University, Greater Noida,
[2]Department of Computer Science,College of Engineering, Greater Noida

Abstract– The stock market is an intricate and dynamic financial system which draws in investors from around the globe. Stock prices are thus difficult to predict due to company performance, macroeconomic indicators, geopolitical events in addition to market sentiment. The study tests machine learning methods to predict stock market movements. Different ML models like regression, classification and deep learning are evaluated for their predictive power in predicting stock prices. Research includes identifying sources of data, features to select and criteria to evaluate predictive accuracy. The results indicate that machine learning models might be useful to investors, though such info might be affected by market fluctuations and also the quality of the information.

EYE DISEASE DETECTION USING MACHINE LEARNING

Vivek Prakash Prajapati

Under Supervision of: ***Dr. T. Ganesh Kumar****, Professor Galgotias University, Greater Noida, Uttar Pradesh*

Abstract**—**Early eye disease detection avoids vision loss and in most cases needs medical intervention. Conventional diagnosis is based upon a subjective and time consuming physical examination by aphthalmologists. An automated eye disease detection based on health-related imaging using machine learning and deep learning is presented here. It employs convolutional neural networks in addition to some new deep learning architectures to classify frequent eye diseases including diabetic retinal disease, glaucomatous diseases and cataracts.

VISION TOOL A DEEP LEARNING EMBEDDED DEVICE FOR BLIND PEOPLE

Rakhi Bharadwaj[1], Bhushan Bachewar[2], Snehal Darade[3], Shreya Barsude[4], Harsh Badagandi[5]

Computer Engineering, Vishwakarma Institute of Technology Vishwakarma Institute of Technology Pune, India

rakhi.bharadwaj@vit.edu, bhushan.bachewar221@vit.edu , snehal.darade22@vit.edu , shreya.barsude221@vit.edu, harsh.badagandi22@vit.edu

***Abstract*—**The paper presents a vision assistance device for blind individuals, utilizing a Raspberry Pi 4B and a Raspberry Pi camera to capture real-time input for object detection using Google's SSDlite MobileNet V2 model and Amazon Image Rekognition. The device calculates object distances with ultrasonic sensors and provides audio feedback via Bluetooth earphones, enabling spatial awareness and effective navigation. A GPS module is integrated to send the user's live location to a Flutter app using Firebase realtime database, allowing caretakers or relatives to track their whereabouts. Multiprocessing ensures efficient task execution, making the device a comprehensive tool for enhancing mobility and safety.

Index Terms*—*Vision Assistance, Object Detection, Raspberry Pi, GPS Tracking, Multiprocessing, Deep Learning, SSDlite MobileNet V2 model, Coco Dataset, Flutter App, Amazon Image Reckognition, Firebase.

STUDY OF TRANSMISSION PROPERTIES OF QUATERNARY MULTILAYER STRUCTURE

Anirudh Banerjee,

Department of Electronics and Communication, Amity School of Engineering and Technology, Amity University, Uttar Pradesh, Lucknow, India.

abanerjee@amity.edu; anirudhelectronics@yahoo.com

Abstract— In this paper, transmission properties of quaternary multilayer structures are studied. The quaternary multilayer is a new structure. This structure is made up of repeated sequential arrangement of four dielectric materials. The passbands and photonic bands for this quaternary multilayer structure are determined. The quaternary multilayer with different thicknesses of dielectric material layers are considered for this purpose. The results of this study are useful for designing optical filters based on quaternary multilayer.

Keywords—*Quaternary, multilayer, filter*

EVALUATING COGNITIVE ASSESSMENT TOOLS: A COMPARATIVE ANALYSIS OF MMSE, RUDAS, SAGE, ADAS, AND MOCA FOR EARLY DEMENTIA DETECTION

Saransh Naole1, Dhriti Parikh2, Sakshi Nayak3, Swarna Priya Ramu
School of Computer Science Engineering and Information Systems
Vellore Institute of Technology Vellore, India
saransh.naole2022@vitstudent.ac.in, dhriti.parikh2022@vitstudent.ac.in;
sakshi.nayak2022@vitstudent.ac.in, swarnapriya.rm@vit.ac.in

***Abstract*—**This review paper conducts a comprehensive com- parative analysis of widely used cognitive assessment tools: the Mini-Mental State Examination (MMSE), Rowland Universal Dementia Assessment Scale (RUDAS), Self-Administered Ge- rocognitive Examination (SAGE), Alzheimer's Disease Assess- ment Scale (ADAS), and Montreal Cognitive Assessment (MoCA). These assessments are crucial for identifying cognitive impair- ments, particularly in early-stage dementia and Alzheimer's disease.Each assessment tool evaluates various cognitive domains. MMSE assesses orientation, registration, attention, calculation, recall, and language, lacking in comprehensive evaluation of executive function and visuospatial abilities. RUDAS examines memory, language, praxis, orientation, and visuospatial skills. SAGE ADAS targets memory, executive function, language, and orientation. MoCA comprehensively covers visuospatial abilities, executive function, naming, memory, attention, language, abstraction, and orientation. The main aim of the paper is to determine and evaluate which cognitive assessment tool is suitable for a certain domain and present detailed description of pros and drawbacks of each.

Keywords*—Cognitive Assessment, Alzheimer's Disease, Montreal Cognitive Assessment (MoCA)*

A STUDY ON STOCK MARKET SYSTEM USING STATISTICAL ANALYSIS

Vanshika1, Kirat Kaur2, Sahil3, Shreyash Moghe4, Ramandeep5

Department of Computer Science and Engineering Chandigarh University,Gharuan Mohali, India

Vanshika45656@gmail.com, kirat.e12999@cuchd.in, sharmasahil0118@gmail.com

shreyashmoghe99@gmail.com, ramandeepkamboj4574@gmail.com

Abstract—The stock market is a process affected by many economic, financial and psychological factors. Understanding its dynamics is important for investors, policymakers and financialexperts. This article provides information on analyzing products to uncover patterns, trends and relationships that move the market. Degree of understanding of distribution properties. We then explore time series analysis techniques such as autoregression, moving averages, and volatility modeling tocapture the natural serial correlation and volatility clusters present in stock prices. Examine the relationship between returns and the macroeconomy using economic models such as vector autoregression (VAR) and covariance to calculate indicators such as interest rates, inflation, and GDP growth. This helps in understanding the broader market which influences the market dynamics. We measure the impact of corporate governance, reported earnings and macroeconomic news on stock prices by conducting empirical studies and regression analysis. Machines and neural networks to predict returns and volatility. This allows for the creation of predictive models that will help investors make informed decisions. Establishing basic business and investment strategies.

Keywords– *Stock market prediction, Machine learning (ML),*

CLASSIFICATION, DEEP LEARNING NETWORK PERFORMANCE ENHANCEMENT UNDER MULTI-PATH TCP APPROACH BY PARAMETER OPTIMIZATION SCHEME

Saurabh Bhutani[1] Nitin Jain[2] Keerti Mishra[3]

Electronics & Communication Engineering,School of Engineering,BBD University, Lucknow, India

saurabhbhutani2412@gmail.com

***Abstract*—**Multi-homing, the process of connecting a host device to numerous networks, is increasingly being used with contemporary Multipath TCP (MPTCP) techniques to improve transmission performance, bandwidth efficiency, and dependability. Traditional TCP, which operates over a single path, frequently exhibits a reduction in performance during brief data transfers due to path-sharing and TCP's aggressive start behavior. This drop happens because data packets are processed independently, causing significant traffic consequences. This study optimizes MPTCP performance by parameter adjustment, with the goal of improving important metrics. Timeouts, retry events, and wait durations, all of which effect packet loss and delays, have been recognized as influential parameters. MATLAB-based simulation identifies ideal parameters in text-based MPTCP applications, minimizing the risk of congestion and preventing loss. The results show that the proposed approach considerably minimizes delays while maintaining high throughput.

***Keywords*—** *Multipath TCP, completion time, short flow. packet loss, optimization.*

DELAY DRIVEN CONGESTION CONTROL APPROACH UNDER SMART VIRTUAL PARALLEL TCP APPLICATION

Keerti Mishra[1], Nitin Jain[2], Saurabh Bhutani[3]

Electronics and Communication Engineering, School of Engineering, BBD University Lucknow

keertim14@gmail.com

Abstract— Wireless networks that exhibits large Bandwidth Delay Product (BDP) follows the Transmission Control Protocol (TCP) for standard data transmission platform. TCP performs an increase in the congestion window exponentially and consequently sometime fails to utilize available bandwidth. This constraint, combined with the transmission control algorithm's to monitor network congestion results in high packet loss. This problem becomes worse with the advanced network devices and the growth of Internet. This work presents a smart approach for improving congestion control by dynamically adjusting the number of virtual parallel streams using machine learning models. This technique allows for more responsive regulation of congestion levels by adjusting delay with respect to variation in the congestion window (CWND). MATLAB-based simulations show that purposed approach outperforms to various existing algorithms in terms of bandwidth consumption**.**

Keywords— *Congestion control, Slow-start, Machine learning, TCP*

EXPLAINABLE DATA DRIVEN DIGITAL TWINS FOR PREDICTING BATTERY STATES IN ELECTRIC VEHICLES

Rathipinni Yogiswar[1], Dr. R. Chitra[2], Dr.Rajeswari[3]

UG Student, Computer Science and Engineering Associate Professor, Computer Science and Engineering Associate Professor, Computer Science and Engineering Karunya University Karunya University Karunya University

rathipinniyogiswar@ieee.org chitrar@karunya.edu rajeswari@karunya.edu

***Abstract*—** As the automotive sector accelerates towards electric vehicles (EVs), predicting battery states accurately is vital for maximizing performance, safety, and lifespan. This project presents a novel approach that utilizes Explainable Data-Driven Digital Twins to forecast battery states in electric vehicles (EVs). It incorporates various advanced machine learning algorithms, including DNN, LSTM, CNN, SVR, SVM, FNN, RBF, RF, and XGBoost. The key objective is to enhance the accuracy of predicting critical battery metrics like SOC and SOH under diverse operating conditions. Additionally, the project applies explainable AI to uncover factors that impact battery performance.

Keywords*–Electric Vehicles, Battery Prediction, Digital Twins, Machine Learning, DNN, LSTM, CNN, Support Vector Regression, Random Forests, XGBoost.*

HARNESSING GALLERIA MELLONELLA ENZYMES FOR POLYETHYLENE DEGRADATION AND ETHANOL PRODUCTION

Swati Patel[1], Alok Mishra[2], Naveen Sharma[3]

[1,2]*Department Computer Science and Engineering*

[3] *Department of Biotechnology*

Ambalika Institute of Management and Technology, Mohanlalganj Lucknow

adi13sept@gmail.com

Abstract– In now days, Plastic pollution is mainly due to polyethylene, which is significant global environmental challenges due to its high durability but low biodegradability. Recently many of the study have highlighted that , wax modes of *Galleria mellonella* enzymes have potential to oxidized and epolymerize polyethylene into smaller molecular compounds by the help of enzymes. These enzymes present in its saliva .In this study we are looking for the harnessing these enzymes for dual purpose firstly is poly-ethylene degradation and subsequent ethanol production. During this bioconversion there are several pathways to break down polyethylene and for focusing on the identification and optimization of the main enzymes which are capable of polymerizing polyethylene into ethylene glycol by using microwave fermentation and which can be convert it into ethanol. So many studies has been discovered that, polyethylene films effectively converted into ethanol by the help of intermediate process in controlled environment due to the presence of enzymes undergo chemical changes as breaking its molecular structure moreover microwave fermentation on the degradation by products has shown promising yield of ethanol. This research tries to provide sustainable method to reduce plastic waste and the future aim to optimize enzymes expression and scale up the process for industrial application.

Keywords– *polyethylene, optimization, enzymes, potential, oxidized fermentation, degradation, strain development, genetics engineering, microwave, bio-catalytic, bio-fuel etc.*

DESIGN OF ANALOG MICROELECTRONIC ARTIFICIAL NEURAL NETWORK IN 90NM CMOS TECHNOLOGY

K.A.Jyotsna[1], Golkonda Vishal[2], Siliveri Swetha[3], G.Snehalatha[4], Silpa kesav Velagaleti[5]

Department of ECE CVR College of Engineering Hyderabad ,India

kajyotsna72@gmail.com golkondavishal20@gmail.com siliveriswetha.cvr@gmail.com

sneharaj401@gmail.com shilpakesav@gmail.com

***Abstract*—**The most well-known technique for mimicking biological systems learning process is artificial neural networks. From a biological perspective, artificial intelligence is achieved through the use of artificial neurons and mathematical formulas. This research focuses on the design of analog artificial neural network using the MOS transistors in 90nm CMOS technology. In addition to the neuron activation function, the Architecture of analog artificial neural network includes analog components such as analog multipliers and differential amplifiers. This uses a Neuron Network with Back propagation Algorithm. In this work, a neuron cell in CMOS technology is developed for an Artificial Neural Network in analog VLSI Design. Both digital and analog applications can use the developed neuron. The cadence virtuoso tool in 90nm technology is used for the design and simulation.

***Keywords*—** *Gilbert cell, Artificial Neural Network (ANN), Differential amplifier, Artificial Intelligence (AI), Neuron network.*

ENVIRONMENTAL IMPACT ASSESSMENT OF SOLAR PV PANELS IN INDIA: ENVIRONMENTAL IMPACTS

Vikalp Saxena

Ambalika Institute of Management and Technology (AIMT), Lucknow

Abstract **–**Currently, India is focused on the installation of solar photovoltaic panels, but there is insufficient attention given to the emerging issue of solar waste management. The lack of proper regulations, guidelines, and operational infrastructure for handling photovoltaic waste could result in improper disposal methods, such as land filling or incineration, which may harm human health and the environment. Projections based on the Weibull distribution function estimate that India will generate 6.64 million tonnes and 5.48 million tonnes of photovoltaic waste by 2040, due to early and regular losses, respectively. This study also reviews global policies and legislative developments concerning the end-of-life management of photovoltaic modules to identify gaps in current approaches. Through a life cycle assessment methodology, the paper compares the environmental impacts of land filling end-of-life crystalline silicon panels with the environmental benefits of recycling materials. It is found that recycling photovoltaic panels and reusing the recovered materials could reduce environmental impacts by up to 70% in future production phases. Additionally, carbon footprint calculations using the Intergovernmental Panel on Climate Change's methods show lower emissions for the recycling approach (15,393.96 kg CO2 eq) compared to land filling (19,844.05 kg CO2 eq). The findings underscore the need for sustainable management of photovoltaic panels at the end of their lifecycle.

PREDICTING EMOTIONS THROUGH TEXT ANALYSIS USING NLP TECHNIQUES

Danush S[1], Rakesh Kumar S[2], Dhanush Anand M[3], C M Velu[4], Kiruthika S S[5], Bharathi A[6]

[1,2,3]*Department of Computer Science and Engineering Saveetha Engineering College Chennai, India*

[4,5]*Department of Artificial Intelligence and Data Science Saveetha Engineering College Chennai*

[6]*Department of Information Technology Saveetha Engineering College Chennai, India*

danushs05062004@gmail.com, rockeyrakeshcoc30@gmail.com ,dhanushanand2003@gmail.com, velucm@saveetha.ac.inRakesh, kiruthikass@saveetha.ac.inDhanush, bharathia@saveetha.ac.in

Abstract - This study proposes an advanced approach for emotion recognition from text, employing cutting-edge Natural Language Processing (NLP) techniques. By analyzing unstructured text sources, such as social media entries, product reviews, and user-generated content, the system aims to accurately identify and classify various emotional states. Utilizing sophisticated NLP methodologies, the model effectively captures sequential relationships and nuanced context within the text, which are critical for deciphering complex emotional expressions. The process includes text pre-processing to cleanse and standardize input data, embedding layers to represent words as numerical vectors, and attention mechanisms to focus on key textual components that drive emotion classification. Robust training and validation methods ensure high reliability and accuracy across diverse datasets. This adaptable and scalable system offers valuable insights into emotional dynamics, enabling applications in customer sentiment evaluation, mental health tracking, and tailored user interaction strategies.

Keywords– *Natural Language Processing, Pre- Processing, Dataset, Validation, Emotional Expression.*

HATE SPEECH DETECTION USING LSTM AND GLOVE EMBEDDING

Farahan Siddique[1], Dr. Nitish Kumar[2]
Amity University, Noida, Uttar Pradesh, India
farahansiddiqui837@gmail.com, nkumar30@amity.edu

Abstract — Although platforms like Twitter have been crucial in facilitating global interactions in the age of technology, the presence of hate speech on these platforms makes it challenging to provide a secure environment for online interaction. When it comes to detecting hate speech on Twitter, this essay investigates many machine-learning approaches. Shallow learning methods, such as logistic regression methodology and support vector machines, provide simplicity and interpretability, but deep learning methods, including as convolutional neural network networks, bidirectional long- and short-term memory, and LSTM, perform better at recording delicate contextual information and language patterns. Hybrid solutions that combine thoroughly and superficial learning approaches increase detection accuracy even further. Knowing how offensive language on Twitter affects users is vital. By utilising the LSTM approach as well as GloVe embedding of words, we can efficiently identify and counteract poor language online. In order to set performance standards, many models are tested against superficial learning methods. These models include CNN, LSTM, and BiLSTM. Furthermore, a unique G-BERT model surpasses the competition in hate speech categorization through merging BERT architecture with GRU. By integrating gated recurrent unit with bilateral emitter symbols from transformers, the G-BERT model obtains outstanding results in hate speech identification in terms of accuracy, precision, recall, and F1-score. To enhance the model's efficacy, future research may look at other deep learning frameworks like transformers. Generally speaking, the objective of this study is to create a secure and more inviting online community by advancing methods and tools for minimising discriminatory comments on social media.

Keywords—*Machine learning; deep learning; LSTM; GloVe Word Embedding; Hate Speech; Social Network.*

DESIGN CRITERIA OF REINFORCED CONCRETE RENO BRIDGE: A CASE STUDY

Aman Saini[1], Naynish Pandey[2]

Department of Civil Engineering, Ambalika Institute of Management and Technology

Lucknow, India

Abstract– This paper discusses the recently completed Reno Bridge, located along the Polytechnic Engineering college ring road which connects connects Indiranagar to Kalyanpur . The bridge features a distinctive Hanging Arch design, necessitating specialized construction techniques. Initially, it was planned to span 1,711 meters, later extended to stretche of 2,611 meters to provide long-term traffic relief to one of Lucknow's busiest corridor. The spans of the bridge are supported by reinforced concrete vertical piers. The design of this bridge was driven by a set of diverse and sometimes conflicting constraints, in addition to the specific requirements set forth by the client. These included the need for structural efficiency, safety, durability, and technical feasibility. Furthermore, the project aimed to balance economic considerations with user comfort and overall satisfaction. Special attention was given to ensuring the bridge's long-term durability, with a design that facilitates routine preventive maintenance while minimizing the need for major, disruptive repairs. This consideration was essential for maintaining the bridge's performance and safety over its lifespan.

Keywords– *Reno Bridge; RCC; Hanging Arch.*

ANALYSIS OF RIGID PAVEMENT USING FINITE ELEMENT TECHNIQUES

Naynish Pandey[1], Aman Saini [2]

Department of Civil Engineering, Ambalika Institute of Management and Technology

Lucknow, India

naynish002@gmail.com, ak2178498@gmail.com

Abstract–Historically, the Finite Element Method (FEM) has been a cornerstone in analyzing pavement responses, with two-dimensional analyses serving as the standard for several decades. In recent years, the advent of three-dimensional FEM analyses has provided a more nuanced and comprehensive understanding of pavement behavior. This study delves into the design of rigid pavements utilizing ANSYS, a FEM-based software renowned for its precision in simulating complex structural scenarios. The analysis encompasses various pavement thicknesses and load conditions to assess performance metrics. The findings from the ANSYS simulations exhibit a strong correlation with results derived from the American Association of State Highway and Transportation Officials (AASHTO) design methodology, with the ANSYS model yielding slightly lower stress values. This alignment underscores the reliability of ANSYS in pavement design applications. Furthermore, the study investigates temperature gradients within the pavement structure, analyzing the distribution from the surface layer down to the bottom of the slab. The study witnessed a significant influence on the pavement's durability and performance over time. In summary, the integration of three-dimensional FEM analyses through ANSYS offers a robust framework for the design and evaluation of rigid pavements, ensuring that modern highways can meet the escalating demands of contemporary infrastructure.

Keywords– *Finite Element Techniques, Rigid Pavement, ANSYS*

ENHANCING SEISMIC STABILITY IN RC FRAME STRUCTURES THROUGH OPTIMIZED BELT TRUSS PLACEMENT: A COMPUTATIONAL APPROACH

Mohd Raish Ansari[1], Chandra Kumar[2]

[1]*Assistant Professor, Jahangirabad Institute of Technology, Barabanki, Uttar Pradesh, India*

[2]*Assistant Professor, Seth Vishambhar Nath Institute of Engineering and Technology, Barabanki, Uttar Pradesh, India*

Abstract–Thus, seismic stability is a key issue for high-rise RC frame structures in terms of structural integrity due to lateral forces. In this study, the ability of optimizing the belt truss placement to improve the seismic performance of RC frame structures has been investigated through computational modeling. The Response Spectrum Method was used in the software ETABS to analyze six different models with varying belt truss position. Based on such argument, key seismic parameters such as base shear, fundamental period, storey displacement and storey overturning moment were investigated to find out the optimal belt truss configuration. It is found that the lateral stability can be increased, structural deformation can be minimized, and overall seismic resistance can be improved through the strategic placement of belt truss. These findings inform designs and ameliorations for engineers and designers that aim to make belt trusses more earthquake resilient within their high rise building designs.

Keywords–*Enhancing Seismic Stability in RC Frame Structures through Optimized Belt Truss Placement: A Computational Approach*

SKINTELLET: ADVANCED AI FOR ACNE DIAGNOSIS AND PERSONALIZED SKINCARE SOLUTIONS

Karumanchi Roshan[1], V Rishi Vardhan Reddy[2], Dr. Gokulakrishnan D[3]

Department of Computing Technologies SRM Institute of Science and Technology

kk1101@srmist.edu.in, vv7492@srmist.edu.in, gokulakd@srmist.edu.in

Abstract – Self care has come a long way, and modern self care has become so personalized and accurate that skin health management is now an integral part of overall well being. In this paper, we introduce SKintellet, a computer vision based analytical platform for acne detection and oiliness assessment, relying on the use of the advanced computer vision technique, mainly YOLO (You Only Look Once). It combines collaborative filtering and rule based analysis on top of which it can provide tailored skincare recommendations while enabling smooth booking to a dermatologist and image based progress tracking. Unlike other solutions that depend on manual assessment, involve individualization and are often expensive, SKintellet provides a comprehensive and significant solution for skincare management along with scalability and userfriendliness. Acne detection is shown to have high precision and recall, while personalized product recommendations are found to be highly satisfactory to users. Enhancement to expand datasets and include additional skin conditions and develop the crossplatform mobile application for the better accessibility and user experience.

Keywords– *skin analysis using AI, acne detection using YOLO, collaborative filtering in skin analysis, skin recommendation, dermatologist booking, progress tracking.*

METABOLIC MODULATION AND GLYCEMIC REGULATION BY FLAXSEED-DERIVED SECOISOLARICIRESINOL DIGLUCOSIDE: A MULTIFACETED APPROACH IN DIABETES PATHOPHYSIOLOGY

Dr. Rahul kumar Yadav[1], Ms. Khyati Arora[2]

Assistant Professor Ambalika institute of management and technology Lucknow

Rahul181292@gmail.com

Abstract–Diabetes mellitus is a complex metabolic disorder marked by hyperglycemia, insulin resistance, and oxidative stress. Flaxseed (*Linum usitatissimum* L.) is a rich source of secoisolariciresinol diglucoside (SDG), a bioactive lignan with antioxidant, hypolipidemic, and hypoglycemic properties. While flaxseed's role in diabetes prevention remains underexplored, its impact on glycemic control has been extensively studied.

Methods Preclinical models, including streptozotocin (STZ)-induced and BioBreeding diabetes-prone (BBdp) rats, were used to assess SDG's effects on glucose metabolism. Zucker diabetic fatty (ZDF) rats were studied for SDG's role in delaying Type 2 diabetes progression through oxidative stress modulation.

Results SDG administration reduced diabetes incidence by 75% in the STZ model and 72% in BBdp rats, correlating with lower serum and pancreatic malondialdehyde (MDA) levels. In ZDF rats, SDG delayed disease progression, reducing MDA and glycated hemoglobin (HbA1c) levels.

Conclusion SDG exhibits strong potential in diabetes management by improving glycemic control and reducing oxidative stress. Further clinical research is needed to validate its efficacy in individuals with Type 2 diabetes and prediabetes.

Keywords–*Metabolic Dysregulation, Secoisolariciresinol Diglucoside, Antioxidative Modulation, Insulin Sensitivity, Glyco-Oxidative Stress*

IoT BASED EV MULTIPLE FAULT DETECTION AND BATTERY MANAGEMENT

Shanmugavadivel G[1], Nathan S[2], Raguladhithiya S[3], Rakesh C[4]

Department of Electronics and Communication Engineering M.Kumarasamy College of Engineering Karur, India shanmugavadivel.ece@mkce.ac.in, nathansmnbec@gmail.com, raguladhithiya@gmail.com, rakeshvpm31@gmail.com

***Abstract*—**Electric vehicle batteries are prone to overheating, overcharging, delays, and loss of capacity, all of which can compromise the performance, safety, and longevity of IoT-based EV battery monitoring and diagnostics effectively address these issues by integrating advanced sensors for temperature, energy, power. Continuous monitoring of essential parameters such as charge level Makes These sensors transmit real-time data to a se- cure cloud platform, where sophisticated analysis detects possible faults such as overheating, overcharge, short circuit, over drain etc. In the event of abnormalities, the system immediately notifies the vehicle owner and service center, enabling quick prevention to avoid major damage or accidents It also provides performance reports, which support predictive maintenance to enable failure and decreased processing time. Utilizing IoT technology for real-time monitoring, data-driven insights and reporting, the system ensures comprehensive battery health management. This innovative approach enhances battery safety, reliability and performance, and significantly extends battery life. It also builds trust between EV users and manufacturers, contributing to the widespread adoption of electric mobility solutions.

Index Terms*—EV Vehicle , Battery Fault, IoT, Fault detection, Kalman filter*

AI – POWERED MULTIMODAL MEDICAL IMAGING ANALYSIS FOR BRAIN TUMOR SEGMENTATION AND CLASSIFICATION

Dr. Rakesh Kumar M[1], Deepika SG[2], Gopika KV[3]

[1]*Assistant Professor Department of CSE Rajalakshmi Engineering College Chennai, India.*

[2,3]*UG Student Department of CSE Rajalakshmi Engineering College Chennai, India*

rakeshkumar.m@rajalakshmi.edu.in, 210701048@rajalakshmi.edu.in,

210701063@rajalakshmi.edu.in

Abstract—This project is an deep learning model which is proposed to Segment and Classify the brain tumor cells from the MRI (Magnetic Resonance Imaging) dataset. The proposed model incorporates 3D-Unet Model along with Vision transformer is used in the project to enable segmentation and classification of the Brain Tumor images. This project introduces an AI-driven framework for brain tumour segmentation, utilizing a combination of 3D U-Net with Vision Transformers (ViTs). The model leverages 3D U-Net's powerful feature extraction capabilities and the ability to utilize the dataset for accurate results to segment tumours across different imaging modalities, ViTs enhance feature representation and classification accuracy. By integrating these cutting-edge techniques, the system improves diagnostic precision and efficiency in analysing multimodal medical images. The model extracts not only global features while segmenting but also the local features making the model accurate to assist clinicians. This approach not only supports medical professionals in making more informed and right decisions but also aims to optimize patient outcomes through more accurate and timely tumour analysis.

Keywords— *BraTs, Glioblastoma, 3D-Unet, ViTs (Vision Transformer)*

FUTURE OF CRYPTO CURRENCY ON INDIA

Mukesh Kumar Singh[1], Ayush Kumar Singh[2], Nikhil Maurya[3], Prabhat Yadav[4]
Ambalika Institute of Management and Technology, Lucknow

Abstract –Due to the rapid development of information and communication technologies, many activities in our daily life have been merged online and they become more flexible and more effective. A huge growth in number of online users has activated virtual word concepts and created a new business phenomenon which is crypto currency to facilitate the financial activities such as buying, selling and trading. The use of virtual currency has become widespread in many different systems in recent years. Virtual money is not fully controlled and regulated hence most of the countries have not admitted this currency in their economic activities. This paper investigates about crypto currency present legality as well as future government moves impact on these currencies. The paper also analyses investment risks in both Bitcoin and Gold countries have responded in terms of regulations & legislations towards crypto currencies to develop a clear picture of its impact on various laws in India in order to regulate it.

Keywords– *Crypto currency, Virtual currency, Information and communication technologies, Government impact, Investment risk, Bitcoin.*

JAILBREAKING LARGE LANGUAGE MODELS: TECHNIQUES, TRANSFERABILITY, AND ADAPTIVE DEFENSES

Abstract—Despite their impressive capabilities, Large Language Models (LLMs) are still susceptible to jailbreaking— adversarial manipulations that circumvent safety constraints to produce harmful outputs. In this paper, we thoroughly analyze jailbreak techniques, classifying them into prompt- based attacks, optimizationbased adversarial suffixes, multi-turn exploits, and LLMto- LLM jailbreaks. Through empirical evaluations across multiple LLM architectures, we evaluate attack success rates (ASR) and investigate defense effectiveness in proprietary security mechanisms, such as Reinforcement Learning from Human Feedback (RLHF), Constitutional AI (CAI), and red teaming. Our results show that while current defenses mitigate some attacks, no current approach completely prevents adversarial exploits, especially against adaptive and optimization-based jailbreaks. We suggest federated red teaming frameworks to improve AI robustness, reinforcement learning for adaptive security, and real-time adversarial detection mechanisms to fill these gaps. We also discuss AI governance issues and recommend collaborative cross-industry adversarial testing, responsible disclosure procedures, and standardized jailbreak benchmarking. dynamic, self- improving AI security systems that can proactively adapt to changing adversarial threats are desperately needed, as our study makes clear.

Index Terms—*Jailbreaking, Large Language Models,Adversarial Attacks, Red Teaming, AI Security, Black- Box Attacks, White-Box Attacks, Optimization-Based Jailbreaking, Ethical AI, Machine Learning Vulnerabilities.*

MATHEMATICAL MODELLING (FOR THE STUDY: NON-NEWTONIAN FLUID IN LUNGS OF COVID PATIENTS)

Princee Singh

Deparment of Mathematics, Ambalika Institute of management and technology Lucknow

anupriya.anusingh2205@gmail.com

Abstract– The flow of most Fluids may be analysed mathematically by the use of two equations.The first governing equation is continuity equation, requires that the mass of fluid entering a fixed control volume either leaves that volume or accumulates within it. It is thus a mass balance & requirement posted in mathematical form and is a scalar equation.The Other often referred to as Momentum equation or Navier- stroke equation, and maybe thought of as a Momentum balance and are vector equations, and may be thought of as a separate equation for each of the co-ordinate directions(usually three).Study of mucus layer and Serous sub layer in normal state of lungs by power law fluid with the help of planar model for mucus and serous layers. Mucus field in the lungs of covid patients is treated as non-newtonian. The flow of most Fluids may be analysed mathematically by the use of two equations.The first governing equation is continuity equation, requires that the mass of fluid entering a fixed control volume either leaves that volume or accumulates within it. It is thus a "mass balance" requirement posted in mathematical form and is a scalar equation. The Other often referred to as Momentum equation or Navier- stroke equation, and maybe thought of as a Momentum balance and are vector equations, and may be thought of as a separate equation for each of the co-ordinate directions(usually three).

ENHANCED SUGARCANE LEAF DISEASE PREDICTION USING AUGMENTED DATASETS AND DEEP LEARNING MODELS

Gayathri S[1], Akilesh S[2], Dharshan P[3], Karthick S[4]

dept. of Computer Science Kongu Engineering College Erode, India

gayathri.cse@kongu.edu, *akileshs.21cse@kongu.edu*,*dharshanp.21cse@kongu.edu*

karthicks.21cse@kongu.edu

***Abstract*—**The developed system marks a notable improvement in the prediction of sugarcane leaf diseases prediction through the integration of an expanded dataset and cutting-edge deep learning architectures. Traditional approaches, often restricted to five disease categories and smaller datasets, achieved a maximum accuracy of 86.53% with models like ResNet50 and XceptionNet but faced challenges in scalability and generalization. Addressing these limitations, the updated dataset introduces a new disease class, Sugarcane BacterialBlight, and incorporates a total of 17,982 images. This expansion is achieved through systematic data augmentation techniques, including image cropping, scaling, and rotation, ensuring a balanced and comprehensive dataset. Advanced deep learning models, including ResNet50, EfficientNet_B0, and MobileNet_V2, were meticulously trained and assessed on the augmented dataset utilizing evaluation metrics such as accuracy, precision, recall, and F1-score. EfficientNet_B0 proved to be the most effective model, delivering an accuracy of 95.11%, a precision of 95.10%, a recall of 95.11%, and an F1-score of 95.09%. ResNet50 and MobileNet_V2 also demonstrated marked improvements compared to baseline performance. This research underscores the value of combining enriched datasets with efficient model architectures to deliver highly accurate disease prediction systems. These advancements hold substantial promise for precision agriculture, offering scalable, real-time solutions for sustainable farming practices.

Keywords*—Sugarcane leaf disease, EfficientNet_B0, deep learning, disease detection, image classification, data augmentation, precision agriculture.*

CHARACTERISTIC IMPROVEMENT IN EXPANSIVE SOIL BY USING BAGASSE ASH ALONE & WITH LIME

Navin Kumar Yadav[2], Bipin Prajapati[1]

[1]*PhD Scholar, Department of Civil Engineering, KNIT, Sultanpur, Uttar Pradesh. India.*

[2]*Associate Professor, Department of Civil Engineering, KNIT, Sultanpur, Uttar Pradesh. India.*

navin.21ce2635@knit.ac.in,bipin.prajapati@knit.ac.in.

Abstract– In our country about 21% of area covered with the expansive of total land area. These soils show nature of expand and shrink with the change the amount of water content. The change in volume with the moisture content is very dangerous for any structure with this subgrade material. This is very critical issue in front of the Geotech engineers due to capacity to load bearing is decreasing and also find unnatural structural settlement. That's why it is very dangerous for the life or any public structures deals with this soil. In other words, Sugar mill produce Bagasse ash as millions of tons. This waste of sugar mills is very helpful if used as characteristic improver in expansive soil and also reduce the disposal issue of this waste. This study deals with the use of lime and bagasse ash as admixtures used for stabilizing this soil proportioned as (0, 2.5%, 5%, 7.5%, 10%) and also lime with fix ratio 3% with bagasse ash as in given percentage which enhancing their characteristics. The dry density, capacity to load bearing, compressive strength and shear strength is computed in this study with the help of result graphs and curves. By these observations, if mix bagasse ash alone 2.5% to 10% and bagasse ash with lime by 2.5% to 10% then all above properties improve up to 7.5% of bagasse ash and also up to 7.5% of bagasse ash with lime of 3% fix ratio. After that the above mentioned properties tends to increase continuously but the increasing rate is decreases. So we find with this study the most suitable combination is 7.5% of bagasse ash and 3% of lime.

Keywords– *Stabilization, Expansive soil, Lime, Stabilization, Bagasse ash.*

HARMONIC UNIVALENT FUNCTION WITH QAUNTUM APPROACH

Vimlesh Gupta[1], Omendra Mishra[2]
[1]Associate Professor, AIMT, Lucknow
[2]Assistant Professor, SRMU, Lucknow

***Abstract*–**The purpose of the present paper is to introduce a new subclass of harmonic univalent functions by using q-Salagean operator. We obtain a subordinate condition, coefficient inequality, extreme points for this subclass. We also prove that the class studied in this paper is convex and compact subset of harmonic functions.

Keywords– *q-Salagean operator; univalent functions; harmonic functions*.

IMPROVING THE ACCURACY OF USED CAR PRICE PREDICTION USING MACHINE LEARNING MODELS

P.S Nandhini Madhurajyothi[1], V K Mahaprabu S[2], Jessica S[3], Malliga S[4]

Dept. of Computer Science Kongu Engineering College

Erode, India

nandhinisv1@gmail.com , kcmadhurajyothi@gmail.com

***Abstract*—** The prediction of used car prices is important in India due to the rapidly growing automotive market and the increasing demand for affordable transportation. Accurate predictions help buyers make informed decisions and enable sellers to set competitive prices, maximizing returns. Reliable price forecasts also enhance transaction transparency, boost consumer confidence and promote used car market stability. However, the lack of sufficient features such as car's condition, service history and number of services poses a challenge for ML models, leading to inaccurate price predictions. To address these challenges, feature engineering is done, various ML models are deployed and the results are compared. The performance of the models is evaluated using metrics like Mean Squared Error (MSE), Mean Absolute Error (MAE) and R^2. Among the models, MLP performed the best, with an MSE of 9.32, an MAE of 2.14 and an R^2 score of 0.88, showing high accuracy in predicting prices.

Keywords- *Used car, price prediction, ML models, feature engineering, accuracy.*

REVOLUTIONIZING STRUCTURAL INTEGRITY: ADVANCES IN NON-DESTRUCTIVE TESTING WITH AI INTEGRATION

Avneesh Kumar Singh[1], , Abhay P Srivastava[2]

Ambalika Institute of Management and Technology

[1]*aksphy@gmail.com*

***Abstract*–**Non-Destructive Testing (NDT) has long been pivotal in ensuring the structural and functional integrity of materials and systems across industries. In recent years, the integration of Artificial Intelligence (AI) into NDT has steered in a new era of precision, efficiency, and automation. This paper reviews traditional NDT methods, including Ultrasonic Testing (UT), Radiographic Testing (RT), Magnetic Particle Testing (MPT), Liquid Penetrant Testing (LPT), Eddy Current Testing (ECT), and Infrared Thermography (IRT). It examines how AI-driven technologies, such as machine learning algorithms, image processing, and predictive analytics, are enhancing defect detection, data analysis, and real-time decision-making. The synergy of AI with NDT has enabled advancements like automated defect recognition, enhanced pattern recognition, and predictive maintenance strategies. While these advancements offer significant improvements, challenges such as data standardization, algorithm bias, and integration costs persist. This paper highlights key innovations, industry applications, and research trends, underscoring the transformative impact of AI in NDT.

Keywords: *Non-Destructive Testing, Artificial Intelligence, Radiographic Testing, Machine Learning, Automated Defect Detection, Predictive Maintenance*

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON MECHANICAL ENGINEERING: OPPORTUNITIES FOR GROWTH AND CHALLENGES TO OVERCOME

Prashant Kumar Srivastava[1], Atul Kumar[2]

[1]*Associate Professor, Mechanical Engineering Department*

(Ambalika Institute of Management & Technology, Lucknow) Uttar Pradesh, India

[2]*Assistant Professor, Mechanical Engineering Department (*

School of Management Sciences, Lucknow) Uttar Pradesh, India

pksri.hbti@gmail.com , at981991@gmail.com

Abstract- Artificial Intelligence (AI) is revolutionizing the field of mechanical engineering by introducing intelligent automation, data-driven decision-making, and enhanced optimization techniques. The integration of AI enables engineers to design more efficient systems, improve manufacturing processes, and implement predictive maintenance strategies that minimize downtime and operational costs. From generative design to robotics and real-time analytics, AI's capabilities extend across multiple domains of mechanical engineering. AI-driven innovations have transformed traditional approaches by incorporating advanced simulation models, adaptive algorithms, and automated workflows. However, alongside these transformative benefits, challenges such as high implementation costs, workforce adaptation, ethical considerations, and data security concerns must be addressed. This paper explores the profound impact of AI on mechanical engineering, emphasizing both its opportunities for growth and the critical challenges that require strategic solutions.

Keywords: *Impact of AI, AI on mechanical engineering, AI's capabilities, AI-driven innovations, Applications of AI in mechanical engineering etc.*

COMPARISON OF TORQUE PULSATIONS MITIGATION IN POWER SYSTEM USING PI AND FUZZY CONTROLLERS WITH UPFC AND SSSC

J. Sreeranganayakulu[1], A. Suresh Kumar[2]

Asst. Professor

***Abstract*—**Capacitors are positioned at different locations in the power system transmission line in order to increase power factor. Nevertheless, this addition has a disadvantage in that it causes torque pulsations across different turbine and generator shafts, which causes sub synchronous resonance oscillations that must be reduced. Many techniques were applied to effectively remit these oscillations in past research projects. With the addition of a static synchronous series compensator and a unified power flow controller, this research study compares the efficacy of fuzzy logic controllers to standard PI controllers in lowering SSR oscillations.

Index Terms*—FACTS, Fuzzy controls, PI, SSSC, SSR, UPFC.*

NAVIGATING MENTAL HEALTH IN THE AGE OF ALGORITHMS: ANALYSING THE IMPACT OF SOCIAL MEDIA PERSONALIZATION ON USER BEHAVIOR

[1]Sachin Srivastava*, [1]Aditya Singh Rana, [1]Vineet Rawat, [1]Amrisha Rawat, [1]Kritika Singh

[1]Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

**sachinrash2004@gmail.com*

Abstract– The widespread use of social media has led to concerns about how it can shape user behavior and mental well-being, partly because of algorithmic suggestions that tailor content to one's preferences. Despite increased user interaction, the algorithms tend to form echo chambers and long screen times, and can even exacerbate mental illness such as social comparison, anxiety, and depression. This research analyzes how such algorithms affect the emotions and behavior of users from the perspective of cutting-edge algorithm design technologies like AI & ML. Based on qualitative and quantitative methods like case studies, literature reviews, and user action analysis, the research finds how important algorithmic transparency, moral design principles, and user awareness are in avoiding negative consequences. It emphasizes ways of promoting digital well-being like the use of adaptive algorithms, explainable AI (XAI), and user empowerment tools like content filters and screen time monitors. Based on the research findings, policymakers, mental health professionals, and technologists should come together to make the digital world healthier. Social media experiences become safe and accessible because of ethical algorithms and transparency needed to balance engagement with concerns of mental illness. This close analysis highlights the importance of designing digital spaces that balance technology progress with user well-being.

Keywords– *Social Media Algorithms, Mental Health, Personalization, Digital Well-being, Algorithmic Transparency, Ethical Design*

ANALYSIS OF PRESSURE DROP AND FORCED CONVECTIVE HEAT TRANSFER IN NANOFLUIDS DURING TURBULENT FLOW WITH AL_2O_3 AND CUO

Sachin Srivastava[1], Deepak Arya[1], Abhay Dhasmana[1], Aditya Singh Rana[1], Kshitj Pandey[2]*,

[1]*Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India*

[2]*Department of Mechanical Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India*

**sachinrash2004@gmail.com*

Abstract– This research presents the effect of Al_2O_3 and CuO nanoparticles on convective heat transfer characteristics, especially pressure drop, under turbulent flow conditions. Investigation was done by conducting experiments to compare performances between nanofluids and their base fluid. The result of this study is such that with an increase in nanofluid concentration, heat transfer coefficient significantly enhanced. This enhancement is mainly due to the combined effect of enhanced thermal conductivity and turbulence that nanomaterials introduce in the base fluid. Notable in this respect is that this enhancement in heat transfer comes at the cost of a corresponding increase in pressure drop. The CuO based nanofluids versus their analogous Al_2O_3 containing nanofluids showed that the former had better heat transfer. The potential benefits of using nanofluids in augmenting heat transfer are presented alongside how crucial it is to correctly assess the greater pressure drop associated with them for practical applications.

Keywords–*Nanofluid**, Pressure Drop, Forced Convective Heat Transfer, Reynolds Number, Aluminum Oxide, Copper Oxide.*

INTEGRATION OF IOT AND AI FOR PREDICTIVE MAINTENANCE IN SMART MANUFACTURING

[1]Sachin Srivastava*, [1]Aditya Singh Rana, [2]Aashwin Kundu, [2]Abhinav Dhyani, [2]Abhay Rathi, [2]Ajay Kumar

[1]Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

[2]Department of Computer Science & Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

**sachinrash2004@gmail.com*

Abstract– The IoT and AI together have revolutionized smart manufacturing, especially in predictive maintenance. Traditional maintenance practices often lead to unplanned power cuts and wasteful usage of resources. Smart manufacturing systems can schedule maintenance proactively and predict potential problems using sensors from IoT along with AI-driven analytics for continuous monitoring of equipment status. This research explores how new advancements in IoT and AI can be used to enhance predictive maintenance for better performance and cost efficiency. A review of technological frameworks and real-world case studies form part of the technique used, which provides insights into successful system integration. The important elements studied include decision-making procedures, AI-based anomaly detection, and sensor data collection. With respect to data security and system compatibility issues, emerging technologies like digital twins and edge computing are investigated. This paper shows how such technologies make equipment last longer, optimize the usage of resources, and develop a more intelligent manufacturing environment. Future research directions might include better AI models, advanced sensor technologies, and standardized frameworks for predictive maintenance applications. For the manufacturer looking to transform maintenance practices and improve the operational efficiency through IoT and AI, this paper would be useful.

Keywords– *IoT, AI, Predictive Maintenance, Smart Manufacturing, Industry 4.0, Machine Learning, Data Analytics*

ADVANCED SPACE DEBRIS CAPTURE AND STORAGE SYSTEM WITH RE-ENTRY CAPABILITIES

[1,2]G. Sai Satyanarayana*,[2]Aditya Singh Rana, [2]Abhay Dhasmana, [2]Vineet Rawat, [2]Sachin Srivastava

[1]Department of Aeronautical Engineering, MRCET, Hyderabad-500100, Telangana, India

[2]Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

**sathyasai.satti@gmail.com*

***Abstract*–**The advancement of several technologies and methodologies, in addition to numerous different fields, has furthermore boosted the pursuit of space exploration. Space debris has grown significantly due to the recent, exponential expansion in space missions, endangering satellites, spacecraft, and the safety of space operations. The efficiency of traditional space debris management techniques is limited, and they frequently call for expensive and complicated solutions. An advanced system that can precisely collect, handle, and store space debris is desperately needed, as well as offers a sustainable and safe way of handling it. This invention's Advanced Space Debris Capture and Storage System provides a comprehensive answer to the growing space debris issue. With the use of a variety of sensors, such as laser and ultrasonic sensors, the system can precisely target and analyze space trash for eventual collection. Thrusters make it possible to move in the direction of the debris that has been located and to alight the system, while an electromagnet draws in metal particles to be captured. For effective storage, the debris is broken down into smaller pieces inside the system using crushers. The device, which has an Artificial Intelligence camera module installed, makes sure that debris and the system are precisely aligned. Its safe return to Earth's atmosphere is made possible by the design of its re-entry capsule, which is powered by solar panels. This innovative technique offers a viable and efficient way of reducing the risks connected with the growing amount of space debris, which is a major improvement in the management of space debris.

***Keywords*–** *Space Debris, Re-entry, Ultrasonic Sensor, Laser Sensor, Electromagnet, Crusher.*

EXPERIMENTAL STUDY OF FRAMEWORK FOR BIKE SEAT TO PROTECT FROM SUMMER/RAINY SEASON

Sachin Srivastava[1*], Subham Haldar[2], Suryaprakash Gairola[1], Abhay Dhasmana[1], Aditya Singh Rana[1], [1]Shivam Yadav

[1]*Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun- 248007, Uttarakhand, India*

[2]*Department of Aerospace Engineering, University of Pisa, Pisa, Italy*

**sachinrash2004@gmail.com*

Abstract–The scientific community is increasingly focusing on innovations in the automotive sector, as evidenced by advancements like the introduction of electric vehicles. This paper aims to address a common discomfort faced by motorcycle riders—overheated seats during summer and wet seats during the rainy season—by presenting a smart solution integrated into the bike seat. The proposed system introduces a pipe frame constructed from Acrylonitrile Butadiene Styrene (ABS) material, characterized by a diameter of 5 mm, a length of 300 mm, and 0.3 mm pores. This frame is designed to be embedded within the foam padding of motorcycle seats. To make the system more interactive, an AI-based controlling mechanism consisting of a microcontroller and three sensors: the temperature sensor is to keep track of the seat heating, the moisture sensor to determine the presence of water in the material and a humidity sensor is used for the environment checking, thus interacting with the motor so that it dynamically controls the system. It circulates water through the frame in hot weather and cools the seat, but it reverses the motor during rain conditions to absorb excess moisture from the seat. One end of the frame connects to the motor, and the other features a compartment for collecting rainwater or dispensing water during operation. This innovative framework offers a practical and intelligent solution to the challenges of temperature regulation and moisture management, significantly enhancing rider comfort and extending the lifespan of motorcycle seats. The integration of durable ABS material and advanced AI technology ensures efficiency, reliability, and ease of use, making it a valuable contribution to the automotive sector.

Keywords– *Automobile, Bike, Acrylonitrile Butadiene Styrene, Bike seat.*

INTEGRATION OF MACHINE LEARNING IN COLD STORAGE SYSTEMS FOR ENHANCED GRAIN PRESERVATION

[1]Sachin Srivastava*, [1]Abhay Dhasmana, [1]Aditya Singh Rana, [1]Divij Arora,
[1]Vineet Rawat, [2]Aashwin Kundu

[1]Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

[2]Department of Computer Science Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India

[*]sachinrash2004@gmail.com

Abstract– In most Asian Countries, the preservation of grains is a critical challenge due to the rapidly changing climate and persistent pest infestations. These changes in temperature and humidity, coupled with poor strategies for pest management, are a stimulus towards the spoilage of grains. This problem is further enhanced by a lack of real-time monitoring and control systems that can help maintain consistency in the storage conditions. Most traditional methods of storage often cannot maintain the optimum conditions against grain spoilage since they are not designed to adapt to dynamic environmental factors, thus leading to post-harvest losses and increasing the economic burden on farmers. This hereby requires an intelligent cold storage system that combines many advanced technologies—in particular, IoT sensors, machine learning, and autonomous systems. This system comes with the balancing of changes in the environment and manages the problem of pests. The following system discusses these technologies to optimize the environmental conditions and have real-time monitoring by predictive maintenance. The IoT sensors can be used to track the environmental conditions of the container, while the machine learning algorithms detect issues before they escalate, ensuring the maintenance of ideal storage conditions. Autonomous systems further enhance the efficiency of the system by automating pest control and environment adjustments. This advanced approach will help maintain the quality of the grains and not suffer many losses from grain spoilage due to climatic change and attack by pests, thereby increasing the sustainability of the agricultural supply chain.

Keywords–*Cold storage systems, Machine Learning, Grain Preservation, Environmental monitoring, Pest management.*

GREEN METHOD PRODUCED BINARY NANOCOMPOSITE: A CATALYST FOR WATER POLLUTANT REDUCTION

Pradeep Tripathi[1], Deen Dayal Upadhyay[2]

Ambalika Institute of Management and Technology, Mohanlalganj, Lucknow

Abstract–In this modern era, water pollution has become a universal problem. Many organic polutants like dyes are being released from our homes, colonies, and industries. In these organic pollutants, Rhodamine B (RB) is one of them which is very carcinogenic, high toxicity, and susceptible for mutagenicity. Z-scheme type Mg embedded g-C_3N_4 a binary photocatalyst had been produced by using *Acacia nilotica* bark extract to resolve this issue. The physio-chemical investigations of Mg embedded g-C_3N_4 binary nanocomposite (BNC) had been made by HR-TEM, X-ray diffraction, FE-SEM, EDS, and BET surface area analysis to know the structural, morphological and surface characteristics. The spectra shown that the designed Mg doped g- C_3N_4 binary nanocomposite under solar light irradiation, have better photocatalytic activity for RB degradation than undoped material. The higher visible radiation absorption, advanced partition effectiveness of excited e^--h^+ couples, improved surface area, and the photo-excited electron transfer between g-C_3N_4 and Mg can all be contributed to Mg@g-C_3N_4 nanocomposite's brilliant photocatalytic recital as well as recyclability.

Key words– *Green synthesis, photocatalyst, nanocomposite, Rhodamine B, pollutant.*

IMPROVEMENT OF POWER FROM WIND ENERGY FARMS

Sandeep Dwivedi

Assistant Professor. (Electrical)

Ambalika Institute of Management and Technology, Mohanlalganj, Lucknow

Abstract– A number of Wind Energy Converters (WECs) produce highly distorted power due to the inverse motion induced by ocean waves. Some WEC systems have integrated energy storage that overcomes this limitation, but add significant expenses to an already costly system. As an alternative approach, this article tells about the direct export option that relies on aggregate smoothing among several WECs. By optimizing the positioning of the WEC devices with respect to the incoming waves, fluctuations may be mutually canceled out between the devices. This work is based on Fred. Olsen's WEC system Lifesaver, and a WEC farm consisting of various related devices is designed in detail and simulated. The major cost driver for the electrical export system is the required oversize factor necessary for transfer of the average power output. Due to the low power quality, this number can be as high as 20 at the entry point of the electrical system, and it is thus crucial to quickly improve the power quality so that the downstream power system is efficiently utilized. The simulations undertaken in this work indicate that a high quality power output can be achieved at the farm level, but that a significant oversize factor will be required in the intermediate power system within the farm.

Keywords– *wave; Wind energy; array; farm; power; quality; peak; average; ratio.*

ENHANCING POWER ABSORPTION OF PV PANELS BY USING QUARTZ GLASS IN SOLAR SYSTEM

Abhay P Srivastava[1], Brijesh K. Pandey[2], Anjani K. Pandey[2] Avneesh Kumar Singh[1]

[1]*Department of Applied Science, Ambalika Institute of Engineering and Technology, Lucknow*

[2]*Department of Physics & Material Science, MMUT, Gorakhpur*

[3]*Department of Physics, Dr. Shakuntala Misra National Rehabilitation University, Lucknow*

abhay.srivastava831@gmail.com

Abstract– The efficiency of solar panels: Maximizing energy from solar radiation is crucial. In this study, we aim to use quartz glass as a cover material for solar panels to improve power absorption. The superior optical, thermal, and chemical properties of quartz glass can help boost solar panels' efficiency and ultimate duration. The potential of quartz glass in photovoltaic systems is underlined by this research, which consists of experimental testing and comparative analysis of traditional glass coverings. Quartz glass is found to have a significant potential for advanced solar technologies, with the highest energy efficiency improved by up to 15%. This promising potential of quartz glass in the field of solar energy offers a bright future for renewable energy and materials science.

Keywords: *PV panel, Solar Energy, Quartz crystal, Renewable energy.*

STUDY OF MIXED TYPE LACUNARY INTERPOLATORY POLYNOMIALS ON (0; 0, 2)

Vipul Srivastava[1], Uma kant Pandey[2]
Depatment of Applied Science AIMT, Lucknow
vipul.srivastava91@gmail.com ; ukpandey1968@gmail.com

Abstract–In the present paper we have studied the problem of existence, uniqueness and explicit representation for various mixed type Lacunary interpolatory polynomials on finite interval [-1, 1]. The study of interpolation mainly began with (0, 2)-interpolation problem of P.Tura'n which means prescribing values of the function and its second derivative at given set of nodes.

Keywords– *Interpolation, Lacnaury interpolation.*

A REVIEW ON TYPE 1 DIABETES PREDICTION METHODS

Rahul Ranjan[1], Mohd Haroon[2]

Department of CSE Integral University, Lucknow, India

rrtiwari88@gmail.com

Abstract– Type 1 diabetes (T1D) is a chronic condition impacting globally, with increasing prevalence due to environmental, genetic, and lifestyle factors. Traditional methods for predicting T1D progression and tailoring treatments are subjective and imprecise, and lead towards delay in treatment. Prediction models based on AI are offering accurate, data-driven approach to manage T1D by identification of high-risk patients and prediction of treatment responses effectively. This paper reviews research work on AI techniques for T1D progression, categorizing methods into mathematical, machine learning (ML), and deep learning (DL) approaches. Findings reveal that machine learning, shows strong performance. Challenges in current models include the need for feature selection tools, interpretable models for clinicians, and validation on large data. Future directions are emphasizing for model interpretability, expert-informed validation as well as feature importance analysis.

Keywords– *diabetes mellitus, Machine learning, T1D, Insulin-dependent diabetes mellitus (IDDM), Juvenile diabetes*

A REVIEW ON APPLICATION OF SOFT COMPUTING TECHNIQUES ON DETECTION OF PLANT LEAF DISEASES

Balmukund Maurya1, Dr. Haider Abbas

Computer Science & Engineering Department Integral University Lucknow, India

Abstract— Agriculture is the resource for majority people to make their living. An illness of different type that develops due to changes in patterns of weather and caused due to impact of microorganisms degrades the production of plants. This paper is presenting analysis of present research going on data processing technique, dataset resources, feature extraction, data set augmentation algorithm, used to detect plant diseases. It is covering the approach for enhancement of detection quality, over-fitting impact on classifier and accuracy. This review papers under this study focus on recent published articles through various databases. Review conducted under this article is helpful for identifying methods that shows relevance to plant disease classification as well as detection directly. This article will be a proved to a beneficial resource for various ongoing researcher to find application of different recent methods under data-driven schemes to identify diseases of plant with enhanced performance in terms of accuracy.

Keywords—*machine learning, image processing, deep learning, disease*

EARLY DETECTION AND CLASSIFICATION OF CARDIAC VENTRICULAR ARRHYTHMIA

Rahema Naaz[1], Shafeeq Ahmad[2]

Department of Computer Science & Engineering, Azad Institute of Engineering and Technology

Lucknow, India

naazrahema218spn@gmail.com

Abstract— This study proposes an algorithm for predicting and classifying fatal ventricular arrhythmias (VA) by applying the phase-space diagram and fuzzy c-means clustering (FCM). A feature index, based on the box-counting technique applied to ECG phase-space trajectories, predicts VA 298.3 seconds before onset with 98.4% accuracy. This proposed method has shown the possible outcome for predicting the impending VA prior to actual occurrence in time sufficiently and also it shows the possibility of classification of VAs type. This covers a novel result compared to existing approaches that is useful for clinical practice that may be proved to be helpful to preempt the fatal occurrence of VA that causes Sudden Cardiac Death. Apart from VA, the proposed algorithm is useful other arrhythmias types that are precursors to other cardiac problems as well.

Keywords—*ECG, Phase space plot, Fuzzy C-Mean clustering, arrhythmia*

ENHANCING FAULT TOLERANCE IN MICROSERVICES WITH AI-POWERED ANOMALY DETECTION AND PREDICTION

Biman Barua1,* and M. Shamim Kaiser2

[1,2]*Institute of Information Technology, Jahangirnagar University, Dhaka 1342, Bangladesh*

[1]*Department of CSE, BGMEA University of Fashion and Technology, Nishatnagar, Turag, Dhaka 1230, Bangladesh*

biman@buft.edu.bd

***Abstract*—** a major component of performing effective reliability and performance tests on a system within a microservices architecture is fault tolerance, even though it has proved utterly ineffective in dynamically detecting and mitigating anomalies in a traditional way. This paper proposes a new architecture with artificial intelligence-based anomaly detection and prediction, advancements toward improving fault tolerance in microservices. The framework includes the combination of advanced models of machine learning, such as Autoencoders for anomaly detection and Long Short- Term Memory (LSTM) networks for fault prediction, and the real-time monitoring tools such as Prometheus, plus orchestration platforms, such as Kubernetes. It also constructs a microservices enviroment-simulated by synthetic data, which were produced from workload simulation (Locust), fault injection (with Chaos Mesh), to be able to evaluate the approach of the framework. Experiment results show that the Autoencoder achieved exceptionally high values in anomaly detection accuracy, with an F1-score of 0.90 and an ROC-AUC of 0.94, while the LSTM model predicts faults with low error (MAE = 0.05). Moreover, the framework is efficient in minimizing fault, having Recovery time objective (RTO) of 10 seconds for service failure and 5 seconds for a latency fault in the network. It implies that ai-generated models have application in improving fault tolerance for microservice architecture; future ways remain in real-world validation. The proposed framework is an automated scalable solution for anomaly detection and fault prediction and recovery, which outperforms traditional rule-based approaches. This contribution adds to the increasing body of research on AI- empowered system resilience in many dimensions, including cloud computing and IoT, as well as other distributed systems.

***Keywords*—** *Microservices Architecture, Fault Tolerance, Anomaly Detection, AI-Powered Prediction, Autoencoders, LSTM Networks.*

IMPLEMENTATION OF NEURAL NETWORK CONTROLLER FOR GRID CONNECTED WIND-SOLAR PV CHARGING STATION

N Chinna Alluraiah[1], M.Ahamad Basha[2], K.Hariharan[3], K.Jaswanthi[4], Y.Harish[5]

[1]*Assistant Professor, Department of Electrical and Electronics Engineering*

Annamacharya Institute of Technology and Sciences Rajampet, A.P.

[2,3,4,5]*UG Scholar, Department of Electrical and Electronics Engineering Annamacharya Institute of Technology and Sciences Rajampet, A.P*

alluraiah.207@gmail.com , mannurahamadbasha19@gmail.com, hariharankadapa@gmail.com, komitireddyjaswanthi@gmail.com, harishraju0901@gmail.com

***Abstract*—** The primary objective of this project is to develop a grid-connected renewable energy-based charging station for electric vehicles (EVs) using an advanced neural network controller. Renewable energy sources such as solar, wind, hydrogen, biogas, and tidal energy are utilized to generate electricity without harmful emissions or hazardous waste. Similarly, EVs operate without generating greenhouse gases, significantly reducing carbon emissions and contributing to environmental sustainability. In conventional systems, a Proportional-Integral (PI) controller is commonly used for regulating power parameters. However, PI controllers suffer from low-speed response and high harmonic distortions (THD), impacting power quality. To address these limitations, this work proposes replacing the PI controller with an Artificial Neural Network (ANN)- based controller, which enhances system performance by improving response speed and minimizing errors. The proposed ANN controller significantly reduces harmonic distortion and ensures better power quality. The system's performance is analyzed through simulations in MATLAB/Simulink 2018a, comparing the traditional PI-based approach with the ANN-based approach. The results demonstrate a notable reduction in Total Harmonic Distortion (THD) from 1.20% (PI) to 0.51% (ANN), highlighting the superior efficiency of the proposed control strategy.

Keywords– *Grid-Connected Renewable Energy, Electric Vehicle (EV) Charging, Artificial Neural Network (ANN) Controller, Proportional-Integral (PI) Controller, Total Harmonic Distortion (THD), Power Quality Improvement, MATLAB/Simulink, Solar Photovoltaic (PV), Wind Energy, Smart Grid, Renewable Energy Integration etc.*

A SURVEY ON - AN INTELLIGENT HEALTHCARE SOLUTION FOR DISEASE PREDICTION AND DRUG RECOMMENDATION SYSTEM USING MACHINE LEARNING

Ms. Sayeda Sadia Tabassum[1], Mir Mohammed Talha[2], Mohammed Affan Yaseen[3], Mohammed Imaad Bokhari[4], Mohammed Maazen Gous[5]

[1]*Asst. Professor, Dept of CSE HKBK College of Engineering Bangalore, India*

[2]*1HK21CS079 Computer Science & Engineering HKBK College of Engineering, Bangalore, India*

[3]*1HK21CS086 Computer Science & Engineering HKBK College of Engineering, Bangalore, India*

[4]*1HK21CS092 Computer Science & Engineering HKBK College of Engineering Bangalore, India*

[5]*1HK21CS095 Computer Science & Engineering HKBK College of Engineering, Bangalore, India*

Abstract—One revolutionary development in healthcare is the use of machine learning algorithms in medication recommendation systems. Based on patient information and past treatment results, this study investigates the use of Decision Trees, Random Forest Classifiers, and Logistic Regression to produce tailored pharmaceutical recommendations. By using these algorithms, we want to improve patient care by increasing the efficacy and accuracy of medication prescriptions. Collaboration with healthcare professionals is integral to this process, as doctors provide essential insights and validation of model predictions. This partnership ensures that the recommendations align with clinical practices and real-world scenarios. Our results demonstrate how machine learning can help doctors make well-informed decisions, lower the risk of negative drug reactions, and improve treatment regimens. By taking this novel approach, we hope to close the gap between clinical knowledge and data-driven insights, opening the door to a healthcare system that is more effective.

Keywords–*Machine Learning, Decision Tree, Random Forest Classifier, Logistic Regression, Dataset, Modelling*

SECURING THE FUTURE: A COMPARATIVE ANALYSIS OF ENCRYPTION TECHNIQUES IN IOT SECURITY

Nivethitha V[1], Abi Swetha G[2], Suthir Sriram[3]

Department of Computer Science and Engineering Amrita School of Computing, Amrita Vishwa Vidyapeetham Chennai, India

v_nivethitha@ch.amrita.edu, abiswethaganesh@gmail.com, s_suthir@ch.amrita.edu

***Abstract*—**With the concept of the Internet of Things taking root and fast integrating different devices, there are many opportunities that come alongside them and challenges as well. Of these, securing and safeguarding privacy in IoT environments persist to be a major concern because IoT devices are typically constrained in terms of the resources, in an environment that is growing constantly more hostile to security. On this occasion, this paper aims to analyze the encryption techniques as essen- tial mechanisms to protect IoT environments and, in this sense, present a deep contrast of current cryptographic algorithms in relation with computational complexity, energy consumption, and scalability. Emphasis is placed on their use in addressing some of the generically recognized IoT threats, including firmware manipulation, credentials compromise, and hardware attacks. From this we derive specifications for assessing competing encryption regimes that optimally maintain security and functionality. Moreover, this paper discusses the benefits of these techniques in building the trust, minimizing the operational cost and enhancing the viable IoT network principles. Thus, by considering three aspects of security, performance, and economic feasibility in the context of IoT, this study attempts to offer valuable guidelines for the construction of durable and sustainable IoT systems on the horizon.

Keywords*—IoT Ecosystems ,Encryption Methods, Data Security ,Privacy Protection ,Cryptographic Tech- niques, Internet of Things Security, IoT Network Safe- guards*

A CRITICAL REVIEW ON THE INFLUENCE OF HYDROCARBON POLLUTION AND THE USE OF ELECTRICAL RESISTIVITY FOR EXPANSIVE SOILS AND TO EVALUATE THEIR PROPERTIES

Saurabh Giri[1], Navin Kumar Yadav[2]

[1]*Lecturer, Department of Civil Engineering, AIMT Lucknow, Uttar Pradesh. India.*

[2]*PhD Scholar, Department of Civil Engineering, KNIT, Sultanpur, Uttar Pradesh. India.*

navin.21ce2635@knit.ac.in,bipin.prajapati@knit.ac.in

Abstract– This paper reviews the studies on expansive soil with a main focus on failure mechanism, financial losses, mineralogy, determination of swelling parameters and others. Effect of hydrocarbon pollution on geotechnical properties of expansive soil was presented. The paper discussed the assessment of electrical response of contaminated swelling soils. Wide extend of expansive grounds around the world and the serious impact created on infrastructures requires identifying its influential aspects and the appropriate treatments. Also, it was found that petroleum product affect significantly on the basic properties of swelling soils such as gradation, consistency, compaction, swelling and others, and electrical resistivity can be employed to reveal the electrical characteristics of polluted expansive soil.

Keywords– *Expansive soil, maximum dry density, hydraulic conductivity, shears strength.*

INVASIVE PLANT SPECIES DETECTION USING CNN

Dr M.Gopinath[1], Mukunda Sri Konatham[2], Jayasree Marrapu[3]

Department of Artificial Intelligence and Data Science Velagapudi Ramakrishna Siddhartha Engineering College

gopinathm@vrsiddhartha.ac.in, mukunda4396@gmail.com, jaya.marrapu1436@gmail.com

***Abstract*—** The detection and classification of invasive plant species are crucial for biodiversity conservation and ecosystem management. This research work explores the use of Convolutional Neural Networks (CNNs) to identify invasive species from images. By leveraging the powerful feature extraction capabilities of CNNs, we developed a model that accurately classifies the non- invasive and invasive plant species. The model was trained on a diverse dataset, incorporating various environmental conditions and geographical locations to enhance its robustness. Evaluation metrics indicate high precision and recall, demonstrating the model's effectiveness in real-world applications. Our findings suggest that CNN-based approaches can significantly enhance monitoring and management efforts for invasive species, offering a scalable and automated solution for environmental scientists and policymakers.

***Keywords*—** *Invasive Species Detection, Convolutional Neural Networks (CNNs), Biodiversity Conservation, Ecosystem Management , Image Classification, Remote Sensing*

AUTOMATED TRACTOR SYSTEM FOR OPTIMIZED TRAJECTORY PLANNING

Shivam Dubey[1], Umar Badr Shafeeque[2], Shafeeq Ahmad[3]

Department of Computer Science & Engineering

Azad Institute of Engineering & Technology Lucknow, India

iamsd009@gmail.com

***Abstract*—** In trajectory planning, a time-dependent path connecting the starting and end configurations is designed while taking certain limitations into account. This procedure is essential for operating an articulated vehicle independently. Trajectory planning is presented in this study as a dynamic optimization problem including boundary conditions, kinematic differential equations, mechanical and environmental constraints, and an optimization goal. Current numerical methods for solving this problem often overlook constraint satisfaction between adjacent discretized mesh points, leading to failures when the planned motions are executed. To address this issue, the minute mesh grid concept is introduced, ensuring constraint satisfaction between adjacent rough mesh points. Large-scale constraints are integrated successfully into the optimization process by the use of precise penalty functions, which turns the dynamic optimization issue into a static one with straightforward limitations on the choice variables. Simulation findings validate that our suggested methodology produces reliable outcomes and can handle a wide range of optimization goals consistently.

Keywords—*Automation, control, optimization, state space representation, trajectory planning.*

ADVANCED CURRICULUM-BASED ABSTRACTIVE TEXT SUMMARIZATION WITH T5 LANGUAGE MODEL AND REINFORCEMENT LEARNINFG

Nagothu Sravani Vimala Rani[1], Anthony Manoj Chand Nagothu[2], Dr.A.Reyana[3]

[1,2,3] *Dept. of computer science and engineering Karunya university coimbatore,india*

nagothusravani@karunya.edu.in, nagothuanthony@karunya.edu.in reyana@karunya.edu

Abstract– In this paper we propose a novel method of abstractive summarization using curriculum reinforcement learning (RL) and the T5 pre-trained language model. By contrast with standard approaches, which are trained on uniformly complex data, our system learns accumulation of summarization capability in a curriculum of tasks. Starting from sentence level summarization, we institute it to multi paragraph document summaries. The model is able to yield better summarization prescreen quality as well as generalization with leveraging curriculum learning. Finally, reinforcement learning extracts to maximize summary generation with respect to factual accuracy, coherence and relevance using a reward function. Results on baseline datasets demonstrate that our methodology achieves state of the art on abstractive summarization, setting a new standard for the discipline.

Keywords– *Abstractive Summarization, T5 Language Model, Reinforcement Learning, Curriculum Learning, Text Summarization.*

MACHINE LEARNING ALGORITHM FOR HIGH-SPEED FACE RECOGNITION BASED ON RBF NEURAL NETWORKS AND DISCRETE COSINE TRANSFORM

Punam Sangole[1], Dr. Lowlesh Yadav[2], Mr.Nilesh Mhaiskar[3]

[1]*Research Scholar, Department of CSE, TGPCET, Nagpur*

[2]*Head of Department of CSE, TGPCET, Nagpur*

[3]*Assistant Professor, Department of CSE TGPCET, Nagpur*

punamsangole07@gmail.com

***Abstract*—** With the rise of automation in many practical domains, face recognition has emerged as a critical problem in the last few years. To verify that test takers are who they claim to be, facial recognition software is an absolute must. The employment of facial recognition technology in airport applications allows for the identification of individuals in possession of counterfeit passports. In addition to the military and residential security, it finds use in banking, reservation systems, and healthcare information systems that are based on FR. Investigating the use of Hyper Spectral Imaging (HSI) methods to face datasets is important for expanding the size of these datasets. In order to increase the accuracy of face identification, hyper spectral imaging approaches acquire additional biometric data, such as spectral characteristics. However, due to the reduction in inter-object space in the face recognition domain, the effectiveness of 2-dimensional image-based approaches diminishes as the number of faces to be evaluated increases. Because the features are so large, hyper spectral imaging is essential for this situation. For this reason, combining HSI with AI methods like Machine Learning (ML) is essential for better face recognition performance. This paper presents three novel algorithms that draw on swarm intelligence and deep neural network methods. Because deep learning algorithms automate the feature extraction, selection, and classification processes, they are used in this study to accomplish the face recognition problem. Better performance in terms of classification accuracy may be achieved by integrating swarm intelligence approaches with deep learning algorithms. In light of this, this thesis proposes novel algorithms that combine deep learning techniques like RNNs and Convolution Neural Networks (CNNs) with swarm intelligence algorithms like firefly and dragonfly optimisation.

Keywords*–Face recognition, Artificial Intelligence (AI), Convolution Neural Network (CNN), Machine Learning (ML), Hyper Spectral Imaging (HSI)*

CLUSTER OPTIMIZATION SCHEME FOR WSN SECURITY AND LIFETIME ENHANCEMENT

Divya Srivastava[1], Nitin Jain[2], Manish Kumar[3]
[1,2]*Electronics and Communication Department, BBD university, Lucknow, India*
[3]*Electronics and Communication Department, SUAS, Indore, India*
divya.div1912@gmail.com

Abstract– WSNs, or wireless sensor networks, have become a pivotal technology across various domains due to their scalability, ease of maintenance, and self-configuring capabilities. These networks consist of small sensor nodes that communicate via the Internet of Things (IoT) to monitor and record environmental conditions. These nodes establish an ad hoc intercommunication topology among themselves, enabling autonomous operations. However, the restricted capabilities of sensor nodes, such as restricted energy capacity, data storage, transmission bandwidth, and processing power, present significant challenges. Addressing these constraints is critical, as the performance of battery-powered nodes directly affects the network's overall efficiency. Despite numerous research efforts to mitigate these issues, challenges like maintaining high network throughput, ensuring balanced energy usage, and safeguarding data integrity persist. The situation is further exacerbated by the susceptibility of sensor nodes to security vulnerabilities, particularly in dynamic and unpredictable network environments. These vulnerabilities pose risks of data compromise and highlight the need for robust security mechanisms. This research proposes a safe and energy-efficient routing protocol that uses heuristic for WSNs, designed to address these challenges comprehensively. The proposed protocol adopts a two-fold approach: First, it employs a heuristic analysis based on Particle Swarm Optimization (PSO) to implement an intelligent and adaptive learning mechanism for reliable routing. Second, it incorporates a lightweight security framework to protect data transmissions against malicious threats with minimal computational complexity. Furthermore, the protocol includes a traffic exploration mechanism to optimize route maintenance by reducing network disconnections and link failures. Simulation results shows how effective the suggested PSO-based protocol, achieving significant improvements over existing approaches in dynamic network scenarios. Specifically, it enhances network throughput by 18%, reduces the ratio of packet drop by 42%, lowers overall delay by 26%, decreases energy usage by 36%, minimizes improper routes by 38%, reduces overhead in the network by 44%, and cuts computational overhead by 43%. These results underscore the protocol's potential to enhance WSN performance while addressing key energy and security challenges.

Keywords– *Wireless sensor networks, heuristic analysis, energy efficiency, artificial intelligence, and data privacy*

REVIEW OF MODERN METHODS FOR DETECTION OF MENTAL HEALTH USING NATURAL LANGUAGE PROCESSING

Priyanka Srivastava[1], Dr. Mohammad Suaib[2]

Computer Science and Engineering, Integral University, Lucknow

priyanka.lecturer.gpl@gmail.com , suaibcs09@gmail.com

Abstract– According to the 2021 study, depression affects over 280 million populations nationwide and is the major cause behind sickness and damage. Millions of individuals worldwide suffer from depression, it has observed to be most prevalent mental diseases. Major depression may be prevented by identifying its signs early and treating them with prompt action. This has led to the necessity for some new methods of detecting depression in order to assist medical professionals in properly identifying and treating depression. Online posts, audio recordings, face expressions, and video recordings may all be used to study depression. Accordingly, the study offers a thorough analysis of the various datasets and machine learning techniques currently in use for depression identification. The study investigates automated depression detection techniques, different methods for identifying depression in audio, text, and video, and even different systems as well as processes for identifying depression based on different criteria.

Keywords– *anxiety, deep learning, audio feature, depression detection, social posts, stress, video feature, machine learning.*

DESIGN OF CONCRETE PAVEMENT USING MESH BASED APPROACH

Naynish Pandey[1] , Aman Saini[2]

Department of Civil Engineering, Ambalika Institute of Management and Technology, Lucknow

naynish002@gmail.com, ak2178498@gmail.com

Abstract– The Finite Element Method (FEM) has long been a fundamental tool in evaluating pavement responses, with two-dimensional analyses being the conventional approach for several decades. However, the advancement of three-dimensional FEM has significantly enhanced our understanding of pavement behaviour. This research focuses on the design and analysis of rigid pavements using ANSYS, a widely recognized FEM-based software. The study examines multiple pavement thicknesses and varying load conditions to evaluate performance parameters. Results obtained from ANSYS simulations show a strong correlation with the (AASHTO) design methodology, with ANSYS yielding slightly lower stress values. This consistency highlights the reliability of ANSYS in pavement design applications. Additionally, the research investigates temperature gradients across the pavement structure, analysing variations from the surface layer to the slab's bottom. Findings indicate that temperature differentials play a crucial role in pavement longevity and performance over time. In conclusion, the integration of three-dimensional FEM analysis using ANSYS provides a robust and reliable framework for designing and evaluating rigid pavements. This approach ensures that modern highways can withstand increasing infrastructure demands while maintaining long-term durability and performance.

Keywords– *Finite Element Techniques, Rigid Pavement, ANSYS*

APPLICATION OF DATA PRIVACY AND PATIENT CONSENT IN BLOCKCHAIN TECHNOLOGY-POWERED HEALTH RECORD MANAGEMENT

Mohd Saif Ashraf[1], Mohd Kaif Ashraf[2], Fakhare Alam[3]

[1]Department of Mechanical Engineering, University of Lucknow, India

[2]Department of Computer Science & engineering University of Lucknow, India

[3]Department of Computer Science & Engineering Oakland University Rochester, United States

saifalilu2021@gmail.com, kaifalilu2022@gmail.com, fakharealam@oakland.edu

***Abstract*—**Blockchain technology has emerged as a disruptive force in the healthcare industry, promising to revolutionize the way patient data is managed and secured. This research paper provides a comprehensive analysis of block chain's transformative impact on healthcare, with a particular emphasis on enhancing patient record security, enabling emergency access, eliminating intermediaries, ensuring data integrity without permission, and exploring the future prospects of blockchain implementation in healthcare. Firstly the paper explores the vulnerabilities of traditional healthcare records system, emphasizing the pervasive risks of data breaches and unauthorized access. It then elucidates how blockchain's decentralized ledger ensures the utmost security and privacy for patient records, reducing the threat of data breaches significantly. Furthermore, the research discusses the concept of emergency access to patient data through block chain, enabling healthcare provider to access crucial information swiftly, even in situations where prior consent is unattainable. The papers underscores the elimination of third party intermediaries in patient data sharing granting patient direct control over their data and enhancing privacy and security. Lastly the paper explores the promising future of blockchain implementation in healthcare, envisioning a landscape where patient data is immutable, secure, and easily accessible.

Keywords*—Healthcare Data Security; Health Information exchange; Medical records on Blockchain; Patient Data Privacy; Health data ownership*

SAFE DRIVE: EMERGENCY SHAKE DETECTION APPLICATION

Rohit Kumar

Abstract—Safe Drive is an Android application designed to enhance road safety by providing an emergency alert system through shake detection. The app uses the device's accelerometer to detect sudden, forceful shakes, which may indicate accidents or critical situations. Upon detecting such an event, it automatically sends an emergency SMS containing the user's live GPS location to three pre-saved emergency contacts. The message includes a Google Maps link, making it easy for recipients to track the user's location in real-time. In addition to shake detection, Safe Drive offers features like real-time speed monitoring using GPS, allowing users to view their current speed while driving. The app also provides quick-call options for emergency services like police (+100), ambulance (+102), and fire brigade (+101), ensuring immediate assistance when needed. Users can toggle the emergency detection services on or off, manage emergency contacts, and even access trip navigation through integrated Google Maps. The app requires permissions for location, SMS, and calls to function effectively. Safe Drive is a comprehensive safety tool aimed at reducing response times during emergencies, making it an essential app for drivers and travelers.

A STUDY ON REUSABILITY TESTING IN SOFTWARE DEVELOPMENT

Dr. Devendra Kumar

Associate Professor, Department of Computer Science & Engineering, Ambalika Institute of Management & Technology, Lucknow.

devendrakumar17@gmail.com

Abstract– The software testing phase is often regarded as the most challenging and time-consuming stage of development. Testing involves executing a system to identify errors, gaps, or missing requirements while ensuring that it meets the specified criteria. Reuse refers to the practice of using an item again after its initial use. This can be in the form of conventional reuse, where the item serves the same function, or new-life reuse, where it is repurposed for a different function. Implementing reuse helps minimize development time and enhances efficiency. The simplest form of reuse includes subroutines or functions. By integrating reuse into the testing phase, overall software development costs can be significantly reduced.

Our paper represents the analysis and study of various research papers which are based on reuse and software testing.

Keywords– *Software Testing, Reusability, Software Development Life Cycle (SDLC), Test Reuse Database, Software Quality Assurance, Cost Reduction in Testing.*

SECURE LAND REGISTRY SERVICES USING BLOCKCHAIN TECHNOLOGY

Dr. Ajay Kumar Bharti

Department of Computer Science and Engineering, Ambalika Institute of Management

Email Id: ajay_bharti@hotmail.com

Abstract– Blockchain technology has become a revolution based application type in the field related to the information technology. Presently we have multiple application of blockchain in public, supply-chain, finance, taxation, healthcare, and IoT based applications. Financial sector is most promising in adoption of blockchain followed by management of supply chain schemes. Blockchain is closely adopted at in India too. In 2018 Reserve Bank India issued a notice in order for the identification of the potential application fields related to the blockchain in banking system of India. NITI Aayog work on strategy of national level for blockchain schemes which will identified as the field where country is implementing the blockchain. Blockchain technology applications is still new and have issues like security, scalability and privacy breaches, limited transaction based application type loads, and high costs of computational, in addition to its technical problem, adoption of blockchain technology into market of Indian system has its own specified problems. This paper describes the prospect related to the blockchain technology in Indian scenario, its current status and likely issues in its acceptance to India market. This is providing an overview over blockchain and its fundamental approach and prominent platform of blockchain, it also gives analysis related to the scalability and application area in transactions of government sector for the underprivileged citizens to verify and trace the direct benefits using Technology of Blockchain scheme.

Keywords– *Blockchain, Land Registry, Parallel Computing, Cyber Security*

INTEGRATION OF INTERNET OF THINGS IN BLACK BOX

Sachin Srivastava[1]*, Arpita Adideo[2], Vansh Kumar[3], Aditya Singh Rana[4], Abhay Dhasmana[5], Pakhi Roby[6]

[1]*Department of Aerospace Engineering, Uttaranchal Institute of Technology, Uttaranchal University, Dehradun-248007, Uttarakhand, India*

**sachinrash2004@gmail.com*

Abstract– Black Boxes recordings are used to investigate post-crash. However, traditional black boxes limit important information such as data loss, delayed retrieval in remote locations and inability to provide real-time insights. This paper aims to explore the integration of IoT, AI, Satellite Communication, GPS and telemetry into black boxes to enable real-time encrypted data transmission and improve aviation safety. Next-gen black boxes can leverage satellite connectivity, telemetry techniques, integration of GPS, underwater beacons, and buoyant ejection modules for faster recovery. The use of predictive analytics enhances aircraft monitoring and safety. By implementing IoT enabled black boxes, the aviation industry can significantly reduce the risk of flight loss and crash. The improved real-time data accessibility and reducing investigation delays results in overall enhancement in flight safety.

Keywords– *IoT, Black Box, Satellite Communication, GPS, Smart Monitoring*

INTELLIGENT QUADRUPED ROBOT LOCOMOTION USING PPO AGENT

Priyanka Banka[1], Vijaya Lakshmi Korupu[2], Chaitanya Varma Pakalapati[3], Anusha Korukonda[4], Bindu Nalluri[5]

Dept of EIE Velagapudi Ramakrishna Siddhartha Engineering College Vijayawada, India

priyankabanka7@gmail.com, vijaya.korupu@gmail.com, chaitanyavarma1257@gmail.com, anusha.korukonda03@gmail.com, bindunalluri9@gmail.com

***Abstract*—**This project presents the application of the Proximal Policy Optimization (PPO) algorithm in Reinforcement Learning (RL) for autonomous locomotion in quadruped robots. These robots are increasingly used as transformative tools in industrial applications, such as transporting goods and conducting surveillance, especially in challenging or remote environments. The PPO agent engages with the quadruped environment to develop an effective control strategy, allowing the robot to move across diverse and challenging terrains while maintaining stability and reliability.The agent takes states (observations) as inputs and outputs actions for which a delayed reward is received. The PPO algorithm optimizes policy updates within safe bounds, balancing exploration and exploitation to enhance adaptability and minimize instability in control tasks. This approach makes PPO well-suited for continuous control tasks essential to autonomous quadruped locomotion. The proposed approach is evaluated through simulations and real-time experimentation, with results showing significant improvements in stability, efficiency, and generalization.

Keywords*—autonomous, proximal policy optimization, locomotion, robot, surveillance, reinforcement learning.*

DYNAMIC RESERVE POWER POINT TRACKING IN GRID-CONNECTED SOLAR FARMS

Under the guidance of Dr.SreeRanganayakulu.J

Department of Electrical and Electronics Engineering, AITS, Rajampet, Andhra Pradesh

ranga2k6@gmail.com

Abstract–The Reserve Power Point Tracking (RPPT) methodology provides dynamic Power Reserve control for grid-connected Solar Farms, ensuring the required Power Reserve to support the grid and high PV generation penetration. The algorithm alternates the operating point between two fixed voltages on the PV curve using a model-based voltage controller and Model Predictive Control (MPC) to regulate PV voltage and inductor current. Tested under steady-state performance, varying power reference, and partial shading conditions, the RPPT methodology extracts MPP information to regulate PV reserve power. The algorithm tracks MPP under partial shading, provides grid frequency support, reduces DC-link capacitor stress, and improves system reliability. It operates in MPPT, FPPT, or RPPT modes to maintain desired Power Reserve, offering advantages over traditional methods, enabling flexible power injection and grid frequency support.

Index Terms—*Flexible power control, grid support, maximum power point (MPP), partial shading, photovoltaic (PV) plant, power reserve, reserve power point tracking (RPPT),Artificial Neural Network(ANN)*

DUAL SOURCE NOVEL NINE LEVEL INVERTER DESIGN WITH TRINARY GEOMETRIC DC LINKS TO PRODUCE HIGHEST OUTPUT VOLTAGE LEVELS

SYED RUBEENA BI[1], K. JEEVANA REKHA[2], K.GOVARDHAN REDDY[3], D.DILEEP KUMAR[4], J.DEVA NANDINI[5]

[1] *Assistant Professor, EEE Department, Annamacharya University-Rajampet*

[2,3,4,5] *UG Scholars, EEE Department ,Annamacharya Institute of Technology and Sciences – Rajampet*

syedrubeena.eee@gmail.com, kadirijeevanarekha75@gmail.com

Abstract–A new Dual-Source Nine-Level Inverter (DSN2LI) is presented in this paper with a minimal component count. To accomplish nine output levels, the suggested DSN2LI makes use of eight switches, including two asymmetrical DC lines and two bidirectional switches. It adopts trinary geometric DC links, enabling it to generate the highest voltage levels with Comparing DC sources and switches to alternative setups .Unlike conventional designs, reduces switches and voltage stress caused by producing negative levels without an H-bridge being required. In each operating mode, Compared to conventional H-bridge configurations, only three switches are in operation, limiting transitions between switches, lowering switching and conduction losses, and increasing efficiency. The design's power components, controllers, and DC sources are contrasted with those of other modern topologies. Compared to earlier designs, the DSN2LI requires fewer switches, control circuits, and DC linkages. Switching pulses are produced using Level-Shifted Pulse Width Modulation (LS-PWM). The system is extensively modelled in MATLAB/SIMULINK, and its effectiveness is verified at different loading, variable frequency, DC links and Modulation Index (MI) conditions.

Keywords–*Dual Source Novel Nine Level Inverter (DSN2LI), Trinary geometric DC links, Modulation Index (MI) and Level-Shifted Pulse Width Modulation (LS-PWM).*

USE OF BLOCKCHAIN IN ONLINE DOCUMENT VERIFICATION: A SURVEY

Prof. Subhash Nalawade[1], Mr. Kunal Patil[2], Mr.Shivtej Deshmukh[3], Mr. Tejas Patange[4], Mr. Suraj Fartale[5],

Information Technology Dr. D. Y. Patil Institute of Technology Pune, India

nalawadesan2013@gmail.com, patilkunal5434@gmail.com, shivtejdeshmukh48@gmail.com, tejaspatange2025@gmail.com, fartalesuraj20@gmail.com

Abstract—Blockchain, because it is decentralized, immutable, and others, has become one of the most-used technologies for verifying academic documents. This is so because the paperbased model of documentation can be slow, especially prone to error, and easily forged. This is almost the opposite of blockchain, which offers innovation in protection of storage for academic records and instant verification. This paper reviews the latest advancements in research with blockchain applications related to verification of academic document authenticity using models that use permissioned, public, and consortium blockchain architecture. The authors emphasize the three most essential technologies: Hyperledger Fabric, Ethereum smart contracts, and Proof of Authority (PoA), along with their pursuit to increase efficiency, security, and user anonymity. Test results on reducing fraud along with efficient verification using digital signatures, and SHA-256 and MD5 cryptographic hash algorithms showed improvement in comparison. However, there are interoperability, scalability issues and regulatory acceptance. More work is required on privacy protections and cross-platform interoperability. To maximize document authenticity, this will entail further study and research in hybrid technologies for blockchain and multiparty frameworks for verification. It traces the pathway that blockchain technology shall take in the advancement of its use towards safe, uniform academic document verification

Index Terms—*Blockchain, SHA-256, Hashing, Hyperledger Fabric, Ethereum smart contracts, Digital Signatures.*

SECURE LAND REGISTRY SERVICES USING BLOCKCHAIN TECHNOLOGY

Dr. Ajay Kumar Bharti[1], Atul Verma[2], Amit Kumar Singh[3]

[1]*Department of Computer Science and Engineering, Ambalika Institute of Management, Lucknow*

[2,3] *Department of Computer science and Information systems, Sri Ramswaroop memorial university, Lucknow*

ajay_bharti@hotmail.com

Abstract–Blockchain technology has become a revolution based application type in the field related to the information technology. Presently we have multiple application of blockchain in public, supply-chain, finance, taxation, healthcare, and IoT based applications. Financial sector is most promising in adoption of blockchain followed by management of supply chain schemes. Blockchain is closely adopted at in India too. In 2018 Reserve Bank India issued a notice in order for the identification of the potential application fields related to the blockchain in banking system of India. NITI Aayog work on strategy of national level for blockchain schemes which will identified as the field where country is implementing the blockchain. Blockchain technology applications is still new and have issues like security, scalability and privacy breaches, limited transaction based application type loads, and high costs of computational, in addition to its technical problem, adoption of blockchain technology into market of Indian system has its own specified problems. This paper describes the prospect related to the blockchain technology in Indian scenario, its current status and likely issues in its acceptance to India market. This is providing an overview over blockchain and its fundamental approach and prominent platform of blockchain, it also gives analysis related to the scalability and application area in transactions of government sector for the underprivileged citizens to verify and trace the direct benefits using Technology of Blockchain scheme.

Keywords– *Blockchain, Land Registry, Parallel Computing, Cyber Security*

INDIGENOUS SYSTEM OF MEDICINE, KEY FOR MEDICAL TOURISM

Prof.O.P Singh[1], Dr.Narendra Kumar Gautam[2]

Former, H.O.D Dept.of Kayachiktsa Faculty of Ayurveda I.M.S, BHU Varanasi

Research Scholar,Ex. Senior Resident,Dept. of Kayachiktsa,Faculty of Ayurveda I.M.S, BHU Varanasi

Abstract–The Indigenous system of medicine, comprising traditional healing practices such as Ayurveda, Traditional Chinese Medicine (TCM), Unani, Siddha, and others, has played a central role in the health and wellness of many civilizations for centuries. These systems are grounded in the belief that health and disease are influenced by a harmonious balance between the body, mind, and environment. As the world becomes more interconnected, these ancient healing practices have gained recognition not only for their holistic approach but also for their potential contribution to medical tourism. Medical tourism, which involves people traveling abroad to seek medical care, has grown exponentially in recent years, driven by factors such as cost-effectiveness, advanced medical technology, and specialized treatments. Indigenous systems of medicine, with their unique methodologies, are increasingly attracting medical tourists seeking alternative and complementary therapies. Ayurveda and TCM, for instance, have become major drivers of medical tourism, offering treatments for a wide range of conditions, from stress and chronic pain to skin disorders and digestive problems. The indigenous systems of medicine, with their emphasis on holistic, natural, and personalized care, are poised to play a significant role in the future of medical tourism. These systems offer distinct advantages, particularly in the areas of wellness, prevention, and alternative therapies. However, challenges such as standardization, integration with modern medicine, and ethical considerations must be addressed to ensure these practices are both safe and effective for global patients.

Keywords–*Tradinatonal healing system, Mindfulness- based Therapies, Alternative medicine, Healthcare medicine, Rehabilitative tourism, Indigenous Knowledge.*

METHODS OF PREVENTION AND TREATMENT OF COVID-19 IN INDIA: AN EXCELLENT EXAMPLE OF MEDICAL TOURISM

Alok kumar Pandey[1], Prof. Dr. Om Prakash Singh[2]

Research Scholar1, Supervisor2 (Professor and Doctor) Department of Kayachikitsa, Faculty of Ayurveda Institute of Medical Sciences, Banaras Hindu University, Varanasi

alok52577@gmail.com

Abstract –COVID-19 has been a period of extremely deadly experience for the whole world, which has caused a huge loss to the economy and human life. The whole world was disturbed by this disaster, but if the Indian medical system is assessed comparatively, then Indian medicine has solved this problem in a very excellent way; especially Ayurvedic medicine (Kwath, Kadha etc.) has not only solved the problem but has also carved out a safe and cost-effective form of Indian medicine. Due to all these reasons, India is becoming a hub of medical destination day by day. This research paper will highlight the effects of COVID-19 on Indian medical and service reforms. Qualified and experienced doctors, excellent nursing services and low-cost medical service are areas of hope for international patients, especially financially incapable foreign patients. Hospitals equipped with modern machines, excellently educated doctors, and new researches have made India a hub of medical attraction, along with this India also inspires other foreigners on its cultural heritage, spiritual basis and the principle of unity in diversity. Therefore, this research paper will be complied with all these above said points.

Key points– *Covid-19 Disaster Situation, Medical System, and Tourist Places*

AI-DRIVEN MICROSERVICES FOR SEAMLESS USER EXPERIENCE IN MULTI-PLATFORM DIGITAL ENVIRONMENTS

Biman Barua[1*], M. Shamim Kaiser[2]

1,2Institute of Information Technology, Jahangirnagar University, Dhaka 1342, Bangladesh

1Department of CSE, BGMEA University of Fashion and Technology, Nishatnagar, Turag, Dhaka 1230, Bangladesh

biman@buft.edu.bd

Abstract— Today, in the multi-faceted digital environments, the support of integrated and individualized user experience (UX) takes center stage. This study examines the design and development of an AI-enabled microservices framework to improve UX using machine learning (ML), natural language processing (NLP), and real-time adaptability techniques. The proposed architecture is a modular design that includes an AI engine, service registry, and user feedback loop to enable real-time decisions and decisions with seamless integration across platforms. One can realize real-time adjustments to users' preferences through reinforcement learning (RL), especially with Proximal Policy Optimization (PPO). That ensures dynamic personalized interactions with users. Using models like BERT, an understanding of contexts alongside more advanced behavior from chatbots will be achieved by NLP methods. Both REST APIs and middleware solutions like Kubernetes would help achieve integration and orchestration across various platforms. We evaluated the experiments against an airline reservation system and a streaming service as a case study. The quantitative figures presented a 50% decrease in response time, a 24% increase in personalization accuracy, and 32% improvement in system adaptability. The findings represented through graphs and charts also show a dramatic increase in performance, validating the framework against real-world problems. The revolutionary possibility of AI-enabled microservices in imparting adaptive, context- aware, and platform-consistent user experiences is illustrated through this work. Future projects would include scaling the framework and developing high-end generative AI to personalize complex digital ecosystems.

Keywords— *AI-Driven Microservices, Machine Learning, Reinforcement Learning, Natural Language Processing, Artificial Intelligence*

AI-INFLUENCED 6G WIRELESS COMMUNICATIONS: ARCHITECTURE AND SECURITY PERSPECTIVE

Archita Singh[1], Aarti Rani[2]

[1]*Student, BBD University*

[2]*Assistant Profressor, LPCPS, Lucknow*

Singharchita723@gmail.com , aarti.singh18oct@gmail.com

Abstract– The increasing flux of multifaceted mobile applications, chiefly those based on AI (Artificial Intelligence), has been considered as a matter of contention over the future of wireless communications. Meanwhile, 5G has been implemented or is in the process of deployment worldwide; the development of future B5G/6G networks is already underway, with the goal of providing versatile connect-compute technologies to enhance future convoluted applications and use cases. 6G networks are expected to lay the groundwork for vertical industries and human-centred high-tech communities by 2030. B5G/6G networks would create a completely linked world with the convergence of satellite and terrestrial wireless communications. Furthermore, 6G provides a completely data-driven network capable of optimizing the sheer volume of a real-time network at the rate of Tb/s and analyzing the behavior at endpoints. However, achieving automated administration & orchestration, effective resource utilization and a consistent user experience becomes strenuous because of the dynamic, immensely sophisticated and heterogeneous nature of 6G. Thus, it becomes essential to use AI for effectively resolving complex challenges in the 6G network. This palimpsest showcases the concept of AI associated with 6G technology and presents the significance of AI in ensuring security and privacy in 6G.With the augmentation of big data processing technologies as well as the availability of profuse data and computing power, it becomes obvious to use Artificial Intelligence (AI) to effectively resolve complex challenges in the 6G network.

Keywords– *Wireless Technology, Artificial Intelligence, 6G-Architecture, Deep Learning, Security*.

DELVING INTO SECURITY HORIZONS: A STUDY OF EC-IOT LANDSCAPE

Archita Singh, Saurabh Gupta, Aarti Rani

Babu Banarasi Das University, Lucknow (India)

***Abstract*–**The past several eons witnessed a leviathan proliferation in the sheer volume of data obtained from actuators, various Internet of Things (IoT) devices, and sensors. Contemporarily, cloud-based computing resources situated in remote data centers are cardinally used to manage IoT data. Network capacity and communication delay therefore turn into decisive constraints. Ergo, edge computing (EC) is emerging as a technologically advance approach that establishes storage and processing of data in close proximity to the end users, engendering the concept of EC-assisted IoT. Nevertheless, because of the prudent nature of the gathered data and the ingrained debility of edge nodes, there are still a number of security issues with EC-IoT. A thorough analysis of the security and privacy concerns that still exist in the EC-IoT ecosystem is conducted in this research. Precisely, the article begins with a concise overview of EC and IoT technologies and their respective use cases. The paper further offers an overview of the forces propelling EC-IoT and describes an edge-centric design that assists in surmounting the shortcomings of conventional IoT systems. Subsequently, the paper addresses beaucoup privacy and security issues that still exist in the redesigned architecture and offers a few defense mechanism against those risks. Lastly, suggestions for unsolved research issues and untapped research opportunities have been posited.

***Keywords*–** *Edge Computing (EC), Internet of Things (IoT), security, EC-IoT architecture, security architectures.*

HOLISTIC HEALTH AND MEDICAL TOURISM

Dr Kamlesh Kumar[1], Prof O.P Singh[2]

[1] *Senior Resident, Department of Kayachikitsa, IMS, BHU, Varanasi*

[2] *Professor, Department of Kayachikitsa, IMS, BHU, Varanasi*

Abstract–Holistic health encompasses a multifaceted approach to health and wellness that integrates conventional medicine with complementary and alternative therapies, emphasizing the interconnectedness of mind, body, and spirit. Medical tourism often caters to this by offering destinations with holistic health therapies like Ayurveda, yoga, meditation, acupuncture, and naturopathy. Destinations provide customized programs that focus on stress relief, immunity boosting, and lifestyle changes to prevent illness. Countries renowned for traditional medicine, such as India and Thailand, have become popular destinations for health travelers. This emerging industry highlights the potential for blending cultural heritage with healthcare innovation, addressing both preventive care and chronic illnesses in a personalized manner. Holistic health tourism not only enhances well-being but also contributes to economic growth, offering a unique synergy between cultural preservation and modern healthcare delivery.

Keywords– *Yoga , Meditation, Acupuncture, Naturopathy, Holistic health*

CLUSTER OPTIMIZATION SCHEME FOR WSN SECURITY AND LIFETIME ENHANCEMENT

Divya Srivastava[1], Nitin Jain[2], Manish Kumar[3]

[1,2]*Electronics and Communication Department, BBD university, Lucknow, India*

[3]*Electronics and Communication Department, SUAS, Indore, India*

divya.div1912@gmail.com

Abstract–WSNs, or wireless sensor networks, have become a pivotal technology across various domains due to their scalability, ease of maintenance, and self-configuring capabilities. These networks consist of small sensor nodes that communicate via the Internet of Things (IoT) to monitor and record environmental conditions. These nodes establish an ad hoc intercommunication topology among themselves, enabling autonomous operations. However, the restricted capabilities of sensor nodes, such as restricted energy capacity, data storage, transmission bandwidth, and processing power, present significant challenges. Addressing these constraints is critical, as the performance of battery-powered nodes directly affects the network's overall efficiency. Despite numerous research efforts to mitigate these issues, challenges like maintaining high network throughput, ensuring balanced energy usage, and safeguarding data integrity persist. The situation is further exacerbated by the susceptibility of sensor nodes to security vulnerabilities, particularly in dynamic and unpredictable network environments. These vulnerabilities pose risks of data compromise and highlight the need for robust security mechanisms. This research proposes a safe and energy-efficient routing protocol that uses heuristic for WSNs, designed to address these challenges comprehensively. The proposed protocol adopts a two-fold approach: First, it employs a heuristic analysis based on Particle Swarm Optimization (PSO) to implement an intelligent and adaptive learning mechanism for reliable routing. Second, it incorporates a lightweight security framework to protect data transmissions against malicious threats with minimal computational complexity. Furthermore, the protocol includes a traffic exploration mechanism to optimize route maintenance by reducing network disconnections and link failures. Simulation results shows how effective the suggested PSO-based protocol, achieving significant improvements over existing approaches in dynamic network scenarios. Specifically, it enhances network throughput by 18%, reduces the ratio of packet drop by 42%, lowers overall delay by 26%, decreases energy usage by 36%, minimizes improper routes by 38%, reduces overhead in the network by 44%, and cuts computational overhead by 43%. These results underscore the protocol's potential to enhance WSN performance while addressing key energy and security challenges.

Keywords–*Wireless sensor networks, heuristic analysis, energy efficiency, artificial intelligence, and data privacy*

PREVENTIVE MEDICINE, AYURVEDA AND MEDICAL TOURISM

Dr. Gajendra Balke[1], Dr Prof O.P Singh[2]

[1]*PG Scholar, Department of Kayachikitsa, IMS, BHU, Varanasi*

[2] *Professor, Department of Kayachikitsa, IMS, BHU, Varanasi*

Abstract– Ayurveda aims to maintain balance (dosha samya), enhance immunity (vyadhikshamatva), and promote long-term well-being. This approach aligns with modern preventive medicine by focusing on root cause elimination rather than symptomatic treatment. Ayurveda, the ancient Indian medical system, complements preventive healthcare by focusing on lifestyle adjustments, herbal treatments, detoxification procedures, and individualized wellness plans. The integration of Ayurveda into preventive healthcare has gained global recognition, contributing to the rise of medical tourism in India and other wellness destinations. Travelers seek Ayurvedic treatments such as Panchakarma, dietary therapies, and holistic wellness programs to address chronic conditions, stress management, and overall well-being. This paper explores the role of Ayurveda in preventive medicine, its scientific validation, and the impact of medical tourism on global healthcare trends.

Keywords– *Ayurveda, Vyadhikshamatva, dosha samya, Panchkarma*

REVIEW OF MODERN METHODS FOR DETECTION OF MENTAL HEALTH USING NATURAL LANGUAGE PROCESSING

Priyanka Srivastava, Dr. Mohammad Suaib

Computer Science and Engineering, Integral University, Lucknow

priyanka.lecturer.gpl@gmail.com , suaibcs09@gmail.com

Abstract– According to the 2021 study, depression affects over 280 million populations nationwide and is the major cause behind sickness and damage. Millions of individuals worldwide suffer from depression, it has observed to be most prevalent mental diseases. Major depression may be prevented by identifying its signs early and treating them with prompt action. This has led to the necessity for some new methods of detecting depression in order to assist medical professionals in properly identifying and treating depression. Online posts, audio recordings, face expressions, and video recordings may all be used to study depression. Accordingly, the study offers a thorough analysis of the various datasets and machine learning techniques currently in use for depression identification. The study investigates automated depression detection techniques, different methods for identifying depression in audio, text, and video, and even different systems as well as processes for identifying depression based on different criteria.

Keywords– *anxiety, deep learning, audio feature, depression detection, social posts, stress, video feature, machine learning*

SAMSHODHANA CHIKITSA BE PROMOTED AS GLOBAL MEDICAL TOURISM

Dr. Rukhsar Parveen[1], Dr Prof O.P Singh[2]

[1]*PG Scholar, Department of Kayachikitsa, IMS, BHU, Varanasi*

[2] *Professor, Department of Kayachikitsa, IMS, BHU, Varanasi*

Abstract **–***Samshodhan Chikitsa* (purification therapies) indigenous and unique contribution of traditional ayurveda system of medicine presents a unique opportunity to position India as a leading destination for global medical tourism holds significant promise, particularly with the growing global demand for holistic, natural, and preventive healthcare solutions. As a vital component of *Samshodhan* in *Ayurveda,* these therapies focus on detoxifying the body and harmonizing the doshas (*Vata, Pitta,* and *Kapha*). With the help of *Samshodhana Chikitsa* the global wellness tourism market is booming, with travelers seeking detox, stress relief, and rejuvenation programs. It offers a unique experience steeped in India's ancient heritage, attracting those curious about traditional healing systems. By highlighting the scientific basis, health benefits, and cultural richness of *Samshodhana Chikitsa*, alongside creating world-class Ayurvedic centers and ensuring international quality standards, this traditional healing method can appeal to a broader international audience, fostering a deeper appreciation of India's ancient medical heritage.

Keywords– *Ayurveda, Samshodhan, Doshas, Rejuvenation.*

WOMEN HEALTH: MEDICAL TOURISM

Dr. Mamta Singh Yadav[1], Prof. Deepa Mishra[2]

[1]*Junior resident-2, Department of Prasuti Tantra, IMS, BHU, Varanasi.*

[2]*Professor, Department of Prasuti Tantra, IMS, BHU, Varanasi.*

Abstract– Women's health and medical tourism are deeply interconnected, providing access to affordable, high-quality healthcare. During traveling certain gynaecological issues developed due to changes in routine, hygiene challenges, and environmental factors, it affects women's health and quality of life. This study explores the effectiveness of Ayurvedic therapies for common gynaecological problems such as Vginal infection, UTI, menstrual pain, and irregularities, PCOS and infertility, integrating Ayurveda's principles with the growing trend of wellness tourism. Ayurveda's approach to gynaecological issues involves balancing the reproductive system through natural means. Treatments are customized based on the patient's *prakriti* (body constitution) and the underlying imbalance. Ayurvedic therapies, including herbal medicines, dietary modifications, *Panchakarma* procedures like *Virechana* (purgation) and *Basti* (enema), *yoni prakshalan*, *yoni pichu*, yoga therapy, have shown promising results in managing gynaecological issues. This combination of Ayurveda and tourism provides not only medical relief but also mental and emotional rejuvenation. Ayurveda offers a comprehensive approach to managing gynaecological problems, emphasizing holistic healing and long-term well-being. Integrating these treatments with health tourism enhances the therapeutic experience, physical, mental, and emotional recovery. Women's health and medical tourism are deeply interconnected, providing access to affordable, high-quality healthcare.

Keywords– *Panchakarma procedure, prakriti, yoga therapy*

DEVELOPMENT OF A CLONE WEBSITE FOR FAMILY GOLF

Shubham Maurya[1], Ambuj Yadav[2], Siddharth Sharma[3], Vivek Yadav[4]

Research Scholar, Ambalika Institute of Higher Education

Abstract– This project undertakes the ambitious task of cloning the Family Golf website, a renowned golf course platform. Leveraging cutting-edge web development technologies such as HTML, CSS, and JavaScript, our team meticulously replicated the original website's features, functionality, and user experience. Rigorous testing ensured the cloned website's performance, security, and usability met the highest standards. This project showcases the viability and potential applications of website cloning in various industries. Our contribution to the field highlights the benefits and challenges of this innovative technique, pushing the boundaries of web development.

Keywords–*Website Cloning, Family Golf, HTML, CSS, JavaScript, Web Development.*

DIGITAL AND SOCIAL MEDIA MARKETING FOR HOMEMAKERS IN ENTREPRENEURSHIP: OBSTACLES, SOLUTIONS, AND DEVELOPMENT

Mehfuza Sultana (Research Scholar)

Faculty of Management, Pacific Academy of Higher Education and Research University, Udaipur

***Abstract*–**Homemakers who want to start their businesses now have more options thanks to the growth of digital and social media marketing. This essay investigates how homemakers are empowered by digital platforms, looking at their marketing role, the difficulties they confront, and potential solutions. Access to internet marketplaces, economical marketing techniques, and consumer interaction are important subjects. Notwithstanding the opportunities, there are always obstacles including a lack of digital skills, fierce rivalry in the industry, and budgetary limitations. This study makes recommendations for ways to support homemakers in their entrepreneurial Undertaking, including financial aid, individualized marketing plans, and skill development programs. Gaining an understanding of these factors can assist close the gap between successful business Undertaking and stay-at-home moms.

Keywords— *Digital marketing, social media, homemakers, entrepreneurship, challenges, strategies*

DESIGN CRITERIA OF REINFORCED CONCRETE RENO BRIDGE: A CASE STUDY

Aman Saini[1], Naynish Pandey[2]

Department of Civil Engineering

Ambalika Institute of Management and Technology, Lucknow, India

Abstract– This paper discusses the recently completed Reno Bridge, located along the Polytechnic Engineering college ring road which connects connects Indiranagar to Kalyanpur . The bridge features a distinctive Hanging Arch design, necessitating specialized construction techniques. Initially, it was planned to span 1,711 meters, later extended to stretche of 2,611 meters to provide long-term traffic relief to one of Lucknow's busiest corridor. The spans of the bridge are supported by reinforced concrete vertical piers. The design of this bridge was driven by a set of diverse and sometimes conflicting constraints, in addition to the specific requirements set forth by the client. These included the need for structural efficiency, safety, durability, and technical feasibility. Furthermore, the project aimed to balance economic considerations with user comfort and overall satisfaction. Special attention was given to ensuring the bridge's long-term durability, with a design that facilitates routine preventive maintenance while minimizing the need for major, disruptive repairs. This consideration was essential for maintaining the bridge's performance and safety over its lifespan.

Keywords– *Reno Bridge; RCC; Hanging Arch*

INDIGENOUS SYSTEM OF MEDICINE, KEY FOR MEDICAL TOURISM

Dr. Narendra Kumar Gautam[1], Sheelendra kushwah[2], Prof.O.P Singh[3]

Abstract–The Indigenous system of medicine, comprising traditional healing practices such as Ayurveda, Traditional Chinese Medicine (TCM), Unani, Siddha, and others, has played a central role in the health and wellness of many civilizations for centuries. These systems are grounded in the belief that health and disease are influenced by a harmonious balance between the body, mind, and environment. As the world becomes more interconnected, these ancient healing practices have gained recognition not only for their holistic approach but also for their potential contribution to medical tourism.

Medical tourism, which involves people traveling abroad to seek medical care, has grown exponentially in recent years, driven by factors such as cost-effectiveness, advanced medical technology, and specialized treatments. Indigenous systems of medicine, with their unique methodologies, are increasingly attracting medical tourists seeking alternative and complementary therapies. Ayurveda and TCM, for instance, have become major drivers of medical tourism, offering treatments for a wide range of conditions, from stress and chronic pain to skin disorders and digestive problems.

The indigenous systems of medicine, with their emphasis on holistic, natural, and personalized care, are poised to play a significant role in the future of medical tourism. These systems offer distinct advantages, particularly in the areas of wellness, prevention, and alternative therapies. However, challenges such as standardization, integration with modern medicine, and ethical considerations must be addressed to ensure these practices are both safe and effective for global patients.

Keywords–*Tradinatonal healing system , Mindfulness- based Therapies , Alternative medicine , Healthcare medicine , Rehabilitative tourism , Indigenous Knowledge.*

HEALHUB: A POWERED SUPPORT SYSTEM FOR HARASSMENT AND ABUSEMENT RECOVERY FOR ALL GENDERS USING DESIGN THINKING FRAMEWORK AND FULL STACK AI

Janani S R[1], Adhithiya P S[2], Aishwarya R[3], Akshaya B S[4], Jyothisha S[5]

[1] *Assistant Professor, Computer Science and Engineering, SNS College of Technology, Coimbatore*

[2,3,4,5] *Student, Computer Science and Engineering, SNS College of Technology, Coimbatore*

Abstract–In recent years, the importance of comprehensive support systems for survivors of harassment and sexual violence has become increasingly clear. Traditional support options spanning medical, psychological, legal, and law enforcement services are often disjointed, requiring survivors to navigate multiple services independently. This fragmentation, coupled with a lack of anonymity and emotional challenges, frequently creates barriers that delay critical assistance and can lead to further traumatization. HealHub addresses these challenges by introducing an AIpowered, integrated mobile platform that combines essential services into a secure and cohesive environment. The platform leverages AI technology to provide real-time, personalized assistance tailored to each user's needs, significantly reducing emotional and logistical burdens. This centralized, data-driven approach enhances privacy and accessibility, creating a supportive ecosystem that bridges gaps in traditional systems. It also lays the foundation for long-term improvements in survivor care and recovery, promoting trauma-informed practices that empower users and streamline their journey toward healing.

Keywords– *AI-powered support system, harassment and abuse recovery, sentiment and emotion analysis, survivor-centered platform, trauma informed care.*

ENHANCING INFORMATION SECURITY WITH A LAYERED CRYPTOGRAPHIC ARCHITECTURE USING HYBRID TECHNIQUES

Mahesh Bahadur Singh[1], Vijay Kumar Shukla[2], Bhim Nath Tiwari[3], Ayodhya Prasad[4]

Computer Science and Engineering, Amabika Institute of Management and Technology Lucknow,India

maheshphd@student.iul.ac.in; vijay30shukla@gmail.com; bntiwari1989@gmail.com; apprasadayodhya@gmail.com

***Abstract*—** Effective operation and decision-making at all levels rely heavily on good information, with accurate and secure data playing a pivotal role. In the context of data communication across various networks, information security becomes a critical concern. Achieving data security involves implementing various techniques during the data handling process, with encryption standing out as a fundamental method. However, even encrypted data can remain vulnerable to hacking. To address this, the paper emphasizes the importance of employing multiple security techniques at different levels of information encryption, thereby enhancing the overall security. This paper analyzes and reviews various security techniques, concluding with the proposal of a layered approach to information security that aims to provide a robust defense against potential threats.

Keywords—*Information Security, Cryptography, Triple DES, RSA, BLOWFISH, TWOFISH*

AN ENSEMBLE MACHINE LEARNING MODEL FOR VEHICULAR ENGINE HEALTH PREDICTION

Nagothu Bala Prasanth Showri, Dr. R. Priscilla Joy, Cherukuri Srivardhan

Department of Computer Science and Engineering Karunya Institute Of Technology And Sciences, Coimbatore, India

nagothubala21@karunya.edu.com, priscillajoy@karunya.edu, cherukurisrivardhan@gmail.com

Abstract—This project is meant to work on an ensemble machine learning model for predicting the health of vehicular engines for which AdaBoost, XGBoost, and Random Forest are among the algorithms to be used. Since cars have become more enhanced, it is very important that the engine be operated and maintained in a very efficient, safe, and suitable way possible. The combination approach aims at strengthening the performance of each algorithm used in identification of tourism related sites in order to give accurate and reliable results. This model is developed based on a diverse range of different engine characteristics coupled with the operational environment and can thus predict when a failure may occur or when maintenance is required. Some of the methods, which could be used to construct an ensemble model include feature selection, hyperparameter tuning, in an effort to maximize predictive accuracies but minimize overfitting. The result of this project will be useful both for automotive manufacturers and for maintenance providers to be able to intervene on time and improve the mileage reliability of vehicles.

Keywords—*Ensemble Learning, Machine Learning, AdaBoost, XGBoost, Random Forest, Engine Health Prediction, Predictive Maintenance, Feature Selection*

MULTI-CLASS IMAGE CLASSIFICATION OF FOOD RECOGNITION AND NUTRITIONAL ANALYSIS USING DNN

Dr Vishal Yadav,Atishay Jain, Dr. Sanatan Ratna

Dept. of Artifical Intelligence Amity University, New Delhi, India

vishalyadav211102@gmail.com, atishay.jain10@s.amity.edu sratna@amity.edu

Abstract— In the field of dietary management and health monitoring, the automation of food recognition and nutritional analysis holds considerable promise for enhancing user accuracy and experience. This study presents an innovative approach to multi-class image classification for identifying food items and performing nutritional analysis using Deep Neural Networks (DNNs). The proposed model utilizes advanced Convolutional Neural Networks (CNNs) to categorize a wide variety of food items with high precision. By leveraging extensive, publicly available datasets such as Food-101, UEC Food 256 and iFood-2018, the model is trained to recognize and classify diverse food images effectively. The methodology includes advanced data preprocessing methods that enhance the resilience of the model, such as image scaling, normalisation, and augmentation. With the use of pre trained networks such as ResNet and VGG, the DNN architecture is optimised to improve performance in particular for food categorisation applications. A thorough nutritional database that offers precise nutritional information based on the categorised food products is also included into the system.

Keywords—*component, formatting, style, styling, insert (key words)*

ENHANCING CATARACT DETECTION IN HEALTHCARE USING ADVANCED CONVOLUTIONAL NEURAL NETWORKS WITH AUTOENCODER INTEGRATION

Dr. Kunal Gupta, Dr. Syed Qamar Abbas

Department of Computer Science & Engineering Ambalika Institute of Management & Technology, Lucknow, India

guptas.kunal@gmail.com , qrat_abbas@yahoo.com

Abstract—The objective of this study is to improve the precision of identifying cataracts in healthcare environments by integrating autoencoder technology with sophisticated convolutional neural networks (CNNs). Hazing, the clouding of the lens, primarily causes cataracts, a prevalent age-related visual impairment. Common symptoms of this ailment may include photophobia, chromatic aberrations, and visual impairment. Conventional approaches to diagnosing cataracts rely on human graders, who have the potential to overlook tiny alterations in the optic disc that indicate the onset of the disease. Early detection of cataracts is essential in order to prevent vision loss and blindness. Research has shown that deep learning models, particularly those that integrate autoencoders with CNNs, are capable of identifying subtle characteristics in medical images. The objective of this study is to construct a sophisticated deep learning model capable of accurately forecasting the incidence of cataracts. We will train the algorithm using a collection of cataract fundus images that meet stringent criteria from thorough eye examinations. The suggested CNN design utilizes autoencoder pre-training to maintain the connections between picture patches, enhancing the model's capability to identify small alterations induced by cataracts. Convolutional neural networks (CNNs) have the potential to surpass and provide a more economical alternative to traditional diagnostic methods for picture categorization. Medical personnel may enhance the protection of their patients' eyesight and overall health by using a comprehensive and rigorous strategy for the early and precise detection of cataracts. The objective of this project is to improve healthcare results by using artificial intelligence and deep learning technology.

Keywords— *Cataract detection, Fundus images, Convolution Neural Network, Autoencoder, Retinal diseases*

INTELLIGENT WASTE MANAGEMENT: A SMART INTEGRATION OF IOT, MACHINE LEARNING, AND CLOUD COMPUTING FOR SUSTAINABLE URBAN SOLUTIONS

Vijay Kumar Shukla[1], Mahesh Bahadur Singh[2], Bhim Nath Tiwari[3], Ayodhya Prasad[4]

Computer Science and Engineering Amabika Institute of Management and Technology Lucknow,India

vijay30shukla@gmail.com , bntiwari1989@gmail.com, maheshphd@student.iul.ac.in , apprasadayodhya@gmail.com

***Abstract*—** This paper proposes an intelligent waste management system integrating IoT sensors, machine learning algorithms, and cloud computing to optimize waste collection, segregation, and recycling. The system features automated smart bins equipped with proximity sensors, weight sensors, and fill-level sensors to monitor waste in real time . Machine learning models analyze and classify waste into categories such as plastic, metal, paper, glass, and hazardous materials to enhance recycling efficiency . Data collected from the bins is processed using Azure cloud services, where Logic Apps generate alerts, optimizing collection routes and minimizing overflow incidents . Power BI dashboards provide insights into waste patterns, supporting data-driven decision-making for sustainable urban development. Simulations and performance evaluations demonstrate enhanced efficiency, reduced operational costs, and increased recycling rates . The proposed system contributes to building smart, environmentally friendly cities by integrating cutting-edge technologies in waste management.

***Keywords*—** *IoT, Machine Learning, Cloud Computing, Smart Waste Management, Sustainable Solutions*

DEEP LEARNING IN HYDROLOGY AND WATER RESOURCES DETECTION FOR SOIL TEST: REVIEW

Dr. Vijay Kumar Singh[1], Dr. Shamsul Haque[2], Dr. Saiful Haque[3]

[1]*Associate Professor Dept of CSE Ambalika Institute of Technology Lucknow*

[2]*Assistant Professor, Department of CSE ITM GIDA , U.P. India*

[3]*Assistant Professor, Department of Business Management, Moje College of Engg. and Management Pune . India*

Abstract–The remarkable findings, referred to as Physics-Guided Deep Learning (PGDL), are elucidated in this discourse. The discussion also encompasses time series data. Deep Learning (DL) is contributing substantial innovations to the field of hydrology; however, the amalgamation of physics-informed models with data-centric approaches has been particularly fruitful in recent years. The evolution of various contemporary architectures within the DL paradigm, such as the Attention mechanism and Transformer Neural Network, demonstrates enhanced proficiency in managing temporal dependencies within sequential time resource applications. Initially, we will examine the foundational principles of DL, followed by an exploration of cutting-edge DL architectures, including Long-Short-Term Memory (LSTM), Convolution Neural Networks (CNN), Generative Adversarial Networks (GAN), and Encoder-Decoder frameworks, which have garnered significant interest in recent scholarly discourse. In recent years, methods pertaining to Deep Learning (DL) have garnered substantial scholarly interest within the domains of hydrology and water resources.

We highlighted that PGDL possesses the potential to augment the physical coherence and resilience of hydrologic predictions. This manuscript further explores the notion of Explainable Artificial Intelligence (XAI) alongside a collection of methodologies aimed at developing interpretable models, thereby facilitating user comprehension and fostering appropriate trust in the outputs generated by machine learning algorithms. The implementation of DL across various sectors of hydrology and water resources is elaborated upon, encompassing applications such as drought and flood forecasting, remote sensing applications, water quality assessments, inversion challenges in subsurface flow, groundwater level forecasting, and the downscaling of hydro-climatic variables. ***Keywords***–*Long-Short-Term-Memory, Physics-Guided Deep Learning, machine learning algorithms.*

WEB 3 ENABLED MENTAL HEALTH CHATBOT

Anviksha Pandey[1], Prashant Johri[2], Mohd.Maaz Khan[3]

Galgotias University Galgotias University Gautam Buddha Nagar, India

anvikshaapandey12@gmail.com, johri.prashant@gmail.com , maaz2584@gmail.com

Abstract–This paper explores the development of a Web 3-enabled mental health chatbot, aimed at addressing the significant gaps in existing mental health solutions for the Indian demographic. The research identifies the cultural, emotional, and privacy-related challenges faced by Indian users when seeking mental health support. Current mental health platforms fail to provide culturally relevant solutions, lack emotional intelligence specific to Indian values and social structures, and often do not ensure adequate privacy. *It* aims to bridge these gaps by utilizing blockchain technology for decentralized authentication and enhanced privacy, ensuring user anonymity and data security. The chatbot is powered by machine learning models, including BERT, and is designed to recognize and respond to emotional cues in Hindi and other regional languages, enabling more personalized and empathetic interactions. Additionally, the system incorporates features like games for relaxation and family photo recommendations to support emotional well-being. This research highlights the importance of integrating Web 3 technology and cultural context in mental health platforms to create a more accessible, private, and user-friendly mental health support system. The paper discusses the need for expanding mental health resources, optimizing AI models, and ensuring privacy in a manner that aligns with Indian societal values.

Keywords– *Web 3, mental health, chatbot, Indian demographic, privacy, artificial intelligence*

STUDY OF EXTRACTION OF LIGNIN FIBRE FROM SUGARCANE BAGASSE USING ALKALINE TREATMENT

Minakshi Choukiker[1]*, Vivek Kumar[2]

M. Tech (Plastic Engineering)

[1,2]*Central Institute of Petrochemical Engineering &Technology Lucknow, India*

minakshichoukiker4@gmail.com

Abstract–The study explores the extraction of lignin fibres from sugarcane bagasse using alkaline treatment. The process involves pre-treating the bagasse and subjecting it to an alkaline solution. The process disrupts lignocellulosic bonds, separating lignin from cellulose and hemicellulose. Comparative studies of various methods, including acidic, enzymatic, and solvent-based approaches, demonstrate that the alkaline method offers superior lignin yield, cost-effectiveness, and structural preservation. Its scalability and reduced impact on cellulose make it a preferred choice for industrial and research applications. The lignin Fibers are then purified, dried, and characterized using techniques like FTIR, TGA, and SEM. This method is sustainable, contributes to bio-based materials, and reduces agricultural waste.

Keywords– *Lignin, Sugarcane Bagasse, Alkaline Treatment, Bio-based Materials, Waste.*

MORPHOLOGICAL ANALYSIS OF ALKALI-TREATED CORN HUSK FIBER-REINFORCED PBAT COMPOSITES USING SEM

[1]Sonali Pundir*, [2]Sonalee Das,

M.Tech (Plastic Engineering)

[1,2]*Central Institute of Petrochemical Engineering and Technology, Lucknow, (India)*

sonalit160@gmail.com

Abstract–This study investigates the morphological characteristics of poly(butylene adipate-co-terephthalate) (PBAT) composites reinforced with alkali-treated corn husk fibers using Scanning Electron Microscopy (SEM). The primary focus is to assess fiber-matrix interfacial adhesion, dispersion, and fracture mechanisms to understand the effect of alkali treatment on composite performance. SEM analysis reveals that alkali treatment effectively removes surface impurities, enhances fiber roughness, and improves adhesion with the PBAT matrix, leading to reduced void formation and better load transfer. The treated fibers exhibit improved compatibility, contributing to enhanced mechanical properties such as tensile strength and impact resistance. Additionally, the fracture surface analysis indicates a more uniform stress distribution, reducing fiber pullout and increasing interfacial bonding. These findings demonstrate the potential of alkali-treated corn husk fibers in optimizing biodegradable PBAT composites for sustainable applications in packaging, agriculture, and automotive industries.

Keywords–*PBAT composites, corn husk fiber, alkali treatment, morphological analysis, SEM, fiber-matrix adhesion, biodegradable materials, interfacial bonding.*

HYBRID INTRUSION DETECTION SYSTEM FOR REAL-TIME ENCRYPTED NETWORK TRAFFIC CLASSIFICATION IN CLOUD ENVIRONMENTS

Jitendra Kurmi[1], Krishna Nand Mishra[2], Pawan Kumar[3]

[1,2]*Ambalika Institute of Mangement & Technology* Lucknow, India

[3]*Dr. Shakuntala Mishra National Rehabilitation University Lucknow, India*

jitendrakurmi458@gmail.com, knmishra24@gmail.com,

pkagnihotri_tech@dsmnru.ac.in

Abstract— In modern cloud environments, the ability to classify encrypted network traffic in real time is fundamental to ensuring robust cybersecurity. This paper presents a novel hybrid intrusion detection system (HIDS) that integrates signature-based and anomaly-based detection methodologies to enhance the accuracy and speed of encrypted traffic classification. By leveraging advanced feature extraction methods and machine learning algorithms within an optimized cloud architecture, our system achieves superior detection accuracy while maintaining minimal processing delays. Through comprehensive experimental evaluations—using benchmarks such as accuracy, precision, recall, F1- score, and processing time—our results demonstrate that the proposed approach not only outperforms traditional methodologies but also scales effectively in diverse cloud environments. The paper details system architecture, implementation strategies, and evaluation metrics that support our findings and provides future research directions aimed at further optimization of hybrid detection systems.

Keywords—*Deep Learning, Encrypted Traffic, Intrusion Detection, Cloud Environment*

A CUTTING-EDGE DEEP LEARNING METHOD FOR ENHANCING IOT SECURITY

Krishna Nand Mishra[1], Jitendra Kurmi[2], Alok Mishra[3], Ram Bhushan[4]

Department of Computer Science and Engineering Ambalika Institute of Management and Technology Lucknow, India

knmishra24@gmail.com , jitendrakurmi458@gmail.com , et.alokmishra17@gmail.com , bhushan.ram@gmail.com

Abstract—The explosive growth of Internet of Things (IoT) devices, particularly in smart home environments, has spurred both innovation and vulnerability. This paper proposes a novel deep learning architecture for real-time threat detection designed specifically to counteract Distributed Denial of Service (DDoS) attacks, data breaches, and authentication vulnerabilities in smart home IoT devices. By combining non-linear neural network models with cutting-edge simulation data and real-world testing, our approach offers a practical and scientifically rigorous method that meets current IoT security standards and privacy regulations. Detailed mathematical formulations, advanced optimization techniques, and comprehensive case studies from the past five years substantiate the effectiveness of our method. Experimental evaluations indicate significant improvements in detection accuracy, lower false positive rates, and minimized response times compared to current state-of-the-art solutions.

Keywords— *IoT security, deep learning, smart home devices, real-time threat detection, DDoS, data breaches, authentication vulnerabilities*

AI BASED FRUIT QUALITY DETECTION USING IMAGE ANALYSIS

Shanmugapriya.K, Naveen Kumar P, Pavan S, Rohan Sunil N S

Department of Computer Science and Engineering, Nandha Engineering College Erode, India

shanmugapriya.k@nandhaengg.org, neevan20012211@gmail.com, pavankcs7@gmail.com, rohansunill44@gmail.com

***Abstract*–**The growing need for high-quality fruits in international markets has encouraged the creation of new methods for quality evaluation. Traditional methods of testing fruit quality are time-consuming, labor-intensive and prone to human error. This paper proposes an AI-based fruit quality inspection system based on image analysis methods for automating the inspection process. AI systems use deep lorithms in the form of folding networks (CNNS) to analyze fruit images, and to determine class membership of quality parameters including color, texture, format and defect occurrence I'll use it. By modeling numerous notable fruit photographs, AI systems can also effectively recognize the shape of fruit errors such as discoloration, bruising, and deformation with considerable freshness and maturity. Additionally, the system can estimate the quality of a typical fruit based on visual characteristics related to consumer requirements. The introduced method provides non-invasive and real-time testing. This leads to high efficiency and consistency, while minimizing human error. This method based on artificial intelligence provides effective solutions for automatic quality checking of fruit cultivation, sorting and packaging, leading to more efficient supply chain management and increased customer satisfaction.

HEALHUB: A POWERED SUPPORT SYSTEM FOR HARASSMENT AND ABUSEMENT RECOVERY FOR ALL GENDERS USING DESIGN THINKING FRAMEWORK AND FULL STACK AI

Janani S R 1, Adhithiya P S 2, Aishwarya R 3, Akshaya B S 4, Jyothisha S 5

1 Assistant Professor, Computer Science and Engineering, SNS College Of Technology, Coimbatore, India

2,3,4,5 Student, Computer Science and Engineering, SNS College Of Technology, Coimbatore, India

Abstract– In recent years, the importance of comprehensive support systems for survivors of harassment and sexual violence has become increasingly clear. Traditional support options spanning medical, psychological, legal, and law enforcement services are often disjointed, requiring survivors to navigate multiple services independently. This fragmentation, coupled with a lack of anonymity and emotional challenges, frequently creates barriers that delay critical assistance and can lead to further traumatization. HealHub addresses these challenges by introducing an AIpowered, integrated mobile platform that combines essential services into a secure and cohesive environment. The platform leverages AI technology to provide real-time, personalized assistance tailored to each user's needs, significantly reducing emotional and logistical burdens. This centralized, data-driven approach enhances privacy and accessibility, creating a supportive ecosystem that bridges gaps in traditional systems. It also lays the foundation for long-term improvements in survivor care and recovery, promoting trauma-informed practices that empower users and streamline their journey toward healing.

Keywords–*AI-powered support system, harassment and abuse recovery, sentiment and emotion analysis, survivor-centered platform, traumainformed care.*

IMPLEMENTATION OF PAWSITIVE-X: IOT AND ML PET CONSULTATION SYSTEM

Ronit Munde, Vaishnavi Chavan, Shridatta Bhasme, Saurabh Sable, Prof. Neerajkumar Sathawane
Computer Science and Business Systems JSPM's RSCOE, Tathawade Pune, India
ronitmunde7@gmail.com,vaishnavichavan1673@gmail.com,shridatta.bhasme100@gmail.com,
saurabhsable62@gmail.com, niraj51413@rediffmail.com

Abstract—With the aim to provide real-time tracking, health monitoring, and remote consultations, this paper describes the implementation of a thorough pet health monitoring system that integrates Internet of Things (IoT) technology and Machine Learning (ML).An Internet of Things (IoT)- enabled smart collar belt with sensors is part of the system, which continuously monitors important health factors like body temperature, heart rate, and activity level. Pet owners can schedule remote veterinary appointments, receive alarms, and obtain real-time insights by using a user-friendly mobile application that receives the data.

Index Terms—*Internet of Things (IoT), Temperature, Heart rate, GPS, Pet tracking, Machine learning, Accelerometer, LED, Random Forest, Decision Trees, Artificial Neural Networks (ANNs), Support Vector Machine (SVM).*

EMPOWERING DAIRY FARMERS: GENERATIVE AI AND DESIGN THINKING FOR LUMPY SKIN DISEASE PREDICTION

Dr. S R Janani, T Subash, S Sanuj, P Vasanth, S K Shakthi Shree

Department Of Computer Science and Engineering SNS College Of Technology(Autonomous)

Coimbatore, Tamil Nadu, India

jananiselvaraj.mit@gmail.com, subasshh77@gmail.com , sanujsreenu10@gmail.com , vasanthvk1724@gmail.com skshakthi2k3@gmail.com

Abstract— Lumpy Skin Disease (LSD) is a highly contagious viral disease in cattle caused by the Capripox virus, primarily spread through biting insects like flies and mosquitoes. It manifests as skin nodules, fever, and general malaise, significantly impacting livestock health and productivity. The disease leads to reduced milk yields, lower meat quality, reproductive issues, and, in severe cases, death, resulting in substantial economic losses for cattle-rearing regions. Controlling LSD is challenging due to its rapid spread and reliance on traditional diagnostic methods, which often involve clinical observation and symptomatic assessment. These methods are prone to errors, as LSD symptoms overlap with other cattle diseases, delaying timely interventions. This study proposes an AI-enhanced diagnostic system that leverages machine learning and image classification to overcome these challenges. Using a multi-modal dataset combining clinical features (e.g., fever, lesion size) and images of affected skin areas, the system automates and standardizes diagnosis, ensuring greater accuracy and efficiency. Early and precise detection reduces misdiagnoses, curbs the disease's spread, and enhances intervention capabilities. This innovative approach holds significant potential to improve cattle health, mitigate economic losses, and support the sustainability of the livestock industry, offering a transformative solution for managing LSD and similar livestock diseases.

Keywords— *Capripox virus, Cattle health, Skin nodules, Fever, Economic losses, Livestock productivity, AI-enhanced diagnostic system, Clinical features, Early detection, Disease management*

CRIMINAL IDENTIFICATION SYSTEM USING FISHERFACES AND EIGENFACES WITH UIPATH AUTOMATION

N.Nagalakshmi[1], Sibiraj M[2], Aravinth S[3], Sibichakravarthi A[4]

Department of AIDS Karpagam Academy of Higher Education Coimbatore, India

nagalakshmi.nagarajan@kahedu.edu.in cis.project085253@gmail.com ,

aravinthaids08@gmail.com , sibi46192@gmail.com

Abstract— Facial recognition technology has become a potent instrument for automating identifying activities across a range of industries, including law enforcement and security. As the demand for effective criminal identification continues to rise, sophisticated machine learning algorithms are becoming essential for improving the precision and dependability of these systems. A Criminal Identification System that uses face recognition technology to identify people in an existing criminal database is proposed in this project. Even under difficult situations, such changing lighting and positions, the system's use of the Fisherfaces and Eigenfaces algorithms for feature extraction and dimensionality reduction guarantees effective and precise matching. Known as Face DB, the criminal database contains annotated facial data that is compared to the user-provided input image. The strong architecture of the system includes a Python-based backend for implementing facial recognition algorithms and an intuitive frontend constructed using HTML, CSS, and JavaScript. The database enables the safe storing and retrieval of facial records, while UIPath streamlines the workflow. Law enforcement may swiftly confirm people's identities with the help of the suggested method, which offers a quicker and more dependable substitute for manual identification procedures. Problems like scalability and differences in image quality, however, could affect how well the system works. To overcome these constraints in the future, deep learning-based techniques and increased database scalability may be implemented. The potential of combining automation and machine learning to update criminal identification is demonstrated by this study, opening the door for more sophisticated and approachable public safety solutions.

Keywords—*component, formatting, style, styling, insert (key words)*

CRIMINAL DETECTION SYSTEM USING CNN FOR PHOTO MATCHING AND VIDEO SURVEILLANCE

N.Nagalakshmi[1], Sibiraj M[2], Aravinth S[3], Sibichakravarthi A[4]

Department of AIDS Karpagam Academy of Higher Education Coimbatore, India

nagalakshmi.nagarajan@kahedu.edu.in cis.project085253@gmail.com ,

aravinthaids08@gmail.com , sibi46192@gmail.com

Abstract— Criminal detection systems (CDS) are essential to contemporary security frameworks, utilizing new technology to enhance public safety and assist law enforcement. Deep learning, especially Convolutional Neural Networks (CNN), has demonstrated efficacy in improving the precision of these systems, including functionalities such as image matching and real-time video monitoring. The suggested Criminal Detection System utilizes modern technology to effectively identify persons inside a pre-existing criminal database. It enables users to submit diverse data formats, like a name, photograph, or video, which triggers an extensive verification procedure. The input data is subjected to preprocessing to guarantee homogeneity, particularly for photos and videos, employing techniques such as scaling and normalization. A CNN collects distinctive facial traits from photo and video inputs, producing a numerical vector representation of the individual's face. The vector is subsequently matched to stored face feature vectors in the criminal database utilizing rigorous similarity measures. Upon receiving a name, the system executes direct string matching against the database records. Upon successful identification, the system provides comprehensive information about the individual, verifying their status in the criminal database. This model functions as an effective instrument for law enforcement agencies, facilitating rapid and precise detection of possible offenders. By optimizing the identification process, the system strengthens security and public safety measures, significantly aiding in crime prevention and investigation, hence fostering a safer community environment.

Keywords— *Convolutional Neural Networks (CNN), Criminal Detection System (CDS)*

A REVIEW BASED ON AI DRONE FOR HYDROPOWERPLANT

Dr. Mohammad Shahid[1], Shashwat Mishra[2], Ashish Yadav[3], Raj Sharma[4], Surbhi Sharma[5]

Dept. of Electrical Engineering Galgotias College of Engineering and Technology

Greater Noida, U.P., India

mohd.shahid@galgotiacollege.edu, rshashwat565@gmail.com, nrjash7@gmail.com ,

rajsharma62446244@gmail.com ,surbhi0774sharma@gmail.com

Abstract— Hydropower plants are very important for renewable energy, but they have their own set of issues that include site assessments, environmental evaluations, structural inspections, and constant maintenance. The scenario has changed for hydropower operations in these fields through AI and UAV technology. Drones equipped with advanced LiDAR sensors and high-resolution cameras permit the accurate mapping of terrain in detail and constantly monitor operations. AI is able to enhance the check process by identifying small cracks and signs of wear that else would require manual checks in hazardous areas. A predictive maintenance service will utilize AI to analyze drone data and discover potential equipment failures before they happen, allowing for quicker intervention as well as it helps enlarge the life of important parts of hydropower plants, which is important key to keep up the hydropower plants running for the longer period of time smoothly and sustainably. These innovations show how the AI-powered drones are making hydropower operations more efficient, safer, and sustainable through huge cost savings and better scalability. It allows earlier identification of equipment failures through the chances of fixing things before they may lead to expensive downtime or damage. This paper looks at the latest advancements in AI-driven drone technology for hydropower plant systems.

Keywords— *UAVs, AI DRIVEN, LiDAR SENSORS, RENEWABLE ENERGY*

DEVELOPMENT OF A MULTI-DISEASE PREDICTION SYSTEM WITH MACHINE LEARNING TECHNIQUES

Miss. Kavya Singh

Ambalika Institute of Management and Technology

Singhkavya014@gmail.com

***Abstract*–**With the rising global health challenges, early disease detection has become a critical aspect of healthcare. Machine learning (ML) has shown substantial promise in automating and enhancing the accuracy of disease diagnosis. However, most current systems focus on the prediction of individual diseases, often neglecting the interconnected nature of health conditions. This paper proposes the development of a multi-disease prediction system (MDPS) using various machine learning techniques to predict multiple diseases simultaneously. The system utilizespatient data such as medical history, symptoms, demographic information, and laboratory test results, processed through models such as Decision Trees, Random Forests, Support Vector Machines (SVM), and Neural Networks. The model is evaluated on a set of performance metrics including accuracy, precision, recall, and F1-score. Experimental results show that the multi-disease prediction system provides an effective solution for early diagnosis and has the potential to reduce healthcare costs while improving patient outcomes.

Keywords*–Machine Learning, Multi-Disease Prediction, Decision Trees, Random Forests, Support Vector Machines, Neural Networks, Disease Classification, Healthcare, Disease Prediction Models, Early Diagnosis, Patient Data, Feature Selection, Medical Data Analysis, Machine Learning Algorithms, Ensemble Learning, Hybrid Models, Predictive Analytics, Clinical Decision Support, Data Pre-processing, Model Evaluation, Accuracy, Precision, Recall, F1-Score, Health Informatics, Artificial Intelligence, Computational Medicine, Health Systems Integration*

A STUDY ON REUSABILITY TESTING IN SOFTWARE DEVELOPMENT

Dr. Devendra Kumar

Associate Professor, Department of Computer Science & Engineering, Ambalika Institute of Management & Technology, Lucknow

devendrakumar17@gmail.com

Abstract– The software testing phase is often regarded as the most challenging and time-consuming stage of development. Testing involves executing a system to identify errors, gaps, or missing requirements while ensuring that it meets the specified criteria. Reuse refers to the practice of using an item again after its initial use. This can be in the form of conventional reuse, where the item serves the same function, or new-life reuse, where it is repurposed for a different function. Implementing reuse helps minimize development time and enhances efficiency. The simplest form of reuse includes subroutines or functions. By integrating reuse into the testing phase, overall software development costs can be significantly reduced.

Our paper represents the analysis and study of various research papers which are based on reuse and software testing.

Keywords–*Software Testing, Reusability, Software Development Life Cycle (SDLC), Test Reuse Database, Software Quality Assurance, Cost Reduction in Testing*.

BOOKS IN THE AGE OF AI: PRESERVING LITERARY HERITAGE IN A DIGITAL WORLD A REVIEW

Mrs. Swati Gaur[1], Mr. Vipin Rawat[2], Mr. Alok Mishra[3]

Assistant Professor, Computer Science & Engineering Ambalika Institute of Management Technology

Abstract–In an era marked by rapid advancements in artificial intelligence (AI) and digital technology, the traditional forms of literary expression face both unprecedented challenges and opportunities. This review paper explores the implications of AI on the preservation and dissemination of literary heritage, examining how digital technologies can enhance access while also posing risks to authenticity and cultural values. Through an analysis of current practices, ethical considerations, and future possibilities, this paper aims to outline a framework for harmonious coexistence between AI innovations and the preservation of our literary legacy.

Keywords–*AI, digital technology, literary heritage, preservation, accessibility, ethical considerations.*

SYMPTOTECH: INTEGRATIVE AI SYSTEM FOR SYMPTOM ANALYSIS AND CUSTOMIZED HEALTH SOLUTIONS

Utkarsha Chore[1], Ehteshamul Haque[2]

1Department of Computing Technology,SRM Institute of Science and Technology,KTR,Chennai,India

up3406@srmist.edu.in, eh8302@srmist.edu.in

Abstract– SymptoTech is a comprehensive AI-based healthcare solution designed to offer accurate, personalized diagnostic insights. Specifically developed to address various health conditions with an emphasis on dermatology, SymptoTech integrates image analysis with symptom-based diagnostics to enhance healthcare accessibility. The system employs Convolutional Neural Networks (CNNs) for identifying skin conditions from user-provided images while incorporating Natural Language Processing (NLP) for additional symptom analysis, leading to improved diagnostic precision. Furthermore, SymptoTech features a dietary recommendation engine that provides users with health-specific nutritional guidance. By seamlessly combining data acquisition, AI-driven diagnostics, and personalized health insights, SymptoTech aims to bridge the gap between technology and efficient medical decision-making, ensuring a more accessible and precise healthcare experience.

OPTIMIZING BRAIN TUMOUR CLASSIFICATION MODELS THROUGH ADVANCED IMAGE SEGMENTATION TECHNIQUES

Anshul Khemka[1], Krishan Bansal[2]
Lovely Professional University,Phagwara, Punjab
akhemka.74@gmail.com, krishan.16348@lpu.co.in

Abstract– By defining the problem in terms of time and accuracy, there will be a positive impact on the patient, and this medical imaging problem is still very much open in brain tumor classification. This research has an advanced image segmentation algorithm to present an optimized framework for the classification of brain tumors. The method brings depth-learning segmentation models like U-Net and Fully Convolutional Networks (FCNs) into more classical techniques like thresholding and region growing algorithms to increase the segmentation precision. As a preparation for the dataset of MRI scans that have T1, T2, and FLAIR images, they are preprocessed and enhanced toward better robustness with changing imaging conditions. The segmented tumor regions will be analyzed with feature extraction considering the texture, shape, and intensity features to capture tumor eterogeneity. Convolutional neural networks (CNN) and support vector machines are well-known machine learning algorithms employed in classification and have potential applications that could be defined in a wellstructured manner for various types of tumors. Examples of some tumor types include meningiomas, gliomas, and metastases. To optimize the performance of a model, the techniques for making ensembles and the tuning of hyper-parameters are utilized. The proposed methods have shown positive results through various evaluation metrics, such as accuracy, precision.
It is expected that this will give rise to a substantial improvement in both the accuracy
of segmentation and classification of tumor types, with automated brain tumor diagnosis and increased efficiency in clinical decision-makingpotential.

Keywords– *Image segmentation, Brain Tumour*

FROM PLANETS TO PROFITS: THE ROLE OF AI AND MACHINE LEARNING IN FINANCIAL ASTROLOGY

Dr.Razia Sultan[1], Mr.Ayan Mehdi Alam[2], Mr.Mehdi Ali[3]

[1]*Ambalika Institute of Management & Technology, Lucknow, U.P, India*

[2]*Department of Computer Science, Rutgers University, New Jersey, USA*

[3]*Department of Business Management, Jai Hind College, Mumbai Maharashtra India*

roohiali110@gmail.com, ayaanalam345@gmail.com, mehdiali9820@gmail.com

Abstract: Astrology has been a longstanding system for understanding human behavior and predicting life events based on celestial movements. With advancements in technology, artificial intelligence (AI) and machine learning (ML) provide opportunities to analyze astrological predictions more systematically. This paper explores how AI and ML can be applied to astrology, leveraging big data and predictive modeling to examine possible correlations between planetary movements and human life. The research also discusses scientific skepticism, ethical concerns, and the potential for AI to validate or challenge traditional astrological beliefs.

Keywords–*Financial Astrology,AI,ML,predictive modeling*

SOCIAL MEDIA INTEGRATION IN EVENT MANAGEMENT SYSTEMS: A REVIEW

Pallavi[1], Kshamta devi[2], Jyoti3, Prakriti Mani Tripathi[4]

Computer Science & Engineering Ambalika Institute of management of technology Lucknow

Kpallavi0147gmail.com ; nkshamta8127@gmail.com jyotiyadavofficial4@gmil.com

Abstract–Abstract Purpose –This study relied on the Theory of Planned Behaviour (TPB) to assess factors that affected event fans' decisions regarding their intention to attend events by using social network websites. The purpose of this study is to examine the impact of event fans'attitudes, subjective norms and perceived behavioural control on their intentions to go to events based on social networking sites (SNSs) marketing. In addition, the researchers examined the impact of perceived enjoyment on event fans' attitudes towards events pages on SNS. Design/methodology/approach–This study used a quantitative research method and used an online survey distributed on Qualtrics and based on the TPB. Populations in the study were followers of events pages on Facebook, Twitter and Instagram. The sample was convenience. Findings –By using the partial least square-structural equation modelling (PLS-SEM), the study found that all the research hypothesis were supported except (H2). While event fans' attitudes had not a statistically significant impact on their behavioural intentions towards using social media to go to events (H2), perceived enjoyment had a statistically significant impact on event fans' attitudes towards events pages on SNS (H1). According to the research findings, event fans were influenced by their subjective norms (H3) and perceived behavioural control (H4). These factors significantly influenced event fans' behavioural intention, which led to their actual behaviour (H5). Originality/value –The value of this study is derived from its aim to highlight the importance of social media as an effective marketing tool for events. Moreover, this study sought to contribute to the literature on social media by exploring how social media affected event attendees' behaviour and attitudes and by gauging the impact of social media on the event industry.

Keywords–-*PLS, Social media, Social media marketing, Social media engagement, Event marketing, The theory of planned behaviour.*

ZERODHA SHARE MARKET – GLOBAL: A REVIEW

Anamika Kumari[1],Asheesh Kumar[2], Sunand Kumar Gupta[3], Aman Pratap Nishad[4]
Information Technology Ambalika Institute of Management and Technology, Lucknow
anamikakum0206@gmail.com ashishrajpoot004@gmail.com sunandgupta9@gmail.com
Amanpratapnishad2626@gmail.com

Abstract– Zerodha, a leading discount brokerage firm in India, has revolutionized the Indian stock market by offering a technology-driven, low-cost trading platform. Founded in 2010, Zerodha has significantly lowered the barriers to entry for retail investors, democratizing access to stock trading. This project explores Zerodha's impact on the Indian stock market, focusing on its disruptive business model, technological innovations, and market accessibility. By analyzing Zerodha's discount brokerage structure, mobile-friendly platforms like Kite, and educational initiatives such as Varsity, the study highlights how the company has attracted a large number of retail investors, particularly millennials and first-time traders. The research further delves into Zerodha's market share, growth trajectory, and its contribution to increasing retail participation in the stock market. Additionally, it examines challenges faced by Zerodha, including market competition, customer service concerns, and regulatory hurdles. The findings suggest that Zerodha's approach has reshaped the Indian brokerage landscape, positioning it as a key player in India's financial ecosystem. This paper concludes by offering insights into Zerodha's future prospects and its role in the evolving stock trading environment in India.

THE IMPACT OF AI ON DATABASE

Surya Pratap Singh[1], Izhar Alam[2], Vaibhav Dubey[3], Utkarsh Yadav[4], Md Ahshad Alam[5]

Dept. Of Computer Science & Engineering Ambalika Institute Of Management & Technology Lucknow, India

suryapratapsinghkpvp@gmail.com , izharalam567y@gmail.com , vaibhavd18051999@gmail.com , pawanyadavbhadohi@gmail.com , suryapratapsinghkpvp@gmail.com

Abstract– AI has significantly transformed database management by making systems more dynamic and efficient. Traditional databases, which rely on static rules and SQL, have evolved with AI techniques like machine learning, predictive analytics, and natural language processing. AI enhances query optimization by learning from past queries to improve response times and makes data retrieval more accessible through natural language interactions. It also strengthens database security by proactively detecting threats using machine learning and predictive analytics.Automation is another key benefit, with AI handling routine tasks like indexing, backups, and performance tuning, reducing human error and freeing up database administrators. However, integrating AI introduces challenges such as increased system complexity, maintenance difficulty, and concerns over data privacy and security. There are also ethical issues, like potential bias in AI algorithms, which could lead to unfair outcomes.Looking ahead, AI is expected to bring even more automation, smarter optimizations, and better predictive capabilities, but balancing these advancements with technical, security, privacy, and ethical concerns will be crucial for the future of database management.

STUDY NOTION-ONLINE LEARNING PLATFORM: A REVIEW

Pratibha Chauhan[1], Sandip Kumar[2], Saurav Kumar Singh[3], Shashi Ranjan Singh[4]
Computer Science and Engineering Ambalika Institute of Management and Technology Lucknow
pratibhachauhan596@gmail.com sandipkumarranawat@gmail.com prathamjii36@gmail.com
sauravsinghsauray2000@gmail.com

Abstract–Study Notion is a digital collaborative learning platform aimed at enhancing student engagement and academic success. This research explores its usability, impact on learning outcomes, and effectiveness in facilitating collaboration. The study employs a mixed-methods approach, incorporating user surveys and case studies to evaluate its efficiency. Findings indicate that Study Notion improves accessibility, fosters interactive learning, and enhances knowledge retention. The research concludes that while Study Notion significantly benefits learners, further improvements in usability and integration are recommended for optimal adoption in educational settings. The rapid advancement of digital technologies has transformed the educational landscape, introducing innovative learning tools that promote engagement, collaboration, and efficiency. Study Notion is a collaborative learning platform designed to enhance the academic experience by integrating digital resource sharing, interactive study tools, and real-time collaboration among students and educators. This research aims to analyze the effectiveness of Study Notion in improving learning outcomes, accessibility, and knowledge retention. This study employs a mixed-methods approach, combining quantitative data from user surveys with qualitative insights from case studies. The research evaluates various aspects of Study Notion, including its user-friendly interface, collaborative tools, progress tracking features, and the overall impact on academic success. Findings indicate that the platform significantly enhances student engagement, fosters better communication between peers and instructors, and provides a structured environment for knowledge sharing. Despite these benefits, the research also highlights some challenges, such as initial user adaptation difficulties and potential technological limitations in certain educational settings. Addressing these concerns through improved user training, feature enhancements, and integration with existing learning management systems could further solidify Study Notion's role as a transformative educational tool.

BRIDGING TECHNOLOGY AND COMFORT: IOT-BASED HOME AUTOMATION FRAMEWORKS

Mr. Vishal Verma[1], Mr. Mehdi Ali[2], Mr. Komael Ali[3]

Department of Computer Application & Science, School of Management & Science, Lucknow,India

Department of Management Studies, Jai Hind College, Mumbai, Maharashtra, India

Department of Commerce Manipal Academy of Higher Education Manipal,Karnataka,India

drvishalv7@gmail.com, alimehdi9820@gmail.com, komaelali111@gmail.com

Abstract– This paper explores an IoT-driven home automation framework that enhances convenience, security, and energy efficiency. By integrating smart sensors, cloud computing, and AI- driven automation, the system enables seamless control and real-time monitoring of household functions. Key aspects include device selection, communication protocols, data processing, and security measures. The proposed approach optimizes resource utilization while improving user experience and system reliability.

Keywords– *IoT, Home Automation, Smart Devices, Cloud Computing, AI, Wireless Communication, Data Security, Energy Efficiency.*

CONSUMER PERCEPTIONS OF CHATBOTS IN CRM: CHALLENGES AND OPPORTUNITIES

Pooja Bajaj[1], Saumya Sodhi[2]

(Research Scholar, University of Lucknow)

(Student, Shri Guru Nanak Girls Degree College)

Abstract– The application of chatbots into customer relationship management (CRM) systems is transforming the way businesses communicate with consumers. However, consumer perception remains a critical factor influencing the effectiveness of chatbots in improving customer experiences. This study investigates the challenges and opportunities associated with consumer perception of role of chatbots in resolving cutomer's problems. Using the Technology Acceptance Model (TAM) a quatitative study is conducted using new constructs such as **Perceived Empathy**, **Trustworthiness**, and **Emotional Engagement .** The study is conducted in Lucknow. The findings reveal that while perceived ease of use and usefulness significantly drive chatbot acceptance, emotional engagement and trustworthiness play pivotal roles in shaping consumer satisfaction. The study also highlights challenges, including privacy concerns and limitations in handling complex queries, which hinder broader acceptance. These insights offer valuable Insights to businesses aiming to use chatbots for enhancing CRM.

Keywords– *CRM, ChatBots, Consumer Perception, AI , Consumer Satisfation*

ENHANCING STOCK MARKET FORECASTING WITH AI AND MACHINE LEARNING: A PYTHON

Atebar Haider[1], Vipin Rawat[2], Divya[3]

Ambalika Institute of Management and Technology, Lucknow, India

atebar.haider786@gmail.com ,vipinrawat6668@gmail.com , divyabharti1990@gmail.com

***Abstract*—** Artificial Intelligence (AI) and Machine Learning (ML) have transformed stock market forecasting by offering advanced tools to process large data and predict market trends. This paper provides an introduction to AI methods with emphasis on Python as the implementation platform of choice. Starting with AI basics, such as ML and Deep Learning (DL), we discuss different stock market forecasting methods. Classic statistical models like Linear Regression and AutoRegressive Integrated Moving Average (ARIMA) are compared with sophisticated ML algorithms like Random Forests (RF) and Support Vector Machines (SVM). DL methods, specifically Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks, are also analyzed for their effectiveness in extracting temporal dependencies. We also look at Generative Adversarial Networks (GANs) for their ability to reveal underlying patterns driving price movements. Python is emphasized as the go-to programming language because of its ease of use, large libraries, and flexibility. Central libraries like Pandas, NumPy, Scikit-learn, and TensorFlow are crucial in data manipulation, preprocessing, and model building. A systematic method of developing predictive models, including data gathering, preprocessing, feature engineering, model selection, training, evaluation, and prediction, is discussed. In spite of the progress, challenges like market volatility, quality of data, complexity of influencing factors, and overfitting risks remain. Finally, the synergy of AI and Python enables analysts and investors to gain deeper insights, making informed decisions in the face of financial market complexities.

Keywords*—Artificial Intelligence, Machine Learning, statistical models, Deep Learning, algorithms, programming language, stock market trends*

DETECTION AND SEVERITY CLASSIFICATION OF KNEE OSTEOARTHRITIS USING X-RAY IMAGES WITH CNN MODEL

Aman Waghmare[1], Mr. Amit Gudadhe[2], Samiksha Satpute[3]

Computer Science and Design Faculty of Engineering & Technology, Datta Meghe Institute of Higher Education & Research, Wardha, Maharashtra, India

waghmareaman8080@gmail.com, amitg.feat@dmimsu.edu.in , Samikshasatpute04@gmail.com

Abstract— A chronic condition mostly caused by age-related causes affecting the knee joints is knee osteoarthritis (OA). Medical professionals typically use X-ray pictures to make the crucial diagnosis. This method takes a lot of time even though it is precise. Deep learning (DL) models, which often use convolutional neural network (CNN) based architectures, have been made easier to use with X- ray images for the automated diagnosis of knee OA. Nonetheless, the results are less reliable due to the models' inability to be interpreted. In order to better understand the behavior of the model in classifying extremely complex knee OA cases, this work expands upon the state-of-the-art (SOTA) pre-trained DL models. It does this by employing a divide-and-conquer strategy, moving from a multi-class to a binary class for improved interpretability and explainability using explainable artificial intelligence (XAI). Kellgren-Lawrence (KL) graded X-ray images are used to evaluate five SOTA fine-tuned DL models. Gradient-weighted Class Activation Mapping (GradCAM) is used in this study to assess the interpretability of the results of both multi-class and binary-class classification approaches (using the multiple subsets derived from the original dataset to examine how the models perform with different data combinations). The GradCAM visualization of EfficientNetb7 shows that the model's effectiveness in identifying knee OA grows as the degree of variation across classes increases. In particular, it improves with 99.13% classification accuracy in differentiating between typical and severe cases. But for other situations, the model's effectiveness falls to 67%, suggesting that it is not as good as clinicians at classifying knee OA.

Keywords— *Deep learning, knee osteoarthritis, healthcare, diagnostics, categorization, and explainable artificial intelligence (XAI).*

BRIDGING THE GAP: ALIGNING SIMULATION AND REAL-WORLD PHYSICS FOR ENHANCED MODELING AND PREDICTION

Atul Sudhakar Singh

(Research Scholar) Faculty of Computer Science Pacific Academy of Higher Education and Research University, Udaipur

Abstract–Simulations play a crucial role in diverse fields, including robotics, engineering, climate science, and autonomous systems, offering valuable insights into real-world dynamics. However, a persistent challenge is the simulation-to-reality gap, where discrepancies between computational models and actual physical systems lead to inaccuracies. This paper explores recent advancements in bridging this gap using digital twins, physics-informed neural networks (PINNs), domain adaptation techniques, and hybrid models. These methodologies enhance the accuracy and reliability of simulations across multiple domains. Additionally, this study highlights key challenges and future research directions aimed at improving simulation fidelity and real-world applicability.

Keywords–*Simulation-to-Reality Gap, Physics-Informed Neural Networks (PINNs), Domain Adaptation, Hybrid Models, Autonomous Systems, Real-World Dynamics, Simulation Fidelity, Engineering Simulations, Physics-Based Learning.*

ARTIFICIAL INTELLIGENCE: A BOON OR A BANE
A CRITICAL ANALYSIS OF AI'S BENEFITS AND CHALLENGES

Akanksha[1], Ankita[2], Astha[3], Anubha[4]

Ambalika Institute of Management and Technology, Lucknow

Abstract **–**Artificial Intelligence (AI) has revolutionized various fields, from healthcare to finance, automation to entertainment. However, as AI advances, concerns regarding its ethical implications, job displacement, and potential risks have grown. This paper explores AI's positive and negative aspects, analyzing whether AI is a boon or a bane for humanity. It discusses AI's benefits in enhancing efficiency, decision-making, and innovation while addressing its challenges, including ethical dilemmas, unemployment, security threats, and potential loss of human control.

Keywords– *Artificial Intelligence, Automation, Ethics, Employment, Innovation, Security*

IMPACT OF SOCIAL COMMERCE ON CONSUMER BUYING BEHAVIOUR IN INDIA

Kadambari Rai[1], Deepshana Jaiswal[2], Zeenat Khan[3], Vaishnavi Dixit[4]

MBA 4th Sem. Ambalika Institute of Management and Technology, Lucknow

Abstract–The proliferation of social media has given rise to social commerce, transforming the Indian retail landscape. This study examines the impact of social commerce on consumer buying behaviour in India. A mixed-methods approach was employed, combining surveys and interviews with Indian consumers. The results indicate that social commerce significantly influences consumer purchasing decisions, with social media influencers, online communities, and trust playing crucial roles. The study reveals a shift towards online shopping, personalized experiences, and digital word- of-mouth. The findings have implications for businesses seeking to leverage social commerce in India, highlighting the need for tailored marketing strategies and authentic online engagement.

Keywords– *Social commerce, consumer buying behaviour, India, social media, online shopping.*

GREEN TECHNOLOGY AND ITS EFFECT ON THE MODERN WORLD

Siddhi raj , Sakshi jaiswal, Shubhangi gupta, Divyanshi pal

Abstract– Any technology that is designed to be environmentally friendly from the production line to the point of use is referred to as "green tech." Since people are using up natural resources more quickly than they can be regenerated, this ever changing technology seeks to be less harmful to them. Green technology's main objectives are to mitigate climate change, save the environment, lessen our reliance on non-renewable resources like fossil fuels, and repair environmental harm. The transportation, energy, and waste management sectors are among the few that are actively investing in this technology. Green technology has become one of the fastest-growing employment sectors over the years, and it is becoming increasingly clear that we must invest more in green solutions for the survival of mankind. Green technology is essential for lowering environmental risks and conserving natural resources, but it still has a long way to go before it can become the new normal. Even though new technologies for cutting emissions, such as wind power, better solar cells, and electric cars, are now available for use, as this paper discusses, we still need to address the problem of technology transfer because developing nations are responsible for the majority of global pollution, especially CO2 and other greenhouse gases, as a result of negligent environmental policies. The Industrial Revolution 4.0 (IR 4.0) and green technology (GT) are briefly discussed in this overview. The effects of climate change on the environment are already becoming apparent, and the shift is genuine. Due to the catastrophic social, economic, and environmental effects of the COVID-19 pandemic, people have been significantly impacted, as has the entire planet. The shift to sustainable, green lifestyles and practices is necessary to counterbalance this issue. For a sustainable future, we require Internet of Things (IoT) and green innovative technologies (GTI) to create eco- friendly, long-lasting, biodegradable, and green products. GTI includes all innovations that help create important goods, services, or procedures that improve the use of natural resources while reducing environmental damage, impact, and deterioration. Sensors are commonly employed in Internet of Things environmental monitoring applications to support ecological safety by monitoring soil or atmospheric conditions, water or air quality, and even the migrations and habitats of species. Together, the governments and industries have developed solutions such as the Green New Deal, carbon pricing, the use of bio-based products as bio-pesticides, biopharmaceuticals, greenbuilding materials, bio-based membrane filters for pollutant removal, bio-energy, and bio-fuels, which are crucial for the global economy's green recovery. In order to achieve the much-needed IR 4.0 for a more environmentally balanced environment and a sustainable future, as well as to steer toward the Sustainable Development Goals (SDGs) set by the UN, environmental biotechnology, green chemical engineering, more bio-based materials to separate pollutants, and product engineering of advanced materials and environmental economies are discussed here.

Keyboards– *Green technology, Natural resources, Employment sectors, Emerging technologies, Sustainable development goals, Industrial revolution, Biotechnology.*

NEW AND INNOVATIVE TECHNOLOGIES IN FINANCIAL SERVICES AND BANKING

Rohit rawat, Sonali Kumari, Niyati nigam, Rishika Kumari

***Abstract*–**In the last few decades, a number of technologies have surfaced and are being actively employed in the banking and financial industries. Among the various technologies are robotic process automation (RPA), machine learning (ML), artificial intelligence (AI), big data, block chain integration, cyber security, cloud computing, and cryptocurrency. These technologies simplify people's life. Nonetheless, there are people in the public domain who are ignorant of them. The goal of this study is to educate readers about the benefits of these technologies and how they can be used in financial services. The data from this study will assist the different stakeholders in developing plans for expanding their businesses and acquiring new clients while gaining a competitive edge. The research was conducted using the descriptive approach since it was the most appropriate for this subject. Information was gathered from a variety of sources, including published reports, media articles, and the websites of listed businesses, RBI, and SEBI. Credit evaluation, check payments, cash transfers, merchant services, currency exchange, consulting, wealth management, stock market, portfolio management, and insurance all make substantial use of the chosen technology. As a result, this benefits all parties involved in these companies. One significant outcome of this study is that digital accounting is expanding rapidly and has the potential to eventually replace human labor entirely.

***Index Terms*–:** *Financial services, technology, artificial intelligence, banking industry, and completely stack digital banks.*

INNOVATIVE TECHNOLOGIES FOR BIODEGRADABLE PLASTICS SUSTAINABILITY

Aakib khan[1],Maya tiwari[2], Ambe tiwari[3], Harsh bahadur singh[4]

***Abstract*–**Due to the buildup and ongoing pollution of degraded microscopic plastic particles known as microplastics (MPs), the increased interest in and production of plastics over the past few decades has put many lives and pristine habitats in danger. Therefore, recycling plastic, composting, burning, and sanitary landfills provide a solution to the problematic problem; nevertheless, each of these methods has significant obstacles, remains unmanaged, and is not environmentally sustainable. As a result, biodegradable plastics (BPs) made from renewable raw materials have the highest possibility of achieving the sustainable development goals that the UN established globally in 2015. Continuous improvements in bioplastics have promoted their use in industrial settings. BPs have been successfully used in some industries where bioplastics are being developed for products like medical implants, fishnets, fertilizer bags, 3D printing polymers, and food packaging, which is the best- selling product. As a result, research on BPs should be strengthened, and future developments in BPs should be investigated. Additional bioplastics initiatives will help strengthen the global green economy. This chapter provides a brief overview of BPs, as well as the new and cutting-edge technologies in biodegradable plastic research, as well as the problems, future directions, and role of BPs in sustainable development.

Index Terms– *Microplastics, Bioplastics, Sustainable, 3D printing Polymers.*

E-COMPANION: REVOLUTIONIZING PATIENT MENTAL CARE WITH PERSONALIZED VOICEBOT

Srinithi K1, Srivarshini S[2] , Shalini M[3]

Computer Science And Engineering St. Joseph's College of Engineering Chennai, India

srinithi15k@gmail.com, srivarshinis17@gmail.com, shalini.mathi@gmail.com

Abstract—The convergence of Artificial Intelligence (AI) and healthcare has revolutionized patient care, yet traditional systems often lack emotional engagement, a crucial element for individuals with chronic conditions or social isolation. This study introduces an empathetic patient companion voice-bot that integrates Retrieval Augmented Generation (RAG) with Distil BERT for advanced natural language understanding and real-time physiological data from wearable devices. By delivering personalized, sentiment-driven interactions, the voice-bot enhances patient engagement and emotional well-being. With features such as selective memory and contextual understanding, it ensures relevant and empathetic responses, fostering trust and rapport with patients. This work bridges the gap between clinical support and emotional care, offering a novel patientcentered approach that redefines healthcare delivery standards with companionship.

Index Terms—*Artificial Intelligence(AI), Retrieval-Augmented Generation(RAG), DistilBERT, Natural Language Processing(NLP), Voice-bot, Sentiment Analysis, Wearable Integration, Personalized Healthcare, Contextual Interaction, Real-time Physiological Data*

MICROSTRUCTURAL AND MECHANICAL PROPERTIES OF 21CR-4NI-N STEEL

Anup Kumar Singh[1] and A K Chauhan[2]

[1]*Department of Mechanical Engineering AIMT, Lucknow*

[2]*Department of Mechanical Engineering KNIT Sultanpur*

ec1@ambalika.co.in

Abstract–Nitrogen strengthened austenitic stainless steels are being considered a new class of engineering materials. Nitrogen represents as an economically and environmentally attractive and versatile alloying element. In this investigation nitrogen strengthened austenitic stainless steel termed as 21-4-N steel was used in as cast as well as hot rolled condition. The fractured tensile and impact surfaces were examined using SEM. It was observed that hot rolled 21-4-N steel presents better mechanical properties, as it has fine grains of austenite.

Keywords– *Microstructure; hardness; tension test; impact test and SEM.*

ROLE OF AI IN DETERMINING RESPONSE TO TRANSDISCIPLINARY CHALLENGES

Dr. Abhishek Mishra[1], Mr. Amir Raza[2]
[1]*Ambalika Institute of Management & Technology*
[2]*University of Warwick, public University in Coventry, England*

Abstract–Artificial Intelligence (AI) plays a crucial role in addressing transdisciplinary challenges by integrating diverse domain knowledge, optimizing decision-making, and fostering innovation across multiple sectors. AI-driven methodologies such as machine learning, natural language processing (NLP), and decision support systems enable researchers and professionals to analyze complex problems holistically. By leveraging vast datasets, AI can uncover hidden patterns, facilitate real- time data interpretation, and support predictive analytics, significantly enhancing collaborative efforts across disciplines. AI is increasingly applied in various fields, including healthcare, environmental science, business, electrical engineering, and policymaking, offering transformative solutions to interconnected global issues. In healthcare, AI enhances diagnostic accuracy and personalized treatment plans by integrating medical and environmental data. In electrical engineering, AI optimizes power grids, predicts equipment failures, and enhances smart grid reliability. Similarly, in business and policy-making, AI-powered models assist decision-makers in forecasting economic trends, devising sustainable strategies, and optimizing resource allocation.

Despite its numerous advantages, AI implementation in transdisciplinary research presents challenges such as data privacy concerns, algorithmic bias, and ethical considerations. Addressing these issues requires the development of robust ethical frameworks and governance policies to ensure transparency, fairness, and accountability in AI-driven decision-making processes.

This paper explores AI's impact on transdisciplinary problem-solving, highlighting its advantages, applications, and associated challenges. The study underscores the need for continuous advancements in AI technology and interdisciplinary collaboration to maximize its potential in addressing complex global challenges. Future research should focus on refining AI-driven methodologies, ensuring ethical AI deployment, and fostering inclusive innovation to enhance AI's contributions to transdisciplinary domains. Furthermore, interdisciplinary cooperation must be encouraged to create AI systems that effectively integrate multiple domain perspectives for better problem-solving.

Keywords– *Artificial Intelligence, Transdisciplinary Challenges, Decision-Making, Optimization, Innovation, Problem-Solving, Ethical AI, Smart Grids, Sustainability*

FROM PLANETS TO PROFITS: THE ROLE OF AI AND MACHINE LEARNING IN FINANCIAL ASTROLOGY

Dr.Razia Sultan[1], Mr.Ayan Mehdi Alam[2], Mr.Mehdi Ali[3]

Department of Computer Science Engineering Ambalika Institute of Management & Technology

Department of Computer Science Engineering Rutgers University New Jersey, USA

Department of Business Management Jai Hind CollegeLucknow Mumbai Maharashtra India

roohiali110@gmail.com ayaanalam345@gmail.com mehdiali9820@gmail.com

***Abstract*–**Astrology has been a longstanding system for understanding human behavior and predicting life events based on celestial movements. With advancements in technology, artificial intelligence (AI) and machine learning (ML) provide opportunities to analyze astrological predictions more systematically. This paper explores how AI and ML can be applied to astrology, leveraging big data and predictive modeling to examine possible correlations between planetary movements and human life. The research also discusses scientific skepticism, ethical concerns, and the potential for AI to validate or challenge traditional astrological beliefs.

Keywords*–Financial Astrology,AI,ML,predictive modeling*

UNITY IN DIVERSITY: MAHAKUMBH PRAYAGRAJ

Prabha Kant Mishra[1], Avneesh Kumar Singh[2]

[1]*Assistant Professor, Department of Civil Engineering*

[2]*Associate Professor, Department of Applied Sciences*

Ambalika Institute of Management & Technology, Lucknow

prabhakant1962@gmail.com

Abstract–Mahakumbh at Prayagraj, the world's largest religious congregation, epitomizes the profound concept of *Unity in Diversity*, where millions of devotees from varied cultural, linguistic, and social backgrounds unite in a shared spiritual journey. This sacred gathering, held once every twelve years at the confluence of the Ganga, Yamuna, and the mythical Saraswati rivers, is deeply rooted in ancient traditions and Vedic rituals. The historical significance of Mahakumbh dates back to Hindu scriptures like the *Puranas* and *Mahabharata*, symbolizing the eternal struggle between divine and demonic forces over the nectar of immortality (*Amrit*). The traditions observed during Mahakumbh, such as the *Shahi Snan* (royal bath), *Kalpvas*, and discourses by revered saints, create an unparalleled atmosphere of devotion, reflection, and spiritual awakening. This event not only reinforces India's cultural heritage but also fosters interfaith dialogue, socio-religious harmony, and global unity. Additionally, the cognitive and psychological impact of Mahakumbh is profound, offering pilgrims a transformative experience of faith, meditation, and self-discovery. By analyzing the historical roots, traditions, and cognitive influence of Mahakumbh, this paper explores how this divine confluence serves as a living testament to the unity inherent in India's diverse spiritual landscape. The research further examines how Mahakumbh continues to be a beacon of collective consciousness, fostering peace and interconnectedness among humanity.

Keywords– *Mahakumbh, spiritual,* Shahi Snan, Diversity, *traditions.*

THE INTERNET OF THINGS (IOT): TRANSFORMING CONNECTIVITY AND INNOVATION

Dr. Anjali Dixit[1] and Dr. Gururaj Devarhubli[2*]

1 Associate Professor, Faculty of Law, SRM University, Delhi-NCR, Sonepat, Haryana, INDIA;

2 Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;

anjalidixitlexamicus@gmail.com * *gururajdd95@gmail.com*

Abstract–The Internet of Things (IoT) is revolutionizing how devices, people, and systems interact, enabling seamless communication, automation, and data-driven decision-making. This paper explores the fundamental concepts of IoT, its architecture, applications across various industries, security challenges, and future trends. By examining the integration of IoT with Artificial Intelligence (AI), Big Data, and Cloud Computing, this study highlights the transformative impact of IoT on modern technological landscapes. Additionally, security concerns such as data privacy, cybersecurity threats, and regulatory frameworks are discussed. This paper aims to provide a comprehensive understanding of IoT and its implications for the future of connected systems.

Keywords– *Internet of Things, IoT Architecture, Smart Devices, Cybersecurity, Cloud Computing, AI in IoT, IoT Applications*

INNOVATIVE APPROACHES IN COMPUTER NETWORK AND SECURITY: CHALLENGES AND FUTURE DIRECTIONS

Ms. Ana Sisodia[1] , Dr. Gururaj Devarhubli[2]*

[1] *Assistant Professor of Law, Sardar Patel Subharti Institute of Law, Swami Vivekananda Subharti University, Meerut, Uttar Pradesh (INDIA);* [2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat (INDIA)*

gururajdd95@gmail.com; anasisodia.law@gmail.com

Abstract–The rapid advancement of technology has transformed the landscape of computer networks, necessitating innovative security measures to counteract evolving cyber threats. This paper explores the latest innovations in computer networking and security, emphasizing emerging technologies such as Artificial Intelligence (AI), Blockchain, Software-Defined Networking (SDN), and Zero Trust Architecture. It examines their impact on network security, threat detection, and mitigation strategies. Additionally, the paper highlights the challenges and future directions in securing modern networks. By addressing these concerns, this research aims to contribute to the ongoing development of resilient and adaptive network security frameworks.

Keywords– *Computer Networks, Cybersecurity, AI in Security, Blockchain, Software-Defined Networking, Zero Trust Architecture, Network Threats*

GREEN COMPUTING: INNOVATIONS, CHALLENGES, AND FUTURE PROSPECTS

Dr. Gururaj Devarhubli[1]*

[1] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA*

gururajdd95@gmail.com

Abstract–Green computing, also known as sustainable computing, refers to the design, use, and disposal of computing systems in an environmentally friendly manner. With the rapid increase in energy consumption by IT infrastructure, green computing aims to reduce carbon footprints while maintaining computing efficiency. This paper explores the principles, technologies, and practices of green computing, including energy-efficient hardware, virtualization, cloud computing, and AI- driven optimizations. The challenges associated with green computing and future trends, such as quantum computing and biodegradable hardware, are also discussed. This study aims to provide a comprehensive overview of how green computing contributes to sustainable technological development.

Keywords– Green Computing, Energy Efficiency, Cloud Computing, AI in Sustainability, E-Waste Management, Quantum Computing, Sustainable IT

SUSTAINABLE COMPUTING: STRATEGIES, CHALLENGES, AND FUTURE DIRECTIONS

Dr. Deepa Shrivastava[1] and Dr. Gururaj Devarhubli[2]*

[1] *Acting Vice Principal, Law Department, Prestige Institute of Management and Research, Indore, Madhya Pradesh, INDIA;*

[2]*Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

deepa_shrivastava@pimrindore.ac.in; gururajdd95@gmail.com

***Abstract*–**Sustainable computing, also known as green computing, focuses on designing, manufacturing, using, and disposing of computers and related systems with minimal environmental impact. It aims to reduce energy consumption, carbon emissions, and electronic waste while optimizing computing efficiency. This paper explores key aspects of sustainable computing, including energy-efficient hardware, cloud computing, edge computing, and artificial intelligence- driven optimizations. Furthermore, it highlights the challenges in implementing sustainable computing practices and discusses potential future trends, such as quantum computing and biodegradable electronics. By addressing these elements, this study contributes to the ongoing discourse on eco-friendly computing solutions.

Keywords*–Sustainable Computing, Green IT, Energy Efficiency, Cloud Computing, AI in Sustainability, Quantum Computing, E-Waste Management*

TOURISM MARKETING

Ms. Dipali N. Patel[1] and Dr. Gururaj Devarhubli[2]*

[1] *Advocate, Gujarat High Court, Bar Council of Gujarat, Ahmedabad, Gujarat, INDIA;*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

gururajdd95@gmail.com

Abstract–Tourism marketing has evolved significantly with the integration of advanced technologies such as Artificial Intelligence (AI), Machine Learning (ML), Big Data analytics, Virtual and Augmented Reality (VR/AR), and the Internet of Things (IoT). These innovations are transforming the tourism industry by enhancing marketing strategies, improving customer experiences, and optimizing operational efficiency. This paper explores key areas of AI-driven personalization, data analytics, customer experience enhancement, and ethical considerations in tourism marketing. The study also highlights the challenges and future opportunities associated with implementing these technologies in the tourism sector. By addressing these aspects, this research contributes to the growing body of knowledge on how technology-driven tourism marketing can shape the future of travel and hospitality industries.

Keywords– *Tourism Marketing, Artificial Intelligence, Machine Learning, Data Analytics, Virtual Reality, Internet of Things, Ethical Considerations.*

EMPLOYER BRANDING: STRATEGIES, BENEFITS, AND CHALLENGES IN TALENT ACQUISITION AND RETENTION

Prof. (Dr.) Namita Vyas Joshi[1] and Dr. Gururaj Devarhubli[2]*

[1] *Professor of Law & Dean, Faculty of Law, Chandigarh Group of Colleges, Jhanjeri, Mohali, Punjab, INDIA*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA*

gururajdd95@gmail.com

Abstract–Employer branding has become a crucial strategy for organizations seeking to attract, engage, and retain top talent. A strong employer brand enhances an organization's reputation, differentiates it from competitors, and contributes to long-term business success. This paper explores the key components of employer branding, including internal and external branding strategies, the impact on employee engagement, and the role of digital media. Furthermore, it examines the challenges organizations face in maintaining a compelling employer brand and the future trends in employer branding. By integrating academic insights and industry practices, this paper aims to provide a comprehensive understanding of employer branding in the modern business environment.

Keywords–*Employer Branding, Talent Acquisition, Employee Engagement, Organizational Culture, Digital Employer Branding, Recruitment Marketing, Employee Value Proposition (EVP)*

ADVANCES IN ORGANOMETALLIC AND MEDICINAL CHEMISTRY: BRIDGING MOLECULAR SCIENCE AND THERAPEUTICS

Dr. Neetu Faujdar[1] and Dr. Gururaj Devarhubli[2]*

[1] *Assistant Professor of Computer Science, GLA University, Mathura, Uttar Pradesh, INDIA;*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

gururajdd95@gmail.com

Abstract–Organometallic chemistry and medicinal chemistry are two interconnected fields that play crucial roles in drug discovery, catalysis, and material science. Organometallic compounds, featuring metal-carbon bonds, serve as catalysts in industrial processes and exhibit promising applications in medicinal chemistry. In medicine, metal-based drugs such as cisplatin have revolutionized chemotherapy, while emerging research explores novel organometallic complexes for treating cancer, infections, and neurodegenerative diseases. This paper provides an overview of organometallic chemistry principles, applications in medicinal chemistry, and recent advancements in metal-based drug design. Furthermore, the challenges and future directions of these fields are discussed.

Keywords–*Organometallic Chemistry, Medicinal Chemistry, Metal-Based Drugs, Catalysis, Cisplatin, Bioinorganic Chemistry, Drug Discovery*

DIVERSITY & INCLUSION FOR ORGANIZATIONAL EFFECTIVENESS: STRATEGIES, CHALLENGES, AND FUTURE DIRECTIONS

Dr. Neelam Pandey (Chaturvedi)[1] and Dr. Gururaj Devarhubli[2]*

[1] Assistant Professor (LAW), G. Singh Vidhi Mahavidyalaya, Sahaso, Prayagraj (UP). [at present, Principal on charge, Chintamani Law College, Gonde, Pratapgarh (UP).]; [2] Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA

chaturvedi.neelam@gmail.com, smt.neelamsc@gmail.com, gururajdd95@gmail.com

Abstract–Diversity and inclusion (D&I) have become critical components of organizational effectiveness, fostering innovation, employee engagement, and overall performance. Organizations that prioritize D&I create an inclusive workplace culture that leverages diverse perspectives and experiences, leading to improved problem-solving and competitiveness. This paper explores the theoretical foundations of diversity and inclusion, key strategies for implementation, the challenges organizations face, and future trends in creating inclusive workplaces. By integrating academic research and real-world case studies, this study provides insights into how organizations can enhance their effectiveness through comprehensive D&I strategies.

Keywords–*Diversity, Inclusion, Organizational Effectiveness, Workplace Culture, Employee Engagement, Equity, Leadership*

MACHINE LEARNING, DEEP LEARNING, AND DATA SCIENCE

Advocate Neha Gupta[1] and Dr. Gururaj Devarhubli[2]*

[1] *Advocate, Delhi High Court, Delhi, INDIA*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

gururajdd95@gmail.com

Abstract–Machine Learning (ML), Deep Learning (DL), and Data Science (DS) have emerged as crucial fields in artificial intelligence, driving innovation across various industries. ML involves developing algorithms that improve from experience, while DL leverages artificial neural networks to handle complex tasks. Data Science integrates ML, DL, and statistical methods to extract insights from vast datasets. This paper explores key concepts, methodologies, applications, and challenges in these fields. It also highlights future research directions, such as explainable AI, quantum computing integration, and ethical considerations in AI-driven analytics.

Keywords–*Machine Learning, Deep Learning, Data Science, Artificial Intelligence, Neural Networks, Big Data Analytics, Explainable AI*

GENERAL STATISTICAL, STOCHASTIC ANALYSIS, FINITE ELEMENT & DYNAMICAL SYSTEMS METHODS

Ms. Priyanka Gupta[1] and Dr. Gururaj Devarhubli[2]*

[1] *Research Scholar, CCS University, Meerut, Uttar Pradesh, INDIA*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

advocatepg09@gmail.com, gururajdd95@gmail.com

Abstract **–**Statistical methods, stochastic analysis, finite element techniques, and dynamical systems play a crucial role in solving real-world problems across various scientific and engineering disciplines. Statistical methods provide a foundation for data-driven decision-making, while stochastic analysis helps model uncertainties in dynamic environments. Finite element methods (FEM) allow for the numerical approximation of complex physical systems, and dynamical systems theory offers insights into stability, chaos, and long-term behavior of systems. This paper explores the theoretical underpinnings, computational techniques, and practical applications of these methodologies, highlighting their interconnections and contributions to modern science and engineering.

Keywords– *Statistical Analysis, Stochastic Processes, Finite Element Method, Dynamical Systems, Numerical Analysis, Chaos Theory, Probabilistic Modeling*

CORPORATE AND BEHAVIORAL FINANCE: THE INTERSECTION OF RATIONAL DECISION-MAKING AND PSYCHOLOGICAL INFLUENCES

Dr. Purnima Chaudhary[1] and Dr. Gururaj Devarhubli[2]*

[1] *Assistant Professor of Law & HOD, IPEM Law College, Ghaziabad, Uttar Pradesh, INDIA;*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

gururajdd95@gmail.com

*purnima.chaudhary@ipemgzb.ac.in, gururajdd95@gmail.com**

Abstract– Corporate finance and behavioral finance are two essential domains that shape decision-making in financial markets and organizations. Corporate finance focuses on the principles governing investment, financing, and dividend decisions, whereas behavioral finance integrates psychological insights into financial decision-making. This paper explores key concepts in both fields, including capital structure, valuation, market efficiency, investor biases, and heuristics. The study highlights the implications of behavioral biases on corporate decision-making and investment strategies. Additionally, the paper discusses the challenges and future prospects of integrating behavioral finance theories into corporate financial models.

Keywords–*Corporate Finance, Behavioral Finance, Capital Structure, Market Efficiency, Investor Psychology, Decision-Making, Risk Perception*

UNDERSTANDING CHEMICAL COMPOSITION: FUNDAMENTALS, ANALYSIS, AND APPLICATIONS

Ms. Richa Mittal[1] and Dr. Gururaj Devarhubli[2]*

[1] Research Scholar and Faculty, Amity University, Gwalior, Madhya Pradesh, INDIA; [2] Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;

*gururajdd95@gmail.com, richamittal993@gmail.com, gururajdd95@gmail.com**

***Abstract*–**Chemical composition refers to the identification and quantification of elements and compounds in a substance. This fundamental aspect of chemistry plays a vital role in various scientific and industrial applications, from material science to pharmaceuticals. This paper explores the principles of chemical composition, analytical techniques used to determine composition, and its applications across different domains. It also discusses the challenges and future prospects in chemical composition analysis.

***Keywords*–** *Chemical Composition, Analytical Chemistry, Spectroscopy, Chromatography, Material Science, Elemental Analysis, Quantitative Analysis*

FULL LITERACY AND EQUAL OPPORTUNITIES FOR EDUCATION: CHALLENGES AND STRATEGIES FOR GLOBAL DEVELOPMENT

Ms. Swati Singh[1] and Dr. Gururaj Devarhubli[2]*

[1] *Law Faculty, Career Launcher, Indore, INDIA*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA*

*swatis1176@gmail.com, gururajdd95@gmail.com**

***Abstract*–**Achieving full literacy and equal opportunities for education is a cornerstone of sustainable development and social equity. Education is not only a fundamental human right but also a powerful tool for economic growth, poverty alleviation, and gender equality. However, numerous barriers such as economic disparities, gender discrimination, geographical limitations, and inadequate infrastructure hinder access to quality education. This paper explores the significance of full literacy, the challenges associated with achieving educational equity, and strategic interventions to foster inclusive education systems. It highlights policies, technological advancements, and community- driven initiatives that can bridge the educational divide and promote lifelong learning opportunities for all.

Keywords*–Literacy, Equal Education, Educational Equity, Lifelong Learning, Inclusive Education, Digital Learning, Policy Interventions*

SUSTAINABILITY AND FINANCE: INTEGRATING ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) PRINCIPLES IN FINANCIAL STRATEGIES

Ms. Simran Bharti[1] and Dr. Gururaj Devarhubli[2]*

[1] *Assistant Professor of Law, IPEM Law Academy, IPEM University, Ghaziabad, Uttar Pradesh, INDIA*

[2] *Assistant Professor of Law, Institute of Law, Nirma University, Ahmedabad, Gujarat, INDIA;*

*simranbharti43@gmail.com, gururajdd95@gmail.com**

Abstract–Sustainability and finance have become increasingly interconnected as businesses, governments, and investors recognize the importance of incorporating environmental, social, and governance (ESG) factors into financial decision-making. Sustainable finance aims to support economic growth while reducing environmental risks and promoting social well-being. This paper explores the principles of sustainable finance, key financial instruments, the role of ESG investing, and the challenges in integrating sustainability into financial markets. Additionally, it highlights future trends, such as green bonds, impact investing, and regulatory developments that shape the landscape of sustainable finance.

Keywords– *Sustainability, Sustainable Finance, ESG Investing, Green Bonds, Impact Investing, Financial Markets, Corporate Social Responsibility (CSR)*

ENHANCING PERFORMANCE IN MULTIPATH TCP: A LITERATURE REVIEW

Saurabh Bhutani [1], Nitin Jain[2]

[2]*Professor & Head Department of Electronics and Communication Engineering, Babu Banarasi Das University, India*

saurabh_sam07@yahoo.com

Abstract– Throughput and resilience may be significantly increased with the Multipath Transmission Control Protocol (MPTCP), which has emerged as a viable alternative to classical TCP. With an emphasis on the current developments in improving MPTCP performance, this study provides an extensive assessment of the literature. To overcome the limitations of single-path communication, MPTCP was developed to meet the requirement for a protocol that is more flexible and effective. Constraint management, load balancing, and security concerns are just a few important areas that are covered by the assessment. Recently, MPTCP was developed with an emphasis on cross-layer optimization, with the goal of improving throughput, robustness, and flexibility. In addition to addressing difficulties with compatibility, security, and complexity, this study sheds light on MPTCP's drawbacks and highlights its benefits, such as simultaneous communication over several channels. Showcasing advancements such as flow schedulers and TLS (Transport Layer Security) encryption, a comprehensive discussion is held on congestion management algorithms, load balancing tactics, and security issues. The significance of experimental assessments employing simulation studies and real-world deployments is underscored, as is the cooperative effort between the network levels. After highlighting unresolved issues with scalability, adaptability in heterogeneous networks, and standardization, the study ends with a call for more research to improve MPTCP's functionality to gain broader traction in a variety of networking contexts.

Keywords– *Transmission Control Protocol, Congestion Control, Load Balancing**,** Network protocol*

REVIEW OF MODERN METHODS FOR DETECTION OF MENTAL HEALTH USING NATURAL LANGUAGE PROCESSING

Priyanka Srivastava, Dr. Mohammad Suaib

Computer Science and Engineering, Integral University, Lucknow (U.P.)

priyanka.lecturer.gpl@gmail.com, suaibcs09@gmail.com

Abstract– According to the 2021 study, depression affects over 280 million populations nationwide and is the major cause behind sickness and damage. Millions of individuals worldwide suffer from depression, it has observed to be most prevalent mental diseases. Major depression may be prevented by identifying its signs early and treating them with prompt action. This has led to the necessity for some new methods of detecting depression in order to assist medical professionals in properly identifying and treating depression. Online posts, audio recordings, face expressions, and video recordings may all be used to study depression. Accordingly, the study offers a thorough analysis of the various datasets and machine learning techniques currently in use for depression identification. The study investigates automated depression detection techniques, different methods for identifying depression in audio, text, and video, and even different systems as well as processes for identifying depression based on different criteria.

Keywords–*anxiety, deep learning, audio feature, depression detection, social posts, stress, video feature, machine learning*

MARKETING INNOVATIONS IN THE DIGITAL ERA: CASE STUDIES AND STRATEGIES FOR BUSINESS GROWTH

Ragini Singh, Garima Mishra

Ambalika Institute of Management &Technology, Lucknow

Abstract–The marketing landscape is undergoing a profound transformation, driven by technological advancements, shifting consumer behaviors, and emerging trends. At the forefront of this transformation are artificial intelligence (AI), data-driven insights, and omni-channel experiences. These innovations are revolutionizing the way businesses interact with their customers, creating new opportunities for marketers to connect with their target audiences.

One key area of focus is AI-powered personalization, which enables businesses to create tailored experiences that meet the unique needs and preferences of their customers. By leveraging machine learning algorithms and data analytics, businesses can gain a deeper understanding of their customers' behaviors, preferences, and interests. This enables them to deliver personalized recommendations, offers, and content that resonate with their target audience.

Another key area of focus is data-driven marketing, which enables businesses to make informed decisions about their marketing strategies. By leveraging data analytics and machine learning algorithms, businesses can gain insights into customer behavior, preferences, and interests. This enables them to optimize their marketing campaigns, improve customer engagement, and drive revenue growth. Omni-channel experiences are also critical in today's marketing landscape. With the rise of digital channels, customers are increasingly expecting seamless experiences across online and offline channels. Businesses that can deliver omni-channel experiences are better positioned to drive customer engagement, loyalty, and revenue growth.

Through comprehensive case studies of pioneering brands such as Coca-Cola, Sephora, Uber, Netflix, and Nike, this research identifies key factors contributing to their marketing success. The findings provide actionable insights for marketers seeking to stay ahead of the curve. By integrating traditional marketing principles with cutting-edge technologies such as AI, data analytics, and omni- channel experiences, businesses can create seamless customer experiences that drive business growth, customer loyalty, and competitive advantage.

MATHEMATICAL MODELLING* (FOR THE STUDY: NON-NEWTONIAN FLUID IN LUNGS IN COVID PATIENTS)

Princee Singh

Deparment of Mathematics,Ambalika Institute of management and technology Lucknow,U.P,INDIA

anupriya.anusingh2205@gmail.com

Abstract— The flow of most Fluids may be analysed mathematically by the use of two equations.The first governing equation is continuity equation, requires that the mass of fluid entering a fixed control volume either leaves that volume or accumulates within it. It is thus a mass balance & requirement posted in mathematical form and is a scalar equation.The Other often referred to as Momentum equation or Navier- stroke equation, and maybe thought of as a Momentum balance and are vector equations, and may be thought of as a separate equation for each of the co-ordinate directions(usually three).Study of mucus layer and Serous sub layer in normal state of lungs by power law fluid with the help of planar model for mucus and serous layers. Mucus field in the lungs of covid patients is treated as non-newtonian.

Keywords—*Non-Newtonian,PlanarModel,Navier-stroke equation*

THE IMPACT OF SOCIAL MEDIA ON TEENAGERS: A MIXED-METHODS STUDY

Prof. Pooja Singh

(HoD Humanities, BBDITM Lucknow)

Priya Verma (Asst. Prof AMIT)

***Abstract*–**This investigation relates to the effect of social Medias on teenagers that may be positive or negative on the mental health, relations with peers, and performance in studies. Both quantitative and qualitative data analysis methods were used in a mixed contexts study approach. Results indicated social media's positives and negatives on teens and that it has resulted in the need for parents, educators and policymakers to work together for responsible and safe social media use.

FROM DATA TO DIAGNOSIS: MACHINE LEARNING'S ROLE IN MODERN HEALTHCARE

Divya[1], Atebar Haider[2], Vipin Rawat[3]

Ambalika Institute of Management and Technology, Lucknow, India

divyabharti1990@gmail.com, atebar.haider786@gmail.com , vipinrawat6668@gmail.com

Abstract— Machine learning (ML) is transforming the healthcare landscape by facilitating precise disease detection, customized treatment strategies, and predictive analytics for improved patient outcomes. ML models, particularly Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs) are essential for automating feature extraction, identifying patterns, and supporting decision-making processes. This paper reviews the advancements in ML applications within healthcare, emphasizing medical imaging, predictive analytics, opportunistic screening, clinical trials, and research. Recent studies highlight ML's ability to enhance diagnosis, optimize treatment planning, and outperform traditional statistical methods. Despite its transformative potential, challenges remain regarding generalizability, ethical concerns, and integration into clinical workflows.

Keywords— *Machine Learning (ML), Healthcare, Predictive Analytics, Medical Imaging, Personalized Treatment*

EFFECTIVE DRUG DOSAGE MONITORING METHOD FOR IMMUNE SYSTEMS USING REINFORCEMENT LEARNING TECHNIQUES

Suddapalii Viswanath[1], Chamarti Harish Kumar[2], Dr S.Christina Magneta[3], Jalcarigari Alchil[4], Kurra Vishnu Sai[5], Mallu Likith Reddy[6]

Artificial Intelligence and Machine Learning. Karunya Institute of Technology and Sciences, Coimbatore, India

eadetviswanath@gmail.com , chamattiharcesh@karunya.edu.in , christinamagneta@kartinya.edu.in kurravishnu@kartinya.cdu.in , akhillakarigari@gmail.com , mallulikhith@karunya.edu.in

Abstract–This study investigates a novel approach to medication dosage tracking using reinforcement learning (RL) to enhance the delivery of immune system medicines. In contrast to the majority of static procedures, this system looks at real-time data to determine the optimal balance between safety and efficacy and adjusts to the patient's demands. To determine each person's ideal dosage based on their response, the course of their illness, and how the therapy varies over time, the system employs sophisticated reinforcement learning techniques, such as actor-critic approaches, Q- learning, and Deep Q-Networks (DQN). The primary goal of the project is real-world implementation, addressing concerns related to regulatory compliance, scalability, and model interpretability. This RL-based technology also increases treatment accuracy and opens the door to improved, more customized treatment approaches. This project intends to close the gap between current medical practices and the potential of cutting-edge AI, resulting in significant progress in individualized healthcare.

Keywords– *Reinforcement Learning (RL), Drug Dosage Optimization, Personalized Medicine, Deep Q-Network (DQN), Immune System Therapy*

EIGHTH INTERNATIONAL CONFERENCE

"CHALLENGES & OPPORTUNITIES IN ARTIFICIAL INTELLIGENCE: ENGINEERING & MANAGEMENT APPLICATIONS"
(COAIEMA-2025)

Organised by

AMBALIKA INSTITUTE
OF MANAGEMENT AND TECHNOLOGY, LUCKNOW

Campus: Maurawan Road, Mohan Lal Ganj, Lucknow, U.P. 226301
Contact: 7703047777
E-mail: editor.coii@ambalika.co.in
Website: www.coii.ambalikastudies.com

978-81-979166-6-3