

About the Conference

The Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) - 2025 promises to be a milestone event in the field of research. This Collaborative endeavor aims to bring together distinguished Scholars, Researchers, Practitioners, and Students from around the globe to delve into the latest Advancements, Trends, and Challenges. The Conference will feature insightful Keynote Speeches, Panel Discussions, Paper presentations, and Collaborations that drive innovation and progress in our field.



Publisher : RSP Research Hub
Coimbatore, Tamil Nadu, India.



Abstract Book Proceedings of Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) - 2025 - Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Global Conference Hub, Coimbatore, Tamil Nadu, India.

Date of the Conference: 27th & 28th February 2025



Editor(s)
Mr. Piyush R Sahay
Dr. Martin Poras
Mr. Mario Martin
Dr. Hamed Barjesteh

Abstract Book: Proceedings of Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM - II) – 2025 - Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India.

Editor (s)

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Coordinator, Department of Business Administration,
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Mr. Mario Martin

Assistant professor, Department of Business Administration,
St. Xavier's College of Management & Technology, Patna, Bihar, India.

Dr. Hamed Barjesteh

Associate Professor, Department of Education, Dean of the Faculty of Education,
The Rector of university, Islamic Azad University, Ayatollah Amoli Branch, Iran.

Published by

RSP Research Hub

Coimbatore, Tamilnadu, India – 641049

Book Title: International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) – 2025 - Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India.

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RSP Research Hub, Coimbatore, Tamilnadu, India - 641049.

Conference Partners:

Global Conference Hub, Coimbatore, Tamilnadu, India.

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Preface

The Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM - II) - 2025 Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & **Event Partner:** Global Conference Hub, Coimbatore, Tamil Nadu, India, held successfully on February 27th & 28th, 2025. 171 teams from 09 countries, including Egypt, Indonesia, Iraq, Malaysia, Japan, Nigeria, Oman the USA, and PAN India, including 21 Indian States from 34 reputed universities and 61 colleges, participated in this conference. The objective of this conference is to bring together entrepreneurs, academicians, research scholars, and postgraduate students from around the world to encourage, acknowledge, and support research in all these areas by providing opportunities for them to exchange and share their experiences, fresh concepts, and research findings and discuss the pragmatic challenges encountered and solutions adopted in the aforementioned interdisciplinary areas through a wide range of research activities and publications.

During the conference, keynote speakers were **Dr. Hamed Barjesteh**, Associate Professor, Department of Education, Dean of the Faculty of Education, the rector of university, Islamic Azad University, Ayatollah Amoli Branch, Iran, **Topic:** AI at the Heart of 21st Century Education: Transforming Learning in the Third Millennium, **Dr. Mehdi Manoocherzadeh**, Zerodale Inc. Centre for Research in Entrepreneurship Education and Development, Toronto, Canada, **Topic:** AI at the Heart of 21st Century Education: Transforming Learning in the Third Millennium and **Mr. Shanmugasundaram Senathipathi**, Consulting Manager, Capgemini America Inc, Chicago, IL, USA, **Topic:** Building the Future of Insurance: Leading Transformation with Guidewire and Data-Driven Innovation.

Conference Chairperson of each session are as **Dr. S. Gopinath**, Professor, Department of Marine Engineering, Coimbatore Marine College, Coimbatore, Tamil Nadu, India, **Dr. Poorva Waingankar**, Associate Professor, Department of Electronics and Computer Science, Shree L R Tiwari College of Engineering, Miraroad, Thane, Maharashtra, India, **Dr. Ketki Kshirsagar**, Associate Professor, Department of E & TC, Vishwakarma Institute of Information Technology, Pune, Maharashtra, India, **CMA Dr. Natika Poddar**, Department of Finance, St.Francis Institute of Management and Research, Mumbai, India, **Dr. P. Saravanan**, Associate Professor, Department of Chemistry, St. Joseph's College of Engineering, OMR, Chennai, Tamil Nadu, India, **Dr. S. Kirubakaran**, Professor & Head, CSE (AI&ML), CMR College of Engineering and Technology Kandlakoya, Hyderabad, India, **Dr. K. Kiruthika Devi**, Associate Professor, Department of Information Technology, Sri Venkateswara college of Engineering, Sriperumbudur, India, **Dr. Sujithra Muthuswamy**, Associate Professor, Department of Data Science Coimbatore Institute of Technology, Coimbatore, Tamil Nadu, India, **Dr. Monica Bhutani**, Associate Professor, Department of Electronics and Communication Engineering, Bharati Vidyapeeth College of Engineering, New Delhi, India and **Dr. S. Meenakshi**, Associate Professor, Department of S & H (General Engineering), R.M.K. Engineering College, Kavaraipettai, Tamil Nadu, India.

10 Oral Presentation sessions are planned and successfully held under the joint efforts of conference chair members, presenters, and conference members through hybrid mode. Many recent trend topics are discussed. The best presentations were selected under the UG, PG, Research Scholar, and Faculty categories, which were evaluated by conference chair members and the conference team as per the given rubric sheet. 171 abstracts are included in these proceedings and have been classified into six focus research areas for corresponding sessions held at the conference. We would like to express sincere gratitude to all the authors for their dedicated contributions to the proceedings. We would like to extend our thanks to all the technical committee members and reviewers for their constructive comments on all papers also, to the organizing committee for the sincere and dedicated work. Finally, we would like to thank the Global Conference Hub for producing this volume. We strongly believe that the participants of ICFTSEM - II - 2025 have enjoyed a wonderful and fruitful time during the conference.

**PROCEEDINGS OF
ICFTSEM - II - 2025**

**Second International Conference on
Futuristic Trends in Science, Engineering,
and Management**

Organized by

**Department of Business Administration, St.
Xavier's College of Management &
Technology (SXCMT), Patna, India**

&

**Global Conference Hub, Coimbatore, Tamil
Nadu, India**

**Abstract Proceedings
(Special Edition)**

About the College

St. Xavier's College of Management & Technology, located in Patna, Bihar, is one of the leading educational institutions in the region. Known for its commitment to academic excellence and the holistic development of its students, the college has earned a distinguished reputation over the years. The institution emphasizes quality education, welcoming students from all backgrounds, irrespective of caste, class, creed, or gender. It takes pride in respecting and appreciating the diverse religious beliefs of its students, fostering an inclusive and harmonious educational environment. The emblem of the college encapsulates its core mission and values. At its heart lies the motto, "प्रवाहिते ज्ञानगंगाप्रवाहः" — meaning "Let the streams of ज्ञान (knowledge) keep on flowing." This represents the college's dedication to ensuring that the pursuit of knowledge remains constant and enriching, much like the ever-flowing river Ganga that runs beside the institution. The Ganga is a symbol of purity and sustenance, which aligns with the college's goal to nurture minds through education and empower individuals for societal betterment. The emblem also features the sun with the letters "IHS," a symbol of the Society of Jesus (the Jesuits), which reflects the institution's Christian values and the Jesuit tradition of rigorous education, social justice, and service to others. The emblem also carries the coat of arms of St. Francis Xavier, the college's patron saint, who was instrumental in the spread of Christianity across Asia. His legacy represents the college's commitment to spiritual and moral development, alongside intellectual growth. St. Xavier's offers a diverse range of undergraduate programs in fields like business administration, science, engineering, and commerce, known for their high academic standards. The curriculum is designed to blend theoretical knowledge with practical skills, preparing students for successful careers. The faculty consists of experienced educators dedicated to imparting not only academic knowledge but also life skills that will help students succeed personally and professionally. The college remains a top choice for students seeking a values-driven, academically rigorous education in Bihar.

About the Global Conference Hub

Global Conference Hub is organizing an international peer-reviewed conference dedicated to Advancements in Sciences, Technology and Management. It promotes collaborative excellence between academicians and professionals from academics. The objective of the Global Conference Hub is to provide an opportunity for academicians and industrialists from various fields with cross disciplinary interests to bridge the knowledge gap and promote research esteem and the evolution of pedagogy. This conference is an amalgamation of industrialists, and academia where they can gear up knowledge. Our gratitude towards people who are concerned about advancements in the hub of research, and we cordially invite them to gear up and make the congress an unforgettable successful event.

About the Department

The Department of Business Administration at St. Xavier's College of Management & Technology, Patna, is dedicated to grooming the next generation of business leaders through its industry-oriented curriculum and comprehensive academic programs. The department is recognized for its commitment to providing students with the knowledge and practical skills necessary to thrive in the ever-changing business landscape. The department offers undergraduate programs in business administration, management, and commerce, focusing on developing a strong foundation in business principles, leadership skills, and ethical practices. Students are encouraged to engage in critical thinking and apply their learning through hands-on experiences such as internships, workshops, and industry collaborations. These opportunities help bridge the gap between theory and practice, enabling students to develop practical skills that are highly valued in the professional world. With a team of highly qualified faculty members, the department provides personalized attention and mentorship, guiding students through their academic journey. The curriculum is designed to be dynamic and relevant to the current business environment, covering key areas such as marketing, finance, human resources, and operations management. Special emphasis is placed on sustainable business practices, technology management, and cross-cultural competence, preparing students to become adaptable and forward-thinking professionals. Graduates of the department are equipped to excel in a variety of industries, including banking, consulting, retail, manufacturing, and entrepreneurship. Through a holistic approach to education that balances academic rigor with character development, the department aims to produce responsible and innovative leaders ready to make a positive impact on society.

About the Conference – ICFTSEM - II - 2025

Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) - 2025 is a prestigious Annual Gathering that unites Scholars, Researchers and Professionals from Diverse fields. Focused on cross-disciplinary innovation, ICFTSEM -II provides a platform to discuss breakthroughs and emerging trends in the Engineering, Management, and Science sectors. Participants present cutting-edge Research, share best practices and explore the convergence of these disciplines to tackle contemporary global issues. The International Conference Features Keynote Speeches, Panel Discussions, Workshops, and Poster Sessions along with Fostering a collaborative environment for knowledge exchange. It aims to promote Interdisciplinary Research, encourage Networking and inspire future collaborations among Academic and Industry leaders. By integrating various perspectives, ICFTSEM -II contributes to holistic advancements in addressing Societal Challenges and enhancing quality of life worldwide.

Conference Committee Members – ICFTSEM-II -2025

Chief Patron

- Dr. Joseph Sebastian SJ, Rector, St. Xavier's College of Management & Technology, Patna.
- Dr. Martin Poras SJ, Principal, St. Xavier's College of Management & Technology, Patna.

Patrons

- Dr. Prakash Louis SJ, Director, Xavier Institute of Social Research, Patna.
- Dr. Sherry George SJ, Vice Principal, St. Xavier's College of Management & Technology, Patna.

Convener

- Mr. Piyush Ranjan Sahay, Coordinator, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.
- Mr Mario Martin, Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.

Coordinators

- Dr. Shilpi Kavita, Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.
- Ms. Shilpa Sharma, Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.

Organizing Committee

- Dr. Gita Rani Sahu, Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.
- Mr. Arindam Roy, Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna.

Advisory Committee

- Fr Dr Martin Poras SJ
- Fr Dr Prakash Louis SJ
- Sr Dr Grace SCSC
- Dr Kalpana Kumari
- Fr Dr Sherry George SJ

Glimpses of the Conference

Editors

Conference Editor – I



Mr. Piyush R Sahay

Coordinator, Department of Business Administration, St. Xavier's college of Management & Technology, Patna, Bihar, India.

Conference Editor – II



Dr. Martin Poras

Principal, St. Xavier's college of Management & Technology, Patna, Bihar, India.

Conference Editor – III



Mr. Mario Martin

Assistant professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna, Bihar, India.

Conference Editor – IV



Dr. Hamed Barjesteh

Associate Professor, Department of Education, Dean of the Faculty of Education, the rector of university, Islamic Azad University, Ayatollah Amoli Branch, Iran.

Keynote Speakers

Technical Session – I



Dr. Hamed Barjesteh

Associate Professor, Department of Education,
Dean of the Faculty of Education, the rector of
university, Islamic Azad University, Ayatollah
Amoli Branch, Iran.

**Topic: AI at the Heart of 21st
Century Education: Transforming
Learning in the Third Millennium**

Technical Session – II



Dr. Mehdi Manoocherzadeh

Zerodale Inc. Centre for Research in
Entrepreneurship Education and
Development, Toronto, Canada.

**Topic: AI at the Heart of 21st
Century Education: Transforming
Learning in the Third Millennium**

Technical Session – III



Mr. Shanmugasundaram Senathipathi

Consulting Manager, Capgemini America Inc, Chicago, Illinois, USA.

**Topic: Building the Future of Insurance: Leading Transformation with
Guidewire and Data-Driven Innovation**

Conference Chair(s)



Dr. S. Gopinath
Professor, Department of Marine
Engineering, Coimbatore Marine College,
Coimbatore, Tamil Nadu, India.



Dr. Poorva Waingankar
Associate Professor, Department of
Electronics and Computer Science, Shree
L R Tiwari College of Engineering,
Miraroad, Thane, Maharashtra, India.



Dr. Ketki Kshirsagar
Associate Professor, Department of E & TC,
Vishwakarma Institute of Information
Technology, Pune, Maharashtra, India.



CMA Dr. Natika Poddar
Department of Finance, St.Francis
Institute of Management and Research,
Mumbai, India.



Dr. P. Saravanan
Associate Professor, Department of Chemistry, St. Joseph's College of Engineering, OMR,
Chennai, Tamil Nadu, India.



Dr. S. Kirubakaran
Professor & Head, CSE (AI&ML), CMR
College of Engineering and Technology
Kandlakoya, Hyderabad, India.



Dr. K. Kiruthika Devi
Associate Professor, Department of
Information Technology, Sri
Venkateswara college of Engineering,
Sriperumbudur, India.



Dr. Sujithra Muthuswamy
Associate Professor, Department of Data
Science Coimbatore Institute of Technology,
Coimbatore, Tamil Nadu, India.

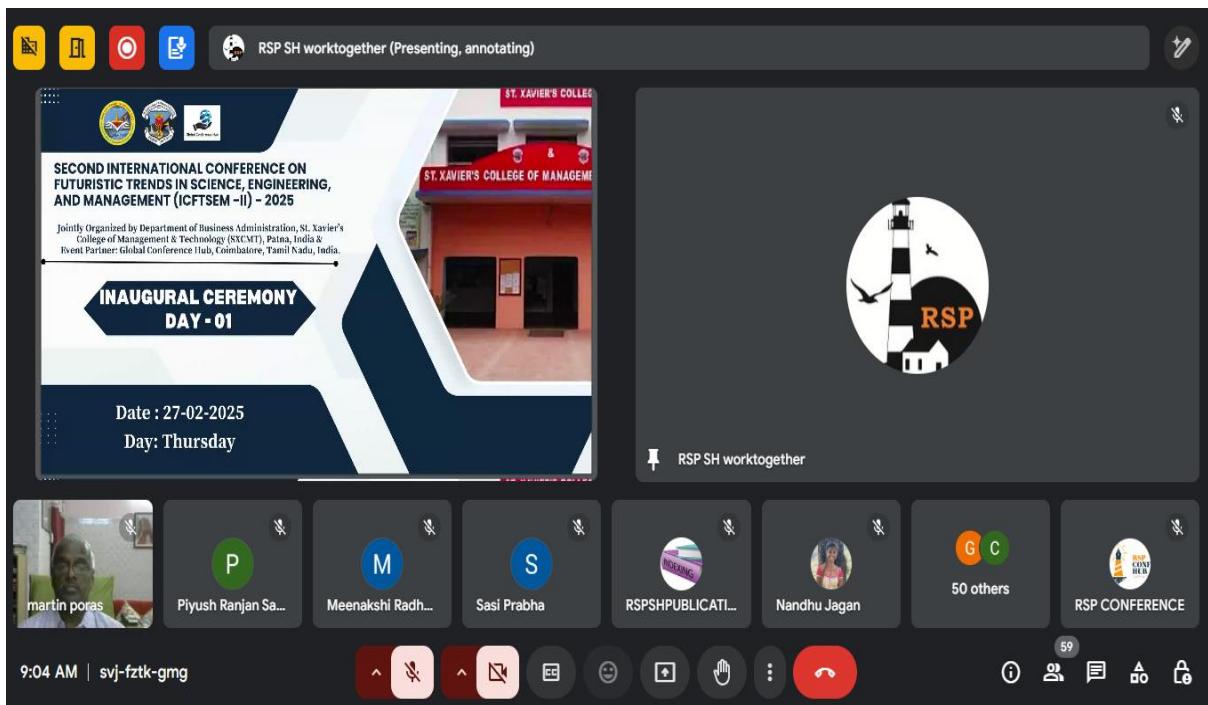


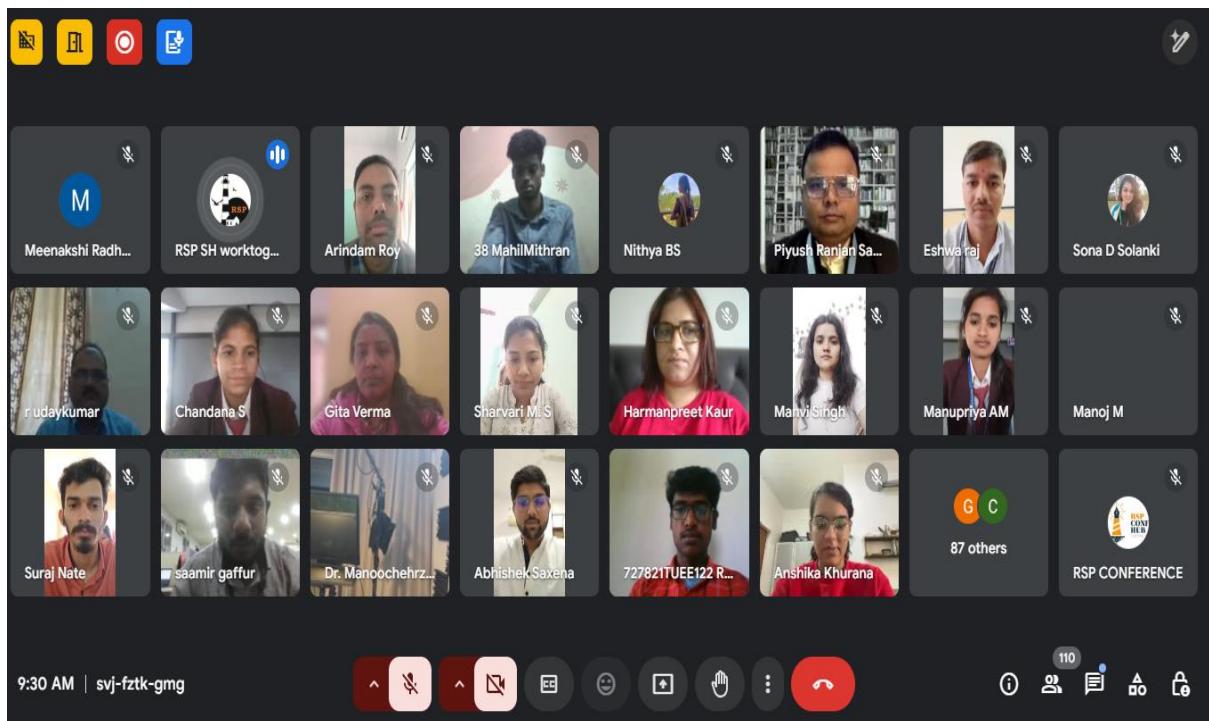
Dr. Monica Bhutani
Associate Professor, Department of
Electronics and Communication
Engineering, Bharati Vidyapeeth College
of Engineering, New Delhi, India.



Dr. S. Meenakshi
Associate Professor, Department of S & H (General Engineering), R.M.K. Engineering
College, Kavaraipettai, Tamil Nadu, India.

Pictures of ICFTSEM-II - 2025





A screenshot of a video conference interface. At the top, there are four small yellow icons: a document, a person, a red circle, and a blue square. On the right side, there is a circular icon with a person's profile and a volume icon. The main area is divided into two sections: a presentation slide on the left and a video feed on the right. The presentation slide has a teal header with the text "RSP SH worktogether (Presenting, annotating)". Below the header is a slide titled "Types of Insurance" with a list of insurance types and their descriptions. The video feed on the right shows a man wearing headphones and a dark sweater, identified as Shanmugasundaram Senathipathi. At the bottom, there is a toolbar with various icons: a microphone, a video camera, a document, a person, a smiley face, a file, a hand, a three-dot menu, and a red phone icon. To the right of the phone icon is a small '57' indicating the number of participants. On the far right are icons for a profile, a group, a message, a file, a person, and a lock. Below the toolbar, there is a row of participant thumbnails: Uday Shukla, RSP SH workt..., Sona D Solanki, Piyush Ranjan S..., RSPSHPUBLICA..., Global confere..., Vigneshwar R M, 47 others, and CONFERENCE ...

RSP SH worktogether (Presenting, annotating)

SECOND INTERNATIONAL CONFERENCE ON FUTURISTIC TRENDS IN SCIENCE, ENGINEERING, AND MANAGEMENT (ICFTSEM -II) - 2025

Jointly Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India.

ACCEPTANCE RATE = 59.5%

NO.OF ARTICLES REGISTERED: 287
NO.OF ARTICLES ACCEPTED: 171

ST. XAVIER'S COLLEGE OF MANAGEMENT & TECHNOLOGY

RSP SH workto... Sona D Solanki Piyush Ranjan ...
M Meenakshi Ra... Dr. Manooche... Sasi Prabha
RSPSHPUBLIC... 102 others RSP CONFERE...

9:31 AM | svj-fztk-gmg

Transcribing Stop transcription Dr. Manoochehrzadeh (Presenting, annotating)

Futuristic Trends in Education:
Transforming or Transmitting
Knowledge?

ZERODAHL
Language Education, Research and Publication

ICFTSEM-II-2025
Second International Conference on Futuristic Trends in Science, Engineering, and Management
ICFTSEM-II-2025
Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India
Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India
Conference Date: 20-21-22 Feb 2025
KEYNOTE SPEAKERS

Associate Professor, Dr. Hamed Barjesteh and Mehdi Manoochehrzadeh
Ha_bar77@yahoo.com
mmsp79@yahoo.com

RSP SH workto... Sona D Solanki Piyush Ranjan Sah... Meenakshi Radha...
107 others RSP CONFERENCE

9:36 AM | svj-fztk-gmg

A Sample Presentation – ICFTSEM-II - 2025

Vivek Dahake (Presenting)

Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) - 2025

ICFTSEM -II - 2025

Date:27/02/2025 & 28/02/2025

Organised by
Jointly Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Global Conference Hub, Coimbatore, Tamil Nadu, India.

Paper Title : DEVELOPMENT OF HYPOTHESIS TO EVALUATE THE IMPACT OF INDUSTRY 4.0 ADOPTION ON SUSTAINABILITY PERFORMANCE IN THE MANUFACTURING INDUSTRY

Authors Details
Mr. VIVEK DAHAKE,
Research Scholar
DMCOE, Mumbai

Dr. Usha Pawar
HOD, Mech, DMCOE,
Mumbai

Paper Id : 2502098
Presenter Category : Research Scholar

Presented by
Mr. VIVEK DAHAKE,
Research Scholar DMCOE,
Mumbai

12:10 PM | baa-yokk-bzn

Participants: Dr. Gopinath S, Vrinda Mata, Neha Kushwaha, Abhishek Saxe..., Manvi Singh, Vandana Vyas, ajaykumar s, r udaykumar, Eshwa raj, Harmanpreet K., Pritesh Kardile, 6 others, RSP SH workto...

Kalpana Kumari (Presenting, annotating)

ICFTSEM2025-Dr Kalpana - PowerPoint

Second International Conference on Futuristic Trends in Science, Engineering, and Management (ICFTSEM -II) - 2025

ICFTSEM -II - 2025

Date:27/02/2025 & 28/02/2025

Organised by
Jointly Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Global Conference Hub, Coimbatore, Tamil Nadu, India.

Paper Title: Prospects of Coconut Waste Management for Sustainable Development in Patna

Authors Details
Dr. Kalpana Kumari
Assistant Professor, Dept. of Economics
St. Xavier's College of Management & Technology, Patna

Paper Id: 2502136
Presenter Category: Faculty

Presented by
Dr. Kalpana Kumari
Assistant Professor, Dept. of Economics
St. Xavier's College of Management & Technology, Patna

12:44 PM | own-qwdw-uyc

Participants: Dr. Saravanan P, manpreet kaur, Pritesh Kardile, sumita thukral, CONFERENCE H..., Neeta Kashyap, Divyadershini, Leela rani, Bhavya up, shveta kaushal, Navdeep Kaur, RSP SH worktoge...



Valedictory – ICFTSEM-II - 2025

The screenshot shows a video conference interface. At the top, there are icons for file operations (New, Open, Save, Print, etc.) and a status bar indicating "RSP SH worktogether (Presenting, annotating)". The main content area displays the title "SECOND INTERNATIONAL CONFERENCE ON FUTURISTIC TRENDS IN SCIENCE, ENGINEERING, AND MANAGEMENT (ICFTSEM -II) - 2025" and the subtitle "VALEDICTORY CEREMONY". Below this, the date "Date : 28-02-2025" and day "Day: Friday" are shown. To the right of the title is a photograph of St. Xavier's College of Management. On the far right, a participant grid shows several users with their initials and names: RSP SH worktogether (M), Mario Martin (M), Rakesh Kumar Pathak (R), Piyush Ranjan Sahay (P), r udaykumar (r), Nandhu Jagan (N), A S (A), and CONFERENCE HUB (C). The bottom of the screen features a toolbar with various video and audio controls.

The screenshot shows a video conference interface. At the top, there are icons for file operations (New, Open, Save, Print, etc.) and a status bar indicating "RSP SH worktogether (Presenting, annotating)". The main content area displays the title "SECOND INTERNATIONAL CONFERENCE ON FUTURISTIC TRENDS IN SCIENCE, ENGINEERING, AND MANAGEMENT (ICFTSEM -II) - 2025" and the subtitle "CO-CONVENOR CONFERENCE REPORT". Below this, it lists "Mr. Mario Martin" as the "Assistant Professor, Department of Business Administration, St. Xavier's College of Management & Technology, Patna, India." To the right of the title is a photograph of Mr. Mario Martin. On the far right, a participant grid shows several users with their initials and names: RSP SH worktogether (M), Nandhu Jagan (N), Sona D Solanki (S), Piyush Ranjan S... (P), r udaykumar (r), Meenakshi Radhakrishnan (Meenakshi ...), and CONFERENCE HUB (C). A message at the bottom right indicates "Meenakshi Radhakrishnan has raised a hand". The bottom of the screen features a toolbar with various video and audio controls.

RSP SH worktogether (Presenting, annotating)

SECOND INTERNATIONAL CONFERENCE ON FUTURISTIC TRENDS IN SCIENCE, ENGINEERING, AND MANAGEMENT (ICFTSEM -II) - 2025

Jointly Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India.

CONFERENCE OVERVIEW

- 10 No. of Countries
- 21 No. of Indian States
- 1090 Total Authors Registered
- 171 No. of Teams - Present
- 34 No. of Universities
- 61 No. of Colleges

ST. XAVIER'S COLLEGE
ST. XAVIER'S COLLEGE OF MANAGEMENT & TECHNOLOGY

15:24 | svj-fztk-gmg

Sona D Solanki, RSP SH worktogether, Pritesh Kardile, Mario Martin, r udaykumar, Nandhu Jagan, A S, 43 others, CONFERENCE HUB

RSP SH worktogether (Presenting, annotating)

SECOND INTERNATIONAL CONFERENCE ON FUTURISTIC TRENDS IN SCIENCE, ENGINEERING, AND MANAGEMENT (ICFTSEM -II) - 2025

Jointly Organized by Department of Business Administration, St. Xavier's College of Management & Technology (SXCMT), Patna, India & Event Partner: Global Conference Hub, Coimbatore, Tamil Nadu, India.

FEEDBACKS

Participants can kindly unmute the mic and turn on the face camera to tell us your feedback about the Conference

ST. XAVIER'S COLLEGE
ST. XAVIER'S COLLEGE OF MANAGEMENT & TECHNOLOGY

Shilpi Kavita

Nandhu Jagan, RSP SH workto..., Sona D Solanki, Mario Martin, Pritesh Kardile, r udaykumar, Arindam Roy, 39 others, CONFERENCE ...

15:27 | svj-fztk-gmg

Best Presentation of ICFTSEM-II - 2025

The screenshot shows a video conference interface with a whiteboard overlay. The whiteboard features two decorative trophy icons and two starburst badges. The left badge is for "Mr. Udit Gupta & Team" and the right badge is for "Mr. Shashank Jayshankar Tiwari & Team". Both badges have a red border and yellow stars. Below each badge is a "Topic:" section. The left topic is "Exploring the intersection of AI and ethics in architecture: Implication for design, design thinking and build environment" and the right topic is "Sign language - to - speech and speech - to - sign language". At the bottom of the whiteboard, there is information about the University Of Design, Sonipat, Haryana, India, and the SLRTC College of Engineering. The video conference interface includes a participant grid on the right with names like Shilpi Kavita, Sona D Solanki, Mario Martin, shilpa sharma, r udaykumar, and 38 others. The timestamp at the bottom left is 15:30 | svj-fztk-gmg.

This screenshot shows a continuation of the video conference interface. The whiteboard now features two more starburst badges for "Ms. R Manjushree & Team" and "Mr. Muthuram & Team". The topics for these presentations are "Automated hallucination detection and mitigation in large language model" and "Improving Melanoma Detection Efficiency A Hybrid Approach Using Resnet and Densnet". The bottom of the whiteboard provides details about the University of Artificial Intelligence and Data Science, SRM Valliammai Engineering College, Kattankulathur, Kanchipuram, Tamil Nadu, India, and the Kamraj College of Engineering and Technology, Virudhunagar, Tamil Nadu, India. The participant grid on the right remains the same, and the timestamp at the bottom left is 15:31 | svj-fztk-gmg.

BEST PRESENTATION (PG)

Ms. Aji Antony

Topic :
Advancements in Real-Time Incident Reporting for Construction Sites: A Literature Review on NLP Applications

PG - Civil Engineering,
Toe H Institute of Science and Technology,
Ernakulam, Kerala, India.

Sasi Pabbha
Nandhu Jagan
Sasi Pabbha

Shilpi Kavita
RSP SH worktogether
Sona D Solanki
Mario Martin
shilpa sharma
r udaykumar
38 others
CONFERENCE HUB

15:32 | svj-fztk-gmg

BEST PRESENTATION (Research Scholar)

Mr. Vyas Vandnbhai Vinodrai

Topic :
Experimental investigation of thermal performance on Zirconium based oxide coating on Al and SS304

Research Scholar - Department of Mechanical Engineering, Charotar University of Science and Technology, CHARUSAT Campus, Off. Nadidad-Petlad Highway, Changa, Gujarat, India.

RSP SH worktogether
RSP SH worktogether
RSP SH worktogether

Shilpi Kavita
RSP SH worktogether
Sona D Solanki
Mario Martin
shilpa sharma
r udaykumar
38 others
CONFERENCE HUB

15:32 | svj-fztk-gmg

BEST PRESENTATION (Faculty)

Topic :
A Hybrid CNN-LSTM Approach for Enhanced Prediction of Chronic Kidney Disease Using Deep Learning and Big Data

ASP - Department of Computer Science & Engineering, Fatima Michael College of Engineering & Technology, Madurai, Tamil Nadu, India.

Topic :
The Function of Photosynthetic Pigments in the Mesophilic Cyanobacterium *Westiellopsis prolifica* in Reducing Heat Stress in the Presence of Sodium Sulfide

AP - Botany, Sri Guru Teg Bahadur Khalsa College, Sri Anandpur Sahib, Punjab, India.

Topic :
Analyzing Project-Specific Bug Resolution Time: A Data-Driven Investigation Into Software Maintenance Efficiency

AP - Department of Computer Science-Faculty of Science & Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India

Participants in the conference hub include Shilpi Kavita, RSP SH worktogether, Sona D Solanki, Mario Martin, shilpa sharma, r udaykumar, 37 others, and CONFERENCE HUB.

BEST PRESENTATION (Faculty)

Topic :
Empowering Change: The Role of Women Entrepreneurs in Advancing Global Sustainability through Sustainable Development Goals

AP - Department of Business Administration, Patna Women's College, Patna, India.

Topic :
Work-Life Balance and Job Satisfaction among College Teachers in Bihar: A Comparative Study of Public and Private Institutions

AP - Business Administration , St. Xavier's College of Management & Technology (SXCMT), Patna, India

Participants in the conference hub include Shilpi Kavita, RSP SH worktogether, Sona D Solanki, Mario Martin, shilpa sharma, r udaykumar, 36 others, and CONFERENCE HUB.

INDEX

About the College.....	ii
About the Global Conference Hub.....	iii
About the Department.....	iii
About the Conference – ICFTSEM - II - 2025.....	iv
Conference Committee Members – ICFTSEM-II -2025.....	v
Chief Patron	v
Patrons.....	v
Convener.....	v
Coordinators	v
Organizing Committee	v
Advisory Committee.....	v
Glimpses of the Conference	1
Conference Editor – I.....	1
Mr. Piyush R Sahay.....	1
Conference Editor – II	1
Dr. Martin Poras.....	1
Conference Editor – III.....	1
Mr. Mario Martin.....	1
Conference Editor – IV	1
Dr. Hamed Barjesteh.....	1
Keynote Speakers	2
Technical Session – I.....	2
Dr. Hamed Barjesteh.....	2
Topic: AI at the Heart of 21st Century Education: Transforming Learning in the Third Millennium	2

Technical Session – II.....	2
Dr. Mehdi Manoocherzadeh.....	2
Topic: AI at the Heart of 21st Century Education: Transforming Learning in the Third Millennium	2
Technical Session – III	2
Mr. Shanmugasundaram Senathipathi	2
Topic: Building the Future of Insurance: Leading Transformation with Guidewire and Data-Driven Innovation.....	2
Conference Chair(s)	3
Pictures of ICFTSEM-II - 2025	5
A Sample Presentation – ICFTSEM-II - 2025	8
Valedictory – ICFTSEM-II - 2025	10
Best Presentation of ICFTSEM-II - 2025	12
ICFTSEMAP001.....	39
The Influence of Social Media On Political Behavior in Indonesia	39
Rahmatya Rahmatya ¹ , Hamdan Hamdan ²	39
ICFTSEMAP002.....	40
Rhetoric and Communication Strategy of Candidates in Regional Elections and General Elections.....	40
Alya Agus ¹ , Hamdan ²	40
ICFTSEMAP003.....	41
Political Communication in the Digital Age “The Influence of Social Media in Political Campaigns.....	41
Artika Ananda Putri ¹ , Muh. Alimuddin Lidda ²	41
ICFTSEMAP004.....	42
The Influence of Social Media on Political Behavior in Indonesia	42
Rahmatya Rahmatya ¹ , Hamdan Hamdan ² , Ahmad Al Yakin ³	42

ICFTSEMAP005.....	43
A Methodical Approach in Warehouse Management Systems (WMS) and Implementations 43	
Natesan Andiyappillai ¹ , Dr.T.Prakash ²	43
ICFTSEMAP006.....	44
Collaboration between Teaching English and Renewable Energy: Fostering Sustainable Development and Language Proficiency 44	
Ghada Tosson	44
ICFTSEMAP007.....	46
Contribution Title Exploring Algorithmic Paradigms in Message Classification: Insights from the Enron Email Dataset 46	
Noor Ali Saejjil ¹ , Hussain A. Younis ² , Israa M. Hayder ³ , Muthmainnah ⁴	46
ICFTSEMAP008.....	47
A Study of the Histories of People for Gerontology through Steps of Artificial Intelligence in Text Book 47	
Ryo Takahashi	47
ICFTSEMAP009.....	48
A Study on Implementation of eLearning and Students Learning Behavioral Changes 48	
S.H. Sheik Mohamed ¹ , Mrs. M. Nirmala ² , Dr. S. Elango ³	48
ICFTSEMAP010.....	49
Integration of Cloud Computing with Artificial Intelligence in Education Process 49	
Dr.Ali Said Al-Matari ¹ , Dr.Abd Ghofur ² , Dr.Andi Asrifan ³ , Dr.Muthmainnah ⁴ ,	
Eva Nikmatul Rabbianty ⁵ , Wasin Albalushi ⁶ , Saliha Alsaadi ⁷	49
ICFTSEMAP011.....	50
Tint Detection Using Image Analysis 50	
Yokesh Babu S ¹ , Vansh Harkut ² , Himanshu Sharma ³ , Vishal ⁴	50
ICFTSEMAP012.....	51
Precision: Paper Correction System Using AI 51	

Ms. M Kowsalya ¹ , S Gowtham ² , S Guhan ³ , S Logeshwar ⁴	51
ICFTSEMAP013.....	52
Survey on The Role of Artificial Intelligence in Future Fitness Services.....	52
Ms.M Kowsalaya ¹ , S Karthik ² , P Mathan ³ , A.B Ohm Prakash ⁴	52
ICFTSEMAP014.....	53
Development of Real-Time Safety Monitoring of Scaffolding in Construction Site Using Vision-Based Techniques	53
Amala Maria Innocent ¹ , Sahimol Eldhose ²	53
ICFTSEMAP015.....	54
Health Status Evaluation of Female Street Vendors of Patna Town, Bihar	54
Amreen Naz, Dr. Sunita Roy.....	54
ICFTSEMAP016.....	55
Fake Currency Detection System Using Image Processing	55
J. Rohini ¹ , R. Deeksha ² , P. K. Mohammed afsal ³	55
ABSTRACT	55
ICFTSEMAP017.....	56
Deep Fake Video Detection Using Transfer Learning Resnet50.....	56
S. Praveena ¹ , R. Kaviya ² , K. Sheerin Farhana ³ , S. Bhuvanasri ⁴	56
ICFTSEMAP018.....	57
Advancements in Real-Time Incident Reporting for Construction Sites: A Literature on NLP Applications.....	57
Aji Antony ¹ , Annie Sonia Xavier ²	57
ICFTSEMAP019.....	58
Work-Life Balance and Job Satisfaction among College Teachers in Bihar: A Comparative Study of Public and Private Institutions.....	58
Mr. Piyush Ranjan Sahay ¹ , Dr. Shashank Bhushan Lall ²	58

ICFTSEMAP020.....	59
Hybrid Solar Wind-Powered Luo DC-DC Converter with Adaptive Control for Enhanced Efficiency and Reliability	59
Ramprasath S ¹ , Navinkumar M ² , Surendran M P ³ , Dr. Magdalin Mary D ⁴	59
ICFTSEMAP021.....	61
A study on Green Economy of Bihar Government and its Impact on the People	61
Shilpa Sharma.....	61
ICFTSEMAP022.....	62
A Study to Analyse the Effectiveness of Artificial Intelligence in the Indian Healthcare System	62
Sukhvinder Kaur Sodhi ¹ , Dr. Sanjeev Bansal ² , Dr. Utkarsh Saxena ³	62
ICFTSEMAP023.....	63
Connected 3D Scanning Solution for Enhanced Mobility of the Blind	63
C.Mohana, B. S. Nithya ² , P. Saranya ³ , V. S. Vikashni ⁴ , Mr. S. Gladson ⁵	63
ICFTSEMAP024.....	64
Non-Linear Stock Market Prediction with Support Vector Machines	64
Amshavalli M ¹ , Paramesh Kumar S ² , Purusothaman R ³ , Tharun M ⁴	64
ICFTSEMAP025.....	65
Rehabilitating Reading: Addressing Dyslexia with Innovative Approaches	65
Maharanjitham S ¹ , Preethi K ² , Niranchana Shree S R ³ , Ignatius Selvarani X ⁴	65
ICFTSEMAP026.....	66
Bluetooth Controlled Agrisense for Agricultural Operations	66
Asath Sugaina A ¹ , Ilakkiya M ² , Abinayasaraswathi B ³ , Archana Devi S ⁴	66
ICFTSEMAP027.....	67
Sentiment Synthesis Transforming YouTube Comments into Strategic Insights	67
Krishna Harni P ¹ , Sangeetha K ² , Zenmathy K P ³ , Uma Maheswari G ⁴	67

ICFTSEMAP028.....	68
Dynamic Ai-Augmented Firewall for Real-Time Threat Mitigation.....	68
Raj shekhar Singh ¹ , Simpal Kumari ² , Sudhanshu Kumar ³ , Dr. Parvathi S ⁴	68
ICFTSEMAP029.....	69
Machine Learning Based Loan Eligibility Prediction and Automation.....	69
Niranjana P ¹ , Pavitra Rao S ² , Dhivya G ³ , Meenakshi A ⁴	69
ICFTSEMAP030.....	70
Medication Adviser System	70
S Gannigaa ¹ , M G Harshina Sri ² , S Madhuram ³ , Mr. V. Rajesh Kannan ⁴	70
ICFTSEMAP031.....	71
Analyzing How Automation Impacts Stress and Job Satisfaction in Banking Jobs	71
Sweta Singh ¹ , Prof.(Dr.) L.B. Gupta ²	71
ICFTSEMAP032.....	72
Evaluating India's Climate Adaptation Policies: A Critical Analysis of PMFBY, NAFCC, and Soil Health Management Scheme in Enhancing Agricultural Resilience	72
Dr Jaimol James.....	72
ICFTSEMAP033.....	73
Enabling Data Storage Security with Blockchain Technology.....	73
R. Vigneshwaran ¹ , N. Mageshwaran ² , J. Akash ³ , S. Kumaravel ⁴ , R. Mohana Santhiya ⁵	73
ICFTSEMAP034.....	74
A Comprehensive Survey of Bias in LLMs: Current Landscape and Future Directions	74
Rajesh Ranjan ¹ , Shailja Gupta ² , Surya Narayan Singh ³	74
ICFTSEMAP035.....	75
A Comprehensive Survey of Retrieval-Augmented Generation (RAG): Evolution, Current Landscape and Future Directions	75
Shailja Gupta ¹ , Rajesh Ranjan ² , Surya Narayan Singh ³	75

ICFTSEMAP036.....	76
A Study on Tenses (Simple Present, Present Continuous, Simple past and Past Perfect) and its Difficulties Experienced by the L₂ Learners of First Year Engineering Students.....	76
Dr. R. Deepa	76
ICFTSEMAP037.....	77
AI for Cloud-Based Healthcare: Transforming Medical Services with Artificial Intelligence	77
Gracey Milcah V	77
ICFTSEMAP038.....	78
Removal of Barium from Oil Industry Effluent Using Eichhornia Crassipes.....	78
Manojraj E ¹ , Revin Sehgal R ² , Rajasekar R S ³ , Geerthika R ⁴ , Kasirajan P ⁵	78
ICFTSEMAP039.....	79
Student Churn Prophecy Using Machine Learning.....	79
Bharathy S ¹ , Babypreethi M S ² , Jemima K ³ , John Livingston J ⁴	79
ICFTSEMAP040.....	80
Early Detection of Endometriosis: Integrating Medical Imaging and Machine Learning Algorithms for Non-Invasive Diagnosis.....	80
J. Josphin Mary ¹ , Dr. V. Shanthi ²	80
ICFTSEMAP041.....	81
Drowsy Guard Real Time Detection System.....	81
Abirami V ¹ , Ruthick sree S ² , Roopa S ³ , Raj D ⁴	81
ICFTSEMAP042.....	82
Comparative Analysis of Machine Learning and Deep Learning Approaches for Predicting Closed Questions on Stack Overflow	82
Puranasree M S ¹ , Rithanyavarshikaa M ² , Sowndarya B ³ , Swetha P ⁴ , Dr.D. Nithya ⁵	82
ICFTSEMAP043.....	83
Empowering Change: The Role of Women Entrepreneurs in Advancing Global Sustainability Through Sustainable Development Goals	83

Dr. Kumari Soni ¹ , Ms. Kumari Priya ² , Dr. Shah Ali Adnan ³	83
ICFTSEMAP044.....	85
Metamorphism of financial services beyond the landscape: Bridging the Financing Gap for Emerging Business Enterprises through Financial Inclusion in Developing countries	85
Dr. Shilpi Kavita.....	85
ICFTSEMAP045.....	86
AI-Powered Solution for Improving Diagnostic Accuracy in Breast Cancer Prediction	86
Athilakshmi S ¹ , Aswini R ² , Krithikadevi U ³ , Vidhya S ⁴	86
ICFTSEMAP046.....	87
A Hybrid CNN-LSTM Approach for Enhanced Prediction of Chronic Kidney Disease Using Deep Learning and Big Data	87
Ravikumaran P ¹ , Vimala Devi K ² , Bridget Nirmala J ³ , Pandimadevi M ⁴ , Preethi K ⁵ , Mangaiyarkarasi T ⁶	87
ICFTSEMAP047.....	88
Bus-Pass Management System	88
Manikandan V ¹ , Saravanan K ² , Dinesh S ³ , Sundararaju G ⁴	88
ICFTSEMAP048.....	89
Flex Sensor Based Communication Aid for Mute Communities	89
M.Keerthana ¹ , R. Kayalvizhi ² , P.P. Samsitha ³ , Mrs Priyadarshini ⁴	89
ICFTSEMAP049.....	90
Implementation of Industry 4.0 RFID Technology for Sustainable Packaging Solutions.....	90
Vivek Manohar Dahake ¹ , Usha Pawar ²	90
ICFTSEMAP050.....	91
Heart Beat Guardian: Virtual Heartrate Monitoring.....	91
Karshan Victor Josh T ¹ , Shiyam A ² , Vignesh S ³ , Mrs Ignatius selvarani X ⁴	91
ICFTSEMAP051.....	92
Duty of Care – Safety Management and Crew Welfare	92

Dr. S. Gopinath ¹ , Mr. Yash Srivastava ² , Dr. S. Rajeswari ³ , Mrs.Ishwarya ⁴ , Mr. Pradeep ⁵ and Mr. Yogesh Rana Singh ⁶	92
ICFTSEMAP052.....	93
Exploring The Hydro Chemical Properties of Groundwater in Madurai District for Sustainable Water Management	93
Aparna N ¹ , Priyadharshini G ² , Rajapandiyan S ³ , Vignesh L ⁴ , Yakini M ⁵ , Eunice J ⁶	93
ICFTSEMAP053.....	94
Uncovering the Impact of Neuromarketing Strategies on Brand Equity.....	94
Mr. Arindam Roy	94
ICFTSEMAP054.....	95
Food Minder.....	95
Praveen Kumar G ¹ , Magathi Lakshmi K ² , Thirisha M ³	95
ICFTSEMAP055.....	96
Eco-friendly Light weight Paper Crete Bricks	96
R. Kalaimani ¹ , S. Muthu Sanjay ²	96
ICFTSEMAP056.....	97
Exploring the intersection of AI and Ethics in Architecture: Implication for Design, Design Thinking and Built Environment.....	97
Udit Gupta ¹ , Anshika Khurana ² , Harmanpreet Kaur ³	97
ICFTSEMAP057.....	98
Architecture Practice in India: Navigating Public Relations, Marketing and Client Relation in A Competitive Market.....	98
Ms. Manvi Singh ¹ , Mr. Abhishek Saxena ² , Ar. Harmanpreet Kaur ³	98
ICFTSEMAP058.....	99
Campus Route Map.....	99
Mrs. Muthulakshmi K ¹ , Manojkumar R ² , Kesavan R ³ , Arul Kumaran S ⁴	99
ICFTSEMAP059.....	100

Predictive Segment Analysis in Atopic Eczema Using Machine Learning Algorithm.....	100
Ms. M Amshavalli ¹ , M Ananth ² , A Bankaj Kumar ³ , M Boobala Krishnan ⁴	100
ICFTSEMAP060.....	101
The Turbulent Hyperbolic Fluid's Unsteady Mhd Flow Via A Vertical Porous Plate Using Non-Fourier Law.....	101
M.Nagapavani ¹	101
ICFTSEMAP061.....	102
Cognitive Brain Age Estimation.....	102
Surya A ¹ , Kavya Sri Vaipava S ² , Ashika Deulin J ³ , Janani S ⁴	102
ICFTSEMAP062.....	103
Synthesis and Characterization of Chiral Impurities of Edoxaban Tosylate Monohydrtae, Used as an Anticoagulant Drug	103
Pritesh Kardile ¹ , Dattatray Chadar ² , Gorakshanath Shinde ³ , Dilip R. Birar ⁴ , Prashant A. Patil ⁵ ...	103
ICFTSEMAP063.....	104
Predictive Analytics for Soil Productivity Using Machine Learning.....	104
Mohana Prakash G ¹ , Balaji J ² , Arun kumar S ³ , Mrs Leelarani K ⁴	104
ICFTSEMAP064.....	105
Canine Breed Classification and Health Insights	105
Vignesh R ¹ , Pruthiviraj M ² , Shyam Sreeram N ³ , Mr. B. Muthukrishna Vinayagam ⁴	105
ICFTSEMAP065.....	106
Automated Hallucination Detection and Mitigation in Large Language Model.....	106
S Srinivasan ¹ , R Manjushree ² , P Harshini ³ , G V Jeeshitha ⁴	106
ICFTSEMAP066.....	107
Bridging the gap: Addressing Challenges and Exploring Opportunities for Women in Indian Architecture	107
Neha Kushwaha ¹ , Vrinda Mata ² , Ar. Harmanpreet Kaur ³	107
ICFTSEMAP067.....	108

Maximizing Returns with Linear Programming in Systematic Investment Plans.....	108
Trupti Gaikwad ¹ , Ruta Vaidya ² , Snehal Kulkarni ³ , Snehal Jadhav ⁴	108
ICFTSEMAP068.....	109
A Blockchain and AI-Powered Digital Marketplace for Optimizing Agricultural Trade Efficiency and Farmer Empowerment	109
Dr. Arthy Rajakumar ¹ , Janavarshini G ² , Hemadharshini R ³ , Nooril Afina T ⁴	109
ICFTSEMAP069.....	110
Secure APK Installation Using Blockchain: A Decentralized Approach to Threat Prevention.....	110
Dr. Arthy Rajakumar ¹ , T. Monica ² , B. Gayathiri ³ , A. Pon karthiga ⁴	110
ICFTSEMAP070.....	111
Car Damage Predictor	111
Dr. Uma Maheswari ¹ , Jabez Jerin J ² , John Rathinam V ³ , Sunil P ⁴	111
ICFTSEMAP071.....	112
Holographic Leadership Redefining Corporate Presence	112
Tracy Joan Reid ¹ , Shikha Soni ² , Jessica Glance Strong ³ , Uday Bhanu Shukla ⁴	112
ICFTSEMAP072.....	113
Impact of Substrate Material On the Performance of Patch Antenna.....	113
Bhoopalan ¹ , Karthibala ² , Karthikeyan ³ , Kavin ⁴	113
ICFTSEMAP073.....	114
Affordable Medicine Recommendation System.....	114
Dr. Meenakshi A ¹ , Aakash Kumar B ² , Raja Aswin T ³ , Prakash A ⁴	114
ICFTSEMAP074.....	115
AI-Powered Plant Disease Detection and Recommendation System.....	115
K. Leelarani ¹ , S. Divyadarshini ² , M. Deebikha ³ , T. R. Anusha ⁴	115
ICFTSEMAP075.....	116

The Function of Photosynthetic Pigments in the Mesophilic Cyanobacterium Westiellopsis Prolifica in Reducing Heat Stress in the Presence of Sodium Sulfide	116
Manpreet.....	116
ICFTSEMAP076.....	117
Evaluation of Cyanobacteria for Phycobiliproteins Production.....	117
Shveta Kaushal	117
ICFTSEMAP077.....	118
Development of Hypothesis to Evaluate the Impact of Industry 4.0 Adoption on Sustainability Performance in the Manufacturing Industry	118
Vivek Manohar Dahake ¹ , Usha Pawar ²	118
ICFTSEMAP078.....	119
Augmented Room Stylist Android Application.....	119
Sanjay Kumar K ¹ , Pavithran R ² , Vignesh S B ³ , Mr.Rajesh Kannan V ⁴	119
ICFTSEMAP079.....	120
The Commodification of Influence: Examining Consumer Culture in the Era of Sponsored Content	120
Dr S Jeni Sanjana ¹ , Neil Beeto Jerrin ² , S Hein Joshna ³	120
ICFTSEMAP080.....	121
Video Summarization Tool Using Machine Learning.....	121
Kumaravel R ¹ , Kathirvel A ² , Hari Haran R ³ , Dhanasekaran M ⁴	121
ICFTSEMAP081.....	122
Ultrasound Nerve Segmentation Using Resu-Net Architecture	122
Pradhiba D ¹ , Kaviya K ² , Priyadarshini R ³ , Swathi R ⁴	122
ICFTSEMAP082.....	123
Educational Assistant for Visually Impaired People.....	123
M.Aswini ¹ , K. Sangeetha ² , M. Nithya Sri ³ , Dr. A. Anandh ⁴	123
ICFTSEMAP083.....	124

Smartdrop: A Deep Learning Framework for Predicting College Dropouts.....	124
Deepa Priya V ¹ , Gabriel Anto Joshua S ² , Jayashree T ³ , Sandhiya K ⁴ , Srideepalakshmi S ⁵ , Harini U ⁶	124
ICFTSEMAP084.....	125
Wavelet-Based MRI Brain Image Analysis for Tumor Detection and Classification Using SVM & Random Forest	125
Ms. Deepa Priya V ¹ , Ms. Nikitha B ² , Ms. Subashini.K ³ , Ms. Magasakthi.S ⁴	125
ICFTSEMAP085.....	126
Smart Shopping Cart	126
Mrs Vijayalaksmi.E ¹ , Suganesan D ² , Sobanraj Thennavan S ³ , Sri Sharan Prakash S ⁴	126
ICFTSEMAP086.....	127
Foreign Shores and Fading Dreams: The Great Indian Labour Exodus.....	127
Dr. Kalyanasundaram P ¹ , Dr. B. Lakshma Reddy ² , Dr. Narasaiah B ³	127
ICFTSEMAP087.....	128
Phytochemical Evaluation of Bark and Leaf Extracts of Tecomella Undulata (Sm.) Seem..	128
Navdeep Kaur	128
ICFTSEMAP088.....	129
Mechanical and Comfort Properties of Hemp and Hemp Blend Fabric: A Comprehensive Review.....	129
Golda Honey Madhu ¹ , Priyanka Gupta ²	129
ICFTSEMAP089.....	130
A novel ML-based framework for securing communication in IoT devices.....	130
Dr. Neeta ¹ , Sumita Thukral ²	130
ICFTSEMAP090.....	131
Efficiency enhancement architecture of SQL Queries through Hierarchical Cache	131
Achal Vijay Navaloor ¹ , Kumudavalli M V ² , Aliya Hassan ³	131
ICFTSEMAP091.....	132

Factors Influencing Consumers regarding Adoption of Electric Vehicles: A Conceptual Study	132
Parul Sehrawat	132
ICFTSEMAP092.....	133
Comparing Deep Learning Techniques for Detecting Network Attacks	133
Vemaraju Tanishq Suhas Kaushik ¹ , Arul V ² , Naveen J ³	133
ICFTSEMAP093.....	134
Connected Healthcare Robot with IoT Integration.....	134
M. Sakthivel ¹ , S. Deepak Piriyan ² , S. M. Divakaran ³ , T. U. Meyyazhahan ⁴	134
ICFTSEMAP094.....	135
Optimized LSTM Model for Day-Ahead Solar Power Prediction.....	135
Mr. Muthu Selvam S ¹ , Mr. Dhevin Ananda Raj A S ² , Mr. Manivannan R ³	135
ICFTSEMAP095.....	136
Secure Energy Management Smart Metering Model System.....	136
Ms. Santhiya R ¹ , Ms. Sneha K ² , Mr. Manivannan R ³	136
ICFTSEMAP096.....	137
Smart Prescription Recognition and Symptom Analysis for Healthcare Solutions	137
Dr.G. Saravanan ¹ , R Punitha Gowri ² , Naveen P. N ³ , Sankar R ⁴ , Sudharsan R ⁵	137
ICFTSEMAP097.....	138
Data Privacy and Consumer Trust in Social Media Marketing	138
Dr. Rachna Thakkar	138
ICFTSEMAP098.....	139
IoT-Based Water Pollution Detection Boat with Real-Time Monitoring.....	139
Dr. Pushparani M K ¹ , Sharavari M S ² , Nayana S M ³ , Likhith L ⁴ , Manoj M ⁵	139
ICFTSEMAP099.....	140

The Impact of Age and Experience on Employee Retention: Understanding the Factors behind Intent to Stay	140
Rajvi Parmar ¹ , Dr. Mihir Shah ²	140
ICFTSEMAP100.....	141
Deep Learning Model for Automated Landslide and Debris Flow Detection	141
Mrs Deepa Priya ¹ , Saamir Gaffur Mohammed Yakub Shah ² , Praveen L ³ , Rajesh R M ⁴	141
ICFTSEMAP101.....	142
A Literature Review on Smart Traffic Management System Using AI	142
Prof. Eshwaraj ¹ , Dr. Ananthayya M B ² , Prof. Gowtham B ³ , Prof. Pooja A ⁴ , Prof. Jayshri ⁵ , Prof. Naveena G N ⁶	142
ICFTSEMAP102.....	143
Quantum Computing in Drug Discovery	143
V. Deepa Priya ¹ , J. Gnana Jersha ² , G. Madhubhavani ³ , T. Mangalya ⁴ , N. Balaharish Alias Yogesh ⁵ , T.R. Chellapandi ⁶	143
ICFTSEMAP103.....	144
Voyage Vista – A Travel Planner Website	144
Gopika Sri M ¹ , Jayakarthika K ² , Karthiga G ³ , Dr. P. Umaeswari ⁴	144
ICFTSEMAP104.....	145
Enhancing Deep Learning to Improve Road Safety: An Accident Detection System	145
Naveenkumar N ¹ , Mahapriya S ² , Dhevathai P ³ , Aswathi V ⁴ , Dhivyadharshini R ⁵	145
ICFTSEMAP105.....	146
Prospects of Coconut Waste Management for Sustainable Development in Patna	146
Dr. Kalpana Kumari	146
ICFTSEMAP106.....	147
AI-Powered Cardiovascular Health Chatbots: Design and Development	147
Dr. Arthy Rajakumar ¹ , Vignesh V K ² , Sandeep Joe A ³	147
ICFTSEMAP107.....	148

A Critical Study of the Strategies for Women Empowerment in India in Present Scenario	148
Dr. Phole Kamal Bhaurao.....	148
ICFTSEMAP108.....	149
Smart Hand Held Device for Measuring the Parameters of Cooking Oil Strategy	149
P. Saranya ¹ , R. Vimalarasi ² , D. Nagarjuna ³ , D. Vamsi ⁴ , M. Govardhan reddy ⁵	149
ICFTSEMAP109.....	150
Revolutionizing Patient Diagnosis with Machine Learning Precision.....	150
Mega Shree R ¹ , Revathi K ² , Sindhu G ³ , Shrenish Saravanan ⁴	150
ICFTSEMAP110.....	151
Web Traffic Analysis Using Machine Learning	151
Sindhu G ¹ , Kalarani R ² , Revathi K ³ , Megashree R ⁴ , Vishnu R ⁵	151
ICFTSEMAP111.....	152
Topic Analysis and Prediction Using Multiple Platform Hub Model and Centralized Network Management Algorithm (CNMA)	152
Mrs. Buvaneswari M ¹ , Ms. Jayadurga S ² , Ms. Gayathri D ³ , Ms. Harini K ⁴	152
ICFTSEMAP112.....	153
Pi-Wall: Raspberry Pi Firewall.....	153
Dr. Arthy Rajakumar ¹ , Naveen Kumar K M ² , Lokesh Kumar S ³ , Vigneshwaran P ⁴	153
ICFTSEMAP113.....	154
MediAura – An AI-Driven Digital Healthcare Ecosystem for Seamless Medical Access.....	154
Priyadharshini P ¹ , RamGanesh G H ² , Isaac Pradeep Raj K L ³ , Deepasri R ⁴ , Afrin Thayufa S ⁵ , Jeyalakshmi M ⁶	154
ICFTSEMAP114.....	155
Design and Simulation of Electric Vehicle's Battery Management	155
Prof. Viraj. B. Bhosale ¹ , Dr. Alok Kumar ² , Prof. A. J. Mehta ³ , Prof D.D. Pawar ⁴	155
ICFTSEMAP115.....	156

AI-Powered Fitness and Diet Recommendation System: A Personalized Approach to Health and Wellness.....	156
Isha Pramod Lakhekar ¹ , Simon Bansal ² , Sushmitha Santhosh ³ , Samita Bhandari ⁴	156
ICFTSEMAP116.....	157
Shriram Transport Finance Limited and Shriram City Union Finance Merger into Shriram Finance Limited: It's Socio-Economic Implication, A Case Study.....	157
Bhavya U P ¹ , Dr. Vinayak M. Bhandari ²	157
ICFTSEMAP117.....	158
Role of Co-Operative Work Environment in Team Building and Enhancing Employee Productivity: In Reference to Indian Start-Up Firms.....	158
Aditya K. Singh ¹ , Maheshwari ²	158
ICFTSEMAP118.....	159
The Rise of Gig Economy: How HR is Adapting to a New Workforce Model	159
Dr. Gita Rani Sahu.....	159
ICFTSEMAP119.....	160
Empowering Education: A Cloud Based E-learning Platform	160
Nair Viji Ravikumar ¹ , Mulla Ibrahim Mujeeb ² , Anubhav Majumder ³ , Swati Patil ⁴	160
ICFTSEMAP120.....	161
Innovative Approaches to Secure Image Processing in Decentralized Environments.....	161
C. Sathana ¹ , J. Rishwana Begam ² , V. Rohini ³ , V. Muthu Subhashini ⁴ , D. Evangelin ⁵ , Mrs. V. Deepapriya ⁶	161
ICFTSEMAP121.....	162
AI Chatbots and Cognitive Behavioral Therapy in Digital Care.....	162
Priya S ¹ , Dr. Rajini G ²	162
ICFTSEMAP122.....	163
Multicultural Workforces: HR's Role in Driving Equity and Inclusion.....	163
Priya S ¹ , Dr. Rajini G ²	163

ICFTSEMAP123.....	164
Modular Industrial Labeling and Stamping System with Conveyor Integration using PLC Controller	164
R. Gopalakrishnan ¹ , S. Aneesh ² , K. Chandra mouli ³ , S. Logeshkumar ⁴	164
ICFTSEMAP124.....	165
Experimental Investigation of Thermal Performance on Zirconium Based Oxide Coating on Al and SS304	165
Vandan V. Vyas ¹ , Kamlesh V. Chauhan ²	165
ICFTSEMAP125.....	166
A Data Mining Framework for Enhanced Evaluation of Transactional Data Efficiency	166
Sonam ¹ , Dr. Jyoti ²	166
ICFTSEMAP126.....	167
Automated Blood Cell Detection and Counting.....	167
S Asha ¹ , R Swarna Lakshmi ² , P Dorathisha ³ , M P Varshini ⁴	167
ICFTSEMAP127.....	168
Facial Biometrics-Driven Encoding and Deep Learning Integration for Secure Password Retrieval	168
Akash Immanuel Solomon ¹ , Ashwin ² , Swaminathan ³	168
ICFTSEMAP128.....	169
The Verse of Floras: A Linguistic Journey Through Botanical Nomenclature.....	169
Poornima S V.....	169
ICFTSEMAP129.....	170
Graph QL vs REST	170
Anjaly Babu ¹ , Arathi Balachandran ² , K. M. Mumthas ³ , M. P. Ganga ⁴ , Niveditha A ⁵	170
ICFTSEMAP130.....	171
Analyzing Bug Fix Characteristics Across Projects: Investigating the Impact of Priority, Complexity, and Resolution Time	171

Meenakshi S	171
ICFTSEMAP131.....	172
Numerical Analysis of Milling Cutting Tool.....	172
Dr.R. Uday Kumar ¹ , Ajay Kumar S ²	172
ICFTSEMAP132.....	173
Ethical Challenges in AI and Robotics: Balancing Innovation and Responsibility	173
Dr. Ranju Grover	173
ICFTSEMAP133.....	174
Understanding Teachers' Attitudes Towards E-Learning: A Psychological and Technological Perspective.....	174
Atulya Verma ¹ , Dr. Meena Bhandari ²	174
ICFTSEMAP134.....	175
A Systematic Study of Various Techniques of Obstacle Detection and Traffic Sign Detection used in Self Driving Car Application of IoT	175
Ms. Reshma D. Vartak Koli ¹ , Dr. Avinash Sharma ²	175
ICFTSEMAP135.....	176
Enerlink: Empowering EVS with Dynamic Vehicle-To-Vehicle Charging	176
Hariharan J K ¹ , Vigneshwar R M ² , Karthick S ³	176
ICFTSEMAP136.....	177
A Study on Intellectual Capital and Innovative Work Behavior of Employees in it Sector .	177
Priya P R ¹ , Dr. G. Kannan ²	177
ICFTSEMAP137.....	178
Smart Gas Leakage Detection System Using IoT	178
Niveditha N ¹ , Harshini B ² , Peria Mahalakshmi M ³ , Siva Sharma Karthick ⁴	178
ICFTSEMAP138.....	179
Effective Workplace Stress Management Techniques in Talent Management	179

Dr Manoj kumara N V ¹ , Chandana S ² , Manupriya A M ³	179
ICFTSEMAP139.....	180
Health Insurance Price Prediction Using Machine Learning	180
A M Megha ¹ , G Vishnu Priya ² , G S Balaji ³ , Dr D Vendhan ⁴	180
ICFTSEMAP140.....	181
Design and Performance Analysis of a Hybrid Inverter for Solar and Wind Energy System.....	181
R. Gopalakrishnan ¹ , V.Heama Chandran ² , T.Shomesh ³ , M.Kamalesh ⁴	181
ICFTSEMAP141.....	182
The Study on Trends and Analysis of the 10 Year Bond Yield.....	182
Dr. M. B. Roopa ¹ , Dr. S. Baranidaran ² , Spoorthy.P ³	182
ICFTSEMAP142.....	183
Sign Language-To-Speech and Speech-To-Sign Language	183
Khushi Singh ¹ , Shashank Tiwari ² , Anuj Mishra ³ , Rashmi Maheshwari ⁴	183
ICFTSEMAP143.....	184
Improving Melanoma Detection Efficiency, A Hybrid Approach Using Res-Net, Efficient-Net and Dense-Net	184
Dr. Muthu Selvi R ¹ , Muthuram M ² , Senthil Kumar T B ³ , Bhuvan Muthu V ⁴	184
ICFTSEMAP144.....	185
Smart and Dynamic AI-Powered Travel Planning: A Machine Learning Approach for Personalized and Real-Time Itinerary Generation	185
Mrs. V. Gayathri ¹ , S. Suriya Ram ² , M. Vinodhan ³ , M.Ganesh Kumar ⁴	185
ICFTSEMAP145.....	186
AI-Driven Performance of Fintech: Navigating Challenges and Unlocking Potential	186
Dr. Mitul Parmar ¹ , Dr. Chetna Parmar ² , Dr, Priyanka Bhatt ³	186
ICFTSEMAP146.....	187

The Impact of Artificial Intelligence on Social Media Marketing: Data-Driven Insights and Strategic Implications.....	187
Harshitha Y S ¹ , Usha Narayan ²	187
ICFTSEMAP147.....	188
Design and Implementation of SIW Antenna for 5G Application	188
Shivamadhura ¹ , Vishnupriya ² , Mounitha ³ , Ganesh babu ⁴	188
ICFTSEMAP148.....	189
Enhanced EV Management System: Safety and Monitoring.....	189
Danasiri P A ¹ , Bavasrivathani B ² , Nisha P ³	189
ICFTSEMAP149.....	190
Adaptive Autonomous Assistance Using Raspberry Pi.....	190
S Bhoopalan ¹ , Ragunath P ² , Sanjay K ³ , Subash M ⁴	190
ICFTSEMAP150.....	191
IoT Based Avoid Fire Accident in E Vehicle with Multiple Fault Detection and Battery Management Using AI.....	191
Madhavan P ¹ , Srinithi A ² , Vigneshwari J ³ , Pradeepa J K ⁴	191
ICFTSEMAP151.....	192
Flexible EBG Structure Antenna for ISM Band Apply	192
S. Praveenkumar ¹ , R. Ragul ² , M. Sivakumar ³ , Dr. R. Praveena ⁴	192
ICFTSEMAP152.....	193
A Hybrid Yolo FPGA Architecture for Real - Time Object Detection in Edge Computing.	193
Saranya P ¹ , Sowmiyaa ² , Pooja M ³ , Sowbarnika B ⁴ , Srinithi C ⁵	193
ICFTSEMAP153.....	194
Cardio Monitoring and Cardiac Disease Prediction Using Machine Learning.....	194
Srinivasan K ¹ , Sharan R ² , Selvakumar S ³ , Udhayakumar M ⁴	194
ICFTSEMAP154.....	195

Classification of WBC using VGG-19 Architecture.....	195
Kirubakaran J Dr ¹ , Pooja K ² , Sujitha R ³ , Pavithra R ⁴	195
ICFTSEMAP155.....	196
Low-Latency Approximate Adder in FPGA.....	196
Sowmiyaa P ¹ , Saranya P ² , Sabena M ³ , Saranya R ⁴ , Subhisha K ⁵	196
ICFTSEMAP156.....	197
A Planar Semi-Circled Horn-Like Bow-Tie Antenna for Armature Radio Applications	197
Batheni Ranjith Kumar	197
ICFTSEMAP157.....	198
A Planar Semi-Circled Horn-Like Bow-Tie Antenna for Armature Radio Applications	198
M Madheswaran ¹ , B Ranjith Kumar ²	198
ICFTSEMAP158.....	199
Securing Fintech: Evaluating the Impact of Multi–Factor Authentication on Cyber Threats	
Shivani Kumari ¹ , Kundana Sindhu ² , Dr.K. Krishna Kumari ³	199
ICFTSEMAP159.....	201
Analysis of the Impact of Digital Healthcare on Service Quality in Mental Healthcare	201
Vikaash P ¹ , N Ramakrishnan ²	201
ICFTSEMAP160.....	202
A Survey: Transformer-Based Models in Code Summarization	202
Suraj Nate ¹ , Om Patil ² , Shreenidhi Medar ³ , Dr. Jyoti Deshmukh ⁴	202
ICFTSEMAP161.....	203
Electron Beam Irradiated Studies on Conducting Polymer Composites for Energy Storage Applications.....	203
Asiya Masarat ¹ , Jakeer Husain ²	203
ICFTSEMAP162.....	204
Studies On Conducting Polymer Composites for Energy Storage Devices.....	204

Asiya Masarat ¹ , Jakeer Husain ²	204
ICFTSEMAP163.....	205
A Study on Brand Preference Towards Foreign vs. Local Brands in the Indian Smartphone Market	205
Mario Martin.....	205
ICFTSEMAP164.....	206
Development of Special Purpose Machine using PLC	206
Mr. K. Mohanraj ¹ , R. S. Mahilmithran ²	206
ICFTSEMAP165.....	207
Recruitment Process using Federated AI: An Unbiased Approach	207
Dr Rakesh Kumar Pathak ¹ , Dr Prakash Upadhyay ²	207
ICFTSEMAP166.....	208
Agro-Franchising for Farm Input and Market Linkage Delivery: A Case Study of DeHaat in Bihar	208
Manish Kumar ¹ , Mr. Piyush Ranjan Sahay ²	208
ICFTSEMAP167.....	209
AI-Powered Smart Shopping Trolley	209
Vivek S. Vaidya ¹ , Kaustubh N. Gaigole ² , Sanket Chamlate ³ , Pruthviraj P. Futan ⁴ , Mohit N. Deshmukh ⁵ , Nitin S. Thakare ⁶	209
ICFTSEMAP168.....	210
Fitai-Personalized Diet and Fitness Planner	210
N Gajalakshmi ¹ , C Andalpriya ² , V Nuttrenai ³ , K Raja Lakshmi ⁴	210
ICFTSEMAP169.....	211
Skyscrapers Beyond Limits: A Futuristic High-Rise Vision	211
Balpreet Singh Madan	211
ICFTSEMAP170.....	212

Educare: An Integrated Platform for Student Attendance Management and Academic Performance Tracking	212
Hari Prasath C ¹ , Aakaash Kumar M ² , Sriram Rathinavel.P ³ , Mr. Asir D ⁴	212
ICFTSEMAP171.....	213
AI-Driven Autonomous Hygiene Solution for Public Toilet.....	213
Mr. P. Sridhar ¹ , A. Manoj ² , J.Valan Joshi ³ , S. Meiyarasu ⁴	213
ICFTSEMAP172.....	214
The Impact of Integrating Machine Learning and Block Chain for SMS Spam Detection ..	214
Mr.Ravi H Gedam ¹ , Dr. Sumit Kumar Banchhor ²	214
END.....	215

The Influence of Social Media On Political Behavior in Indonesia

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ABSTRACT

The digital revolution has changed the political landscape in Indonesia, with social media becoming the main platform for people to interact, access information and participate in political life. This research aims to analyze the influence of social media on the political behavior of Indonesian people, including political preferences and voter participation. The research method used is a literature review, by examining various scientific articles and related book references. The research results show that social media has a significant impact on increasing political participation, forming public perceptions, and mobilizing political support. However, this research also highlights challenges such as the spread of false information (hoaxes) and polarization of opinion which can affect the quality of political discussions. The implication of this research is the need to increase digital literacy and appropriate regulations to ensure social media can function as a positive tool in the democratic process in Indonesia.

Rhetoric and Communication Strategy of Candidates in Regional Elections and General Elections

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ABSTRACT

This study analyzes the rhetoric and communication strategies used by candidates in the 2024 Regional Head Elections (Pilkada) and General Elections (Pemilu) in Indonesia. Elections and Pilkada in Indonesia are important events for candidates to win public support, where political communication plays a central role in shaping public perception. This study aims to understand how candidates construct their political messages and the communication strategies they implement in the face of increasingly critical and selective voter dynamics. Using a qualitative approach, this study explores several communication techniques, such as the use of social media, political speeches, and direct interactions with voters, used by candidates. This study also highlights how political rhetoric, such as campaign promises, social issues, and attacks on political opponents, become strategic tools to attract attention and build a positive image. In addition, this study also examines the role of mass media and digital platforms in supporting or hindering the messages conveyed by candidates. The findings of this study indicate that political rhetoric used by candidates has a significant influence on voter behavior, despite the challenges of managing accurate and credible information in the digital era. This research is expected to provide deeper insight into the effectiveness of political communication strategies in elections and regional elections, as well as provide recommendations for candidates who want to achieve success in increasingly competitive elections.

Keywords: **Indonesia 2024; Regional Election; General Election; Political Rhetoric; Communication Strategy.**

Political Communication in the Digital Age “The Influence of Social Media in Political Campaigns

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ABSTRACT

In the increasingly advanced digital era, social media has become a powerful platform for sharing information, influencing opinions, and mobilizing the masses. Therefore, it is important to understand how the use of social media in political campaigns affects political participation and public perception. This study aims to investigate the influence of social media on political behavior, focusing on the use of social media in political campaigns and its impact on political participation and public perception. This study will use a case study approach to analyze several political campaigns that involve social media as the main communication tool. Data will be collected through online surveys, interviews, and social media content analysis. The respondents sampled in this study are individuals involved in political campaigns that use social media, as well as the general public who actively consume political content on social media. Based on this study, it can be concluded that the use of social media in political campaigns has a significant influence on political behavior, political participation, and public perception.

Keywords: Self-Understanding, Career Information, Decision-Making Skills, and Self-Efficacy.

The Influence of Social Media on Political Behavior in Indonesia

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ABSTRACT

The digital revolution has changed the political landscape in Indonesia, with social media becoming the main platform for people to interact, access information and participate in political life. This research aims to analyze the influence of social media on the political behavior of Indonesian people, including political preferences and voter participation. The research method used is a literature review, by examining various scientific articles and related book references. The research results show that social media has a significant impact on increasing political participation, forming public perceptions, and mobilizing political support. However, this research also highlights challenges such as the spread of false information (hoaxes) and polarization of opinion which can affect the quality of political discussions. The implication of this research is the need to increase digital literacy and appropriate regulations to ensure social media can function as a positive tool in the democratic process in Indonesia.

Keywords: Media Social, Politic, Public.

A Methodical Approach in Warehouse Management Systems (WMS)

and Implementations

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ABSTRACT

In the last few decades or so, many organizations have realized the importance of Logistics and Supply Chain Systems to manage their business entities due to evolving and dynamic business environment and subsequently implemented those systems as well. There are many IT systems available in the market and this research article focuses on the Warehouse Management System (WMS), one of the very crucial IT systems in Logistics and Supply Chain channel. As it is important for an organization to implement WMS for their Logistics business to manage their inventory while meeting the customer requirements, it is also important to use right methodology to make the implementation a successful one for all the stakeholders involved in the business. Hence, a case study has been conducted in a leading Logistics and Supply Chain company to study and evaluate their approach in WMS implementations and also provide recommendations for further streamlining the implementation strategy based on the study.

Keywords: **Warehouse Management Systems (WMS), Logistics and Supply Chain Systems.**

Collaboration between Teaching English and Renewable Energy: Fostering Sustainable Development and Language Proficiency

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ABSTRACT

In today's interconnected world, the intersection of education and sustainable development has gained significant attention. This abstract explores the potential collaboration between teaching English as a second language (ESL) and renewable energy education, with the goal of fostering sustainable development goals and enhancing language proficiency simultaneously.

Renewable energy has emerged as a crucial solution to address the challenges of climate change and transition to a sustainable future. Education plays a vital role in equipping individuals with the knowledge and skills necessary to embrace renewable energy technologies and practices. Meanwhile, English language proficiency has become a global necessity due to its role as a lingua franca in academia, diplomacy, and the professional world.

This abstract proposes that a collaboration between ESL and renewable energy education can lead to numerous benefits. By integrating renewable energy topics into ESL curricula, students can gain an interdisciplinary perspective on sustainable development, developing an understanding of the environmental, social, and economic implications of renewable energy technologies. This can foster a sense of global citizenship and responsibility among students.

Incorporating renewable energy concepts into ESL education can also enhance language proficiency by providing students with contextualized learning experiences that require critical thinking, problem-solving, and communication skills. This can help students develop a deeper understanding of the language and its applications in real-world scenarios.

Overall, the collaboration between ESL and renewable energy education has the potential to promote sustainable development and language proficiency, equipping students with the knowledge and skills

necessary to address the challenges of the 21st century. Incorporating renewable energy concepts into ESL instruction can significantly improve language acquisition and proficiency. By integrating relevant terminology, debates, and discussions into the classroom, students are provided with engaging and meaningful content, which in turn enhances their motivation and participation. Through expressing opinions, debating renewable energy policies, and collaborating on group projects related to sustainable energy solutions, students can develop their language skills in a practical and meaningful way.

Moreover, collaboration between ESL and renewable energy education can create opportunities for authentic language use. Field trips to renewable energy installations, lectures from industry experts, and interactive projects allow students to practice English in real-life contexts, thereby enhancing their language fluency and cultural understanding. This experiential learning approach fosters a deeper appreciation of the language and its practical applications, while promoting cross-cultural understanding and exchange.

Contribution Title Exploring Algorithmic Paradigms in Message Classification: Insights from the Enron Email Dataset

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ABSTRACT

This research focuses on message classification, specifically distinguishing between legitimate and spam messages. The paper emphasizes the importance of preprocessing textual data using vectorizers, introducing CountVectorizer and TFIDF Vectorizer for this purpose. These vectorizers convert text into numerical representations. The dataset is split into training and testing data to facilitate model development and evaluation. Python, along with libraries such as scikit-learn and nltk, is used for model implementation, providing machine learning and natural language processing capabilities. Various algorithms, including decision trees, random forests, support vector machines, logistic regression, and neural networks, are employed, each initialized with specific parameters for optimization. Data is sourced from the Enron email dataset on Kaggle, comprising around 500,000 emails linked to Enron's investigation by the Federal Energy Regulatory Commission. The research objectives include training models with selected algorithms to accurately categorize messages and evaluating their performance using metrics like accuracy, precision, recall, and F1 score. Findings reveal weak positive correlations between message characteristics and the target variable. The developed models show promising performance, emphasizing the need to consider diverse factors and techniques in message classification. The study contributes insights into the relationships between message characteristics and classification accuracy, aiding the development of effective models across various domains.

Keywords: Message Classification, Spam Detection, Algorithms, Decision Trees, Random Forests, Support Vector Machines, Logistic Regression, Neural.

A Study of the Histories of People for Gerontology through Steps of Artificial Intelligence in Text Book

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ABSTRACT

Artificial intelligence (AI) has a big potential to help tackle educational system, especially during pandemic it has been issued for worldwide people's interests in many reasons. Particularly, education has very important issue for all people in the world. Nowadays, AI has the power to improve teaching and learning methods throughout all age from birth through death even before death and life after death. Consciousness is the most important to improve ability than memorization. In order to improve consciousness, there are among four cycling to grow such as Layered knowledge 層(Sou)知(Chi), round 環(Wa), practice for a lifetime 一生稽古(Isshoukeiko), and unnatural wonder 不自然(Fushigen)の(no)妙(Myou). These are AI goals to seek wisdom through experience. We can understand gradually meaning of Master 名人(Meijin), Expert 達人(Tatsujin), Ironman 鉄人(Tetsujin): Creation and evolution of intelligence through time and eternity.

Keywords: Gerontology, Artificial Intelligence, education, Consciousness.

A Study on Implementation of eLearning and Students Learning Behavioral Changes

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ABSTRACT

It is a well-known fact that education is essential in this modern age, in this modern era, society is undergoing many changes, but education is the main reason for it, although there are many factors involved. The demand for education is increasing day by day and the development and evolution of education is growing very fast. In this research article, this article has based researcher experience on the opinions of many scholars about how to focus on the mind-set of students in Information and Communication Technology Education or eLearning in the modern era. Many books and already written articles have been qualitatively researched to write this research paper.

Keywords: eLearning, ICT, Education, Development, Students

Integration of Cloud Computing with Artificial Intelligence in Education Process

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ABSTRACT

This study aimed to identify the integration of cloud computing with artificial intelligence in the education process, where the researchers touched on showing the different definitions of the concept of artificial intelligence in the learning and teaching process, and the basics of computing artificial intelligence and the cloud, how does cloud computing change schools? And why is artificial intelligence important in cloud computing? The benefits of using artificial intelligence in cloud computing, and the future of artificial intelligence in cloud computing.

Keywords: Cloud Computing, Artificial Intelligence, Education Process.

Tint Detection Using Image Analysis

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ABSTRACT

This paper introduces an automated Tint Detection System designed to meet regulatory requirements for vehicle window tinting through advanced image analysis techniques. Excessive tinting on vehicle windows can impair visibility, affecting road safety and law enforcement's ability to monitor vehicles. Traditional manual inspections are time-intensive, costly, and prone to error. This project proposes a system that automates tint detection in real-time using a modular pipeline incorporating YOLOv5 for vehicle detection, U-Net for window segmentation, and a Convolutional Neural Network (CNN) for Visual Light Transmission (VLT) analysis. Our system facilitates efficient, automated detection of tint levels, supporting law enforcement in ensuring compliance with minimal manual intervention.

Keywords: Image Analysis, Tint Detection, YOLO, U-Net, Convolutional Neural Network, Real-Time Processing, Vehicle Compliance.

Precision: Paper Correction System Using AI

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ABSTRACT

The education system has experienced a significant transformation due to technological advancement. Technology has made teaching much more interesting and informative through projectors, online tutorials, teaching videos, and animations. In classrooms, technology is now widely used in order to enhance learning experiences for students. The evaluation, however, tends to be traditional as exam papers are manually graded with a heavy reliance on the teacher's judgment. Replacing the manual way of grading with machine learning could very well tackle the inconvenience and errors human handling brings about. This project aims to address the massive amount of time and energy that are being applied to the manual correction of exam papers. Also, an online evaluation of answer sheets would provide a quicker method of assessment compared to offline grading.

Keywords: Online Evaluation, Machine Learning, Automated Correction, Education Technology, Exam Paper Assessment.

Survey on The Role of Artificial Intelligence in Future Fitness Services

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ABSTRACT

Future of Fitness is being transformed by deep learning with CNN algorithms, MediaPipe and Open CV use pose estimation to track body movements in real-time, analyzing posture, form, and exercise performance. This allows fitness apps to offer personalized workout plans, injury prevention tips, and progress tracking. With automated motion capture, users get customized training and remote coaching, creating a more engaging and effective fitness experience that promotes better health. Artificial Intelligence (AI) is revolutionizing the fitness industry, offering personalized, data-driven solutions that enhance user experience, performance, and overall well-being. Future fitness services will leverage AI to provide tailored workout plans, real-time feedback, and injury prevention strategies. By integrating AI-powered virtual trainers, and smart gym equipment, individuals can receive customized coaching that adapts to their fitness levels, and goals.

Keywords: CNN Algorithms, Mediapipe, Open-CV, Object Detection, Image Processing AI, Fitness, Health, Pose Estimation.

Development of Real-Time Safety Monitoring of Scaffolding in Construction Site Using Vision-Based Techniques

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ABSTRACT

The construction industry is high-risk, with worker safety as a top priority. This project aims to develop a real-time safety monitoring system for construction sites using vision-based techniques to improve worker safety. A systematic journal analysis was conducted on papers published between 2020 and 2024. After reviewing 32 journal articles, 27 meeting the selection criteria were finalized for analysis. Using VOSviewer and Litmap, the analysis identified significant contributions in journals such as Applied Sciences, Automation in Construction, and Sustainability, *which* showed strong impact. Countries with higher-impact journals included South Korea, the United States, and China, with developed nations dominating in total and average citations. Journal analysis provides valuable insights by identifying research trends, uncovering knowledge gaps, and offering a deeper understanding of the field. It also helps guide future research and publication decisions by highlighting the most influential work in construction safety and real-time monitoring systems.

Keywords: Construction Safety, Real-Time Monitoring, Computer Vision, YOLO, Label Studio, Performance Metrics, Mean Average Precision (mAP), Precision, Recall, F1-Score, VOS viewer, litmap, journal analysis, Real-Time Alerts.

Health Status Evaluation of Female Street Vendors of Patna Town, Bihar

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ABSTRACT

In the present day, customers frequently purchasing from street vendors or hawkers, as they offer necessary goods at reasonable prices and in accessible locations. However, these street vendors, particularly female street vendors, face numerous serious obstacles including social, economic, and health-related issues. The objective of this investigation is to ascertain the health conditions and occupational vulnerabilities that women who are employed in this field encounter. The primary data was collected through a field survey, which was restricted to a maximum of 100 respondents. The data collected was analysed and represented using a bar diagram, pie chart, and percentage analysis. The key findings indicate that women are primarily affected by one or more health issues, work long hours and have been mistreated by government employees, and tend to seek private health care more often than public health services. This results in a decrease in their purchasing power, which in turn decreases their ability to purchase other basic necessities and ultimately reduces their standard of living. It also addresses the factors that contribute to the underutilisation of public healthcare services. Consequently, it is recommended that the government implement superior policies and programs that address the financial needs of businesses, thereby enhancing the standard of living of the women who work in this sector. Additionally, policies should be implemented that ensure the children of women in this field have access to a sufficient education. Attention should be given to the maintenance of hygiene at public places and awareness program should be implemented.

Keywords: Street Vendors, Health, Health Facilities, Women Vendors

Fake Currency Detection System Using Image Processing

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ABSTRACT

The proliferation of counterfeit currency poses a significant threat to global economies. Traditional methods of detection rely on human expertise, which can be time-consuming and prone to errors. This study proposes an automated fake currency detection system using image processing techniques. The system employs a combination of pre-processing, feature extraction, and classification algorithms to distinguish between genuine and counterfeit currency notes. The proposed methodology utilizes techniques such as, Image acquisition and pre-processing Feature extraction (texture, colour, shape, and watermark analysis) Classification (machine learning algorithms, such as SVM, CNN, and KNN), Experimental results demonstrate a high accuracy rate of [insert percentage] in detecting fake currency notes. The proposed system offers a robust, efficient, and cost-effective solution for combating counterfeit currency. Its integration with existing banking systems and ATMs can significantly reduce economic losses and enhance financial security.

Keywords: **Fake Currency Detection, Image Processing, Feature Extraction, Classification, Machine Learning, Currency Authentication.**

Deep Fake Video Detection Using Transfer Learning Resnet50

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ABSTRACT

The rapid development of deep learning technologies has enabled the creation of highly realistic deepfake videos, raising concerns in areas such as media integrity, privacy, and security. Detecting these deepfakes has become a significant challenge, as conventional methods struggle to keep pace with increasingly sophisticated techniques. This journal explores the application of transfer learning using ResNet50, a pre-trained convolutional neural network, for deepfake video detection. We present an overview of deepfake creation, the role of ResNet50 in transfer learning, the implementation process, and the results of using this approach to detect deepfakes in video content.

Advancements in Real-Time Incident Reporting for Construction Sites: A Literature on NLP Applications

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ABSTRACT

Construction site incidents show growing concern based on data collected by the International Labour Organization which demonstrates rising frequency of incidents along with severe consequences. The evaluation of research between 2020 and 2024 outlines existing practices, difficulties and prospective uses of NLP and AI to revolutionize incident reporting procedures. The review examines three major sections about present-day operations and Natural Language Processing applications while also analyzing Artificial Intelligence-based severity assessment methods. Through the Litmap system identified a significant problem in connecting NLP technology with immediate incident data entry. A method to analyze site-specific data by conducting surveys uses NLP speech recognition technology alongside AI tools that perform report assessment along with severity classification to develop a real-time alert system. This approach seeks to offer useful information that both enhances safety protocols and enables better decisions at the same time. NLP and AI work together to strengthen occupational safety by assessing sites more efficiently thus lowering accident frequencies and resulting in better safety results. This system provides the potential to lower both accidents and near-miss incidents dramatically during its implementation phase.

Keywords: Automated Incident Reporting, AI, NLP, Construction Site Safety Management, Speech Recognition.

Work-Life Balance and Job Satisfaction among College Teachers in Bihar: A Comparative Study of Public and Private Institutions

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ABSTRACT

This study explores the work-life balance (WLB) and job satisfaction among college teachers in Bihar, focusing on the differences between public and private institutions. Recognizing the increasing demands placed on educators, the research aims to assess how these pressures impact their personal and professional lives. A structured questionnaire was distributed to 400 college teachers, with a response rate of 85%, yielding 340 valid responses. Descriptive statistics, correlation analysis, and regression analysis were employed to analyze the data. The results indicate that teachers in public institutions experience significantly higher levels of work-life balance (mean = 4.00) and job satisfaction (mean = 4.30) compared to their private institution counterparts (mean work-life balance = 3.50; mean job satisfaction = 3.70). Furthermore, a strong positive correlation ($r = 0.60, p < 0.01$) between work-life balance and job satisfaction was found, while workload was negatively associated with both constructs (work-life balance: $r = -0.48, p < 0.01$; job satisfaction: $r = -0.40, p < 0.01$). The study concludes that improving work-life balance is crucial for enhancing job satisfaction among college teachers, particularly in private institutions. Recommendations include institutional policy changes aimed at workload management and increased support for teachers. This research contributes to the ongoing discourse on educator well-being and emphasizes the need for targeted interventions to promote a healthier work-life balance in the academic sector.

Keywords: Work-Life Balance, Job Satisfaction, College Teachers, Public Institutions, Private Institutions, Bihar.

Hybrid Solar Wind-Powered Luo DC-DC Converter with Adaptive Control for Enhanced Efficiency and Reliability

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ABSTRACT

This paper aims at discussing the concept, design and setup of a renewable hybrid energy system incorporating Luo converters for photovoltaic (PV) charging system with solar & wind power sources. By engaging an Artificial Neural Network (ANN) for controlling and operating the system most effectively, the power flow control system smartly controls energy conversion and storage fortifying the effectiveness and dependability of renewable energy production. The Luo converter becomes the decisive part, and it could boost or buffer the frequencies of the DC voltage produced from the solar panels and wind turbines to fit the batteries and electronics. Also, the efficiency of the converter is high reducing energy losses, ensuring proper charging and powering operations under different input voltage ranges characteristic of renewable sources. System employs a charge controller which manages the charging currents, commonly used to control the rate of energy charge. Lastly, this hybrid renewable energy system improves both uses of solar and wind power and provides a stable power supply to the grid, making it contribute positively towards the integration of sustainable energy supply. This converter was designed to maximize efficiency with minimal ripples. These objectives would be achieved using an LCL filter. Here, the typical Luo converter circuit arrangement includes two inductors, two capacitors, and two switches. The input voltage is first selected by an inductor and the output current from the second inductor. The two capacitors along with the switches are in combination with the two inductors, thus forming an LCL filter. Now when the first switch is ON, it allows the input voltage feeding into the first inductor. As the result, the current flow increases. After the first switch is OFF and the second switch is ON, then the current

passes through the LCL filter; thus, the output capacitor gets charged. Then the energy built up in the succeeding inductor gets transferred to the output capacitor. It raises the output voltage. In Luo converter, its functionality depends on the duty cycle of the switches. The duty cycle may be altered either in an increase or decrease, depending on which will be required for the output voltage in relation to the input voltage. Through the application of LCL filters, the Luo converter achieves higher efficiency and fewer ripple effects regardless of their working in high frequencies of switching. Luo converters are often implemented in applications in power electronics where efficiency needs to be kept high, like electric vehicles, renewable systems, and data centers. The first peak wave in solar structure installation took place during the 1980s and 1990s. Alongside growing environmental concern, government policies encouraged the use of solar power by offering some incentives for production. Many of the countries which led in that area were those like Japan or Germany, introducing feed-in tariffs and even subsidizing the installation of solar panels, which proves to be quite cost-effective to individuals and firms. In this era, efficiencies for solar cells increased and installation prices dropped to a surprisingly small amount. The millennium turn was the decisive point of time for the industry of solar energy. After this point of time, the worldwide market was soaring at a rate which, up to the moment, was unknown at least in Europe and North America. Next to that technological progress followed step by step along with improvements of efficiency of thin-film solar cells and CSP amongst others. These technologies brought efficiency improvements besides bringing the total cost of solar energy systems to their lowest levels. The cost of solar panels had decreased by more than 80% in the 2010s, and the cost of solar energy had become one of the cheapest ways to produce electricity.

Keywords: High level efficiency, Luo converter, Wind energy, Solar energy, Voltage sensor, Batteries, Lcd di

A study on Green Economy of Bihar Government and its Impact on the People

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ABSTRACT

The Government of Bihar has embarked on a groundbreaking journey towards sustainability by spearheading a comprehensive Green Economy initiative. This forward-thinking endeavor represents a paradigm shift in the state's approach to economic development, prioritizing environmental preservation and social well-being alongside economic growth. The foundation of Bihar's Green Economy initiative lies in fostering renewable energy sources. The government has launched ambitious programs to harness solar and wind energy, reducing the state's carbon footprint and contributing to India's renewable energy goals. These efforts not only enhance energy security but also create employment opportunities in the burgeoning green technology sector. Bihar is promoting organic farming practices, reducing chemical pesticide usage, and adopting eco-friendly techniques. This not only ensures food security but also safeguards the health of farmers and consumers while preserving the environment. Furthermore, the government is investing in green infrastructure, improving public transportation, and rejuvenating urban spaces to reduce pollution and enhance the quality of life for its citizens. Inclusivity is a cornerstone of Bihar's Green Economy initiative, as it prioritizes the welfare of marginalized communities. Through skill development and employment generation in the green sector, the government is fostering social equity and economic resilience. Bihar not only bolsters its economic prospects but also ensures a healthier, more prosperous future for its people.

Keywords: Green Economy, sustainable development, skill development, Scaling, Early Intervention, Proactive Health Management, Data-Driven Healthcare.

A Study to Analyse the Effectiveness of Artificial Intelligence in the Indian Healthcare System

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ABSTRACT

Health care delivery system in India has many challenges such as, deficiencies in physical resources, manpower shortage and uneven distribution of quality health services. Traditionally, these issues have been managed through traditional concepts to a minimal efficiency; however, in the recent past, Artificial Intelligence (AI) has presented itself as an extreme solution with potential in diagnostics, treatment, and operational management. The purpose of this study is to evaluate the role of AI in improving health care in India through the study of the performance of AI in different fields including but not limited to predicting analysis, diagnosis through imaging analysis, virtual health aides, and hospital resource management. The research based on the survey and experiments aims to quantify the effects of the utilization of AI solutions on enhancement of diagnostic accuracy, cost reduction, and the enhancement of access to the inhabitants of rural and other underserved territories. It also delves into the topic of AI implementing the barriers that exist in the society such as the problem of data privacy; ethical issues; and the looming question on the need for AI specific legislation in the healthcare system of India. These results help to show how beneficial AI is for patients and organizational functioning, but where it is currently lacking. The paper concludes with policy implications for enhancing the effectiveness of AI interventions + specific suggestions for policymakers, healthcare stakeholders, and technology developers for not only the India-specific but also more general contexts. This research enhances knowledge regarding the use of AI in closing gaps in delivering healthcare services and lays down a premise for other comprehensive studies to identify AI strategies that can easily be implemented to make health care services accessible to a vast number of people in the society.

Keywords: Artificial Intelligence, Medical Diagnosis, Pattern Recognition, Privacy.

Connected 3D Scanning Solution for Enhanced Mobility of the Blind

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ABSTRACT

This paper aims to develop an IoT based 3D scanning system designed to enhance environmental understanding for visually impaired individuals. The device utilizes advanced computer vision and machine learning algorithms to detect and recognize objects, providing real-time tactile using IoT technology. Vision loss significantly impacts a person ‘s quality of life, limiting independence, safe mobility, and often resulting in heightened risks of injury from unseen obstacles. According to the World Health Organization, around 2.2 billion people globally are visually impaired, with a large proportion being individuals over the age of 50. This figure is expected to increase as populations grow and age, emphasizing an urgent need for accessible solutions. Vision impairment in children is also prevalent and can arise from a variety of health and genetic factors, underscoring the universal necessity for adaptive technologies. A variety of assistive devices have been developed to aid visually impaired individuals, limited in accuracy. With technological advancements, there is significant potential to overcome these limitations through affordable, high-precision solutions that can integrate seamlessly into everyday life.

Keywords: **3D Scanning, Assistive Technologies, Tactile Representation, Audio Feedback.**

Non-Linear Stock Market Prediction with Support Vector Machines

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ABSTRACT

In forecasting financial markets using time series data, predicting Future in the financial market data such as Stock prices, currency exchange commodity price, and rates is a difficult but crucial endeavor. We introduced the Support Vector Machine (SVM) technique for financial market trend prediction using TSA. Because of their intricate patterns and inherent dynamic character, financial market time series data pose a challenge to traditional forecasting methods. The SVM algorithm, which is well-known for its robustness and ability to handle high-dimensional data, is used to estimate future market patterns based on historical price and volume data. The study evaluates the effectiveness of SVM in capturing non-linear correlations in financial time while accounting for shifting market and economic conditions. Through in-depth empirical investigation and performance comparison with other forecasting models, this study sheds light on the suitability and precision of SVM in anticipating movements in financial markets. For traders, investors, and scholars studying algorithmic trading and quantitative finance, it has significant ramifications.

Keywords: Financial Market, Forecasting, Financial Time Series, Machine Learning.

Rehabilitating Reading: Addressing Dyslexia with Innovative Approaches

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ABSTRACT

Dyslexia is a common, lifelong neurobiological disorder that affects reading, spelling, and writing abilities. Dyslexic individuals often struggle with conventional educational methods, which do not cater to their unique learning needs. To address this, we have developed a web-based application that combines multiple assistive features to support reading, comprehension, and accessibility. This tool includes a text-to-speech feature that reads aloud user-provided text, a PDF-to-speech converter for document accessibility, an image generation function to visualize text, and a symbol recognition feature that identifies common symbols like school zones and danger signs. The application also offers a dyslexia-friendly text converter, simplifying text for easier understanding by transforming challenging words into dyslexia-compatible alternatives. Utilizing natural language processing (NLP), optical character recognition (OCR), and responsive web design, this platform aims to improve reading and comprehension for individuals with dyslexia.

Keywords—Dyslexia, Assistive Technology, Web Application, Text-to-Speech, Image Recognition, NLP, OCR, Accessibility, PDF-to-Speech, Dyslexia-Friendly Text.

Bluetooth Controlled Agrisense for Agricultural Operations

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ABSTRACT

Due to high demand for sustainable agricultural practice, this project presents Bluetooth operated mobile Agri Sense for irrigation and grass cutting. Equipped with Arduino Uno, Bluetooth, DC motors, and solar lithium-ion batteries, Agri Sense works via an Android application; the mobile application controls water dispensation and field upkeep. This is in combination with a servo-controlled sprinkler that offers the best control of water distribution hence efficiency in the supplied water for irrigation purposes. Also, these solar panels being efficient, produce light energy, corresponding to the environment conservation acts. For optimal functionality, the proposed Agri Sense comprises of individual power, control, mobility and irrigation sections. Each of the modules improves its function and flexibility in response to agricultural requirements, which makes it possible to incorporate more features into the system if necessary. Even the Agri Sense implements other strategies like LoRa-based communication coverage for larger range or track for rough surface, which further helps to customize the flexible and adaptive capability of Agri Sense to fulfil the roles of various farming fields. This project represents a pioneering strategy to incorporate robotics into change in sustainable farming to cope with the coming issues in water and labour scarcity in the farming industry.

Keywords: Smart Crop Water Management System, Bluetooth Enabled Control, Green Energy, Eco-Friendly Farming, Rob-Agriculture, Arduino, Remote Sensing, Solar Based Power, Water Saving.

Sentiment Synthesis Transforming YouTube Comments into Strategic Insights

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ABSTRACT

Sentiment analysis in the domain of social media analytics is crucial for understanding public opinion, particularly on platforms like YouTube, where vast amounts of user-generated content are continuously uploaded. The challenge lies in efficiently processing live-streamed comments in real time while ensuring accurate classification into sentiment categories—positive, negative, and neutral. Existing approaches, such as those utilizing BERT-based models, face limitations in handling multilingual and code-mixed comments effectively, leading to reduced accuracy in sentiment classification. The proposed system enhances sentiment analysis system leveraging XML-RoBERTa, a transformer-based model trained on diverse multilingual datasets, improving classification accuracy and robustness. The system processes live YouTube comments in real time, categorizes them into sentiment classes, and visualizes the results using word clouds, pie charts, and bar charts. Additionally, it generates a detailed sentiment report that maps individual comments to their respective sentiment categories, offering a transparent and comprehensive analysis. Experimental results demonstrate that XML-RoBERTa outperforms the BERT model used in the base paper by offering better multilingual support and sentiment differentiation, validating the effectiveness of the proposed approach.

Keywords: Real-Time Sentiment Analysis, Youtube Comments, XML-Roberta, Multilingual Classification, Data Visualization

Dynamic Ai-Augmented Firewall for Real-Time Threat Mitigation

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ABSTRACT

Firewalls are an integral part of network protection against intrusions, their traditional approaches of sticking to static rules have rendered firewalls ineffective when countering sophisticated cyber threats. In this project, a Dynamic AI-Augmented Firewall will be developed which uses artificial intelligence augmented firewall for the proactive detection and response to cyber threats thereby undertaking network protection and security better than traditional firewalls. To accomplish the objectives stated above, the study will develop an AI-enabled anomaly detection system that will constantly scan for abnormal network traffic and manage firewall policy changes and restrictions whenever an abnormal algorithmic pattern is noticed. The methodological approach will encompass securing the network by employing machine learning algorithms fed with global threat intelligence to keep the network safe from new attacks. Pre-packaged threats that are already established and documented have also been proved less active. Promising conclusions show that an AI-Augmented Firewall is very promising with regards to its low false positive which comes with little additional network delay. The report concludes that to provide a scalable solution that increases the resilience of an organization against advanced threats, it is very important that an organization adopts adaptive security measures. This work fits into the growing field of cybersecurity by providing proof of the rigour of AI applications on firewalls and calls for more robust means of defense against intrusions due to changing workplace dynamics.

Keywords: Cyber Security, Machine learning, Firewall, ML Algorithms, Security.

Machine Learning Based Loan Eligibility Prediction and Automation

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ABSTRACT

In the banking sector, reviewing and approving loan applications is a crucial yet often time-consuming process. Traditional methods rely on manual evaluations, which can lead to inconsistencies, human errors, and delays in decision-making. As financial institutions strive for greater efficiency and accuracy, automation has become essential in streamlining loan assessments and ensuring timely responses to applicants. This project introduces a machine learning-based web application designed to modernize the loan evaluation process. By analysing key financial metrics such as credit history, income status, employment stability, and debt-to-income ratio, the system provides unbiased and data-driven assessments. This reduces dependency on manual reviews, enhances decision-making speed, and ensures transparency in loan approvals. The web application offers real-time insights, instant eligibility decisions, and seamless communication with applicants, improving customer experience and operational efficiency. Additionally, it supports the bank's digital transformation initiatives by providing a scalable, adaptable solution aligned with evolving regulatory and market conditions. By leveraging machine learning, the project not only reduces operational costs but also strengthens risk management and compliance. The automation of loan processing enhances consistency, minimizes delays, and improves customer trust and loyalty. Furthermore, its scalability allows the bank to integrate future advancements, setting a new industry standard for data-driven decision-making.

Keywords: **Loan Automation, Machine Learning, Web Application, Credit Evaluation, Customer Trust, Real-Time Insights, Decision-Making Speed, Transparency in Loans, Operational Efficiency, Scalable Financial Solution, Digital Transformation, Banking Innovation, Regulatory Compliance, Customer Experience Enhancement.**

Medication Adviser System

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ABSTRACT

In the realm of healthcare, timely and accurate diagnosis, coupled with appropriate medication, is crucial for effective treatment and patient well-being. This paper presents an innovative Medication Adviser System that leverages Natural Language Processing (NLP) to identify diseases based on user-reported symptoms and subsequently recommend appropriate medications. The system is designed to streamline the preliminary diagnostic process and provide immediate guidance on potential treatments, especially in situations where access to professional medical advice may be limited or unavailable. By integrating advanced NLP techniques, the system enhances the accuracy of symptom interpretation and disease identification, making it a valuable tool for early diagnosis and self-care. The core functionality of the system involves processing user-inputted symptoms through an NLP model, which is trained to recognize and correlate symptoms with a comprehensive database of diseases. This involves several steps, including data cleaning, feature extraction using techniques like TF-IDF Vectorizer, and matching symptoms with existing medical records. Once the system identifies the most likely disease, it retrieves detailed information such as a description of the disease, a list of recommended medications, and preventive measures. Additionally, it provides users with suggested workouts and dietary plans that can help manage their condition and maintain overall health. This system offers a user-friendly platform for individuals seeking quick medical insights. It acts as a temporary solution to address health concerns and supports preventive care by offering actionable recommendations. The Medication Adviser System thus bridges the gap between symptom recognition and medical advice, enhancing healthcare accessibility and promoting early intervention.

Keywords: Disease identification, Medications, Natural Language Processing, Precautionary measures, Symptoms.

Analyzing How Automation Impacts Stress and Job Satisfaction in Banking Jobs

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ABSTRACT

Automation is changing the way banking employees work, bringing both benefits and challenges. As technology continues to improve, many repetitive tasks that were once done manually are now handled by automated systems. This allows employees to focus on more meaningful work, increases efficiency, and reduces human errors. However, automation also creates concerns about job security, as some employees worry that machines may replace their roles. Additionally, workers may feel pressured to learn and adapt to new technologies quickly, leading to stress and uncertainty. This study explores how automation affects the stress levels and job satisfaction of banking employees. It reviews existing research on automation in the banking sector and uses a combination of surveys and interviews to understand employee experiences. The goal is to identify both the positive and negative impacts of automation on workplace conditions. The findings suggest that while automation can reduce workload and improve productivity, it must be implemented carefully to avoid increasing employee stress. Banks can support their workers by providing proper training and guidance on new technologies. Open communication and clear change management strategies can also help employees feel more secure in their roles. By striking a balance between technology and human involvement, banks can create a work environment where employees feel valued and motivated. This study highlights the importance of considering employee well-being while introducing automation, ensuring that technological advancements lead to a positive and supportive workplace rather than causing unnecessary stress.

Keywords: Stress, Job Satisfaction, Banking, Automation, Employees.

Evaluating India's Climate Adaptation Policies: A Critical Analysis of PMFBY, NAFCC, and Soil Health Management Scheme in Enhancing Agricultural Resilience

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ABSTRACT

India's agricultural industry is seriously threatened by climate change, which has an impact on crop yields, water availability, and rural livelihoods. To improve agricultural resilience, the Indian government has responded by enacting a number of adaptation measures. Important programs including the National Adaptation Fund for Climate Change (NAFCC), the Pradhan Mantri Fasal Bima Yojana (PMFBY), the Soil Wellness Scheme, and the encouragement of climate-resilient crop varieties are all critically examined in this paper. This article assesses how well these policies mitigate climate risks, ensure farmer sustainability, and promote long-term agricultural stability, based on official reports from the Ministry of Agriculture, NITI Aayog, IPCC, and FAO. To improve climate resilience in Indian agriculture, the findings draw attention to policy inadequacies, implementation issues, and the necessity of integrated adaptation methods. For researchers, politicians, and development professionals pursuing climate-adaptive and sustainable agricultural systems, this study offers insightful information.

Keywords: Climate Adaptation, Agricultural Resilience, Policy Effectiveness, Sustainable Farming, Climate Change Mitigation.

Enabling Data Storage Security with Blockchain Technology

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ABSTRACT

There are multiple ways of keeping data by using a single or Distributed Database on the cloud, yet a single database client can keep data only on a single server, and if multiple clients try to access those at the same time with data consistency, the data may be altered at the time of concurrent data access. Handling data on a single database could be easy, but problems associated with data consistency, confidentiality, availability, and bottleneck/single point of failure are always there. To eliminate these problems, today the author uses the Distributed Database approach, in which data is stored on multiple servers, and makes clients access the data concurrently. Here, data is mirrored in multiple places and made available anytime/anywhere. Moreover, various replicas of the data are kept on various servers so if the data is lost during concurrent access, the replica is available and made easily available to users. Data security is administered using various encryption algorithms like DES (Data Encryption Standard), 3DES (Triple Data Encryption Standard), AES (Advanced Encryption Standard), and the like. Different kinds of data are encrypted in different cryptographic schemes and thereby level of security is enhanced. Moreover, an error recovery process is also executed in the system resulting in auto-correction of a failed cloud instance if the data is found to be modified there. The main advantage of this approach is data security as well as a single point of failure elimination. In this architecture, the client is unaware of what kind of encryption is made to required data and what cloud server instance is providing those data. Hence data security, availability, and consistency are achieved better than single cloud database architecture.

Keywords: Database Security, Cryptographic Algorithms, Database Replica, Error Recovery Process.

A Comprehensive Survey of Bias in LLMs: Current Landscape and Future Directions

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ABSTRACT

Large Language Models (LLMs) have been instrumental in shaping applications of natural language processing (NLP) through text generation, translation, and comprehension capabilities. LLMs have progressed significantly in reasoning capability and are being used in broader areas of our lives today across healthcare, customer service, banking, legal, and others. The wider adoption of LLMs brings a lot of advantages, but their widespread deployment has brought concerns regarding biases embedded within these models. This paper presents a comprehensive survey of biases in LLMs, establishing a refined taxonomy based on both their origins and manifestations. We categorize biases into several key dimensions, such as data-driven biases, algorithmic biases, social biases, systemic biases, and application-specific biases. Our study systematically reviews the sources of these biases from data collection and human annotation to model design and societal influences—and assesses their operational, social, and ethical impacts. The paper makes a novel contribution by summarizing the recent advancements in LLM bias mitigation techniques such as Chain-of-Thought (CoT) prompting, Parameter-Efficient Fine-Tuning, Social Contact Debiasing (SCD), and Direct Preference Optimization. By analyzing the research gaps, the paper proposes the future research direction to advance the maturity of the field, emphasizing the lifecycle bias evaluation, intersectional and contextual bias mitigation, bias-aware training and pre-training techniques, bias in multimodal and non-English models, and explainability and transparency along with bias mitigation. This study serves as a foundational resource for researchers, practitioners, and policymakers concerned with addressing the bias in LLMs.

Keywords: Artificial Intelligence, Biases, Bias Mitigation, Fairness in AI, Large Language Model (LLM), and Natural Language Processing (NLP).

A Comprehensive Survey of Retrieval-Augmented Generation (RAG): Evolution, Current Landscape and Future Directions

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ABSTRACT

Retrieval-augmented generation (RAG) has emerged as a critical technique to tackle hallucinations in LLM and to keep the system updated with the ground truth. RAG is effective in reflecting the latest information in the output in the area where the base information evolves fast. It has been a transformational lever in natural language processing that cascades the retrieval and generation into a system to overcome several limitations of traditional large language models (LLMs). The novel contribution of the paper is a comprehensive study of RAG from its evolution as early hybrid systems to current sophisticated architectures. The paper presents in-depth studies of the research in the foundation elements of the RAG system, such as retrieval and generation mechanisms, and categorizes the advancements in the field, such as dense retrieval, dynamic query adaptation, and hierarchical fusion. The paper also summarizes the emerging research in the RAG application, such as open-domain question answering, medical diagnostics, and legal advisory, and the challenges in the field, including scalability, retrieval quality, and bias mitigation. The novel contribution of the paper includes the future research directions for the field's maturity, emphasizing multimodal integration, ethical and privacy considerations, RAG enhancement for cross-linguistic and low-resource languages, and integration with emerging technologies such as AR, VR, and brain-computer interfaces (BCIs). The work aims to serve as a foundational resource for academicians and practitioners to advance the future of RAG systems.

Keywords: Retrieval-Augmented Generation (RAG), Information Retrieval, Natural Language Processing (NLP), Artificial Intelligence (AI), Machine Learning (ML), Large Language Model

A Study on Tenses (Simple Present, Present Continuous, Simple past and Past Perfect) and its Difficulties Experienced by the L₂ Learners of First Year Engineering Students

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ABSTRACT

This study is about the Tenses and its uses for the L₂ learners, as tense is the foundation for the second language learners from first level to second level in learning and comprehending the grammar because tense is the base mark for the level one learner to write effectively by avoiding silly mistakes .For this study the data has been collected from the first year Mechatronics Engineering Students to identify their knowledge in placing the articles and the difficulties experienced by the L₂ learners. The total target of the first-year engineering students for this study is **35** from first year Mechatronics Engineering

Keywords: Background, Right Inflection, Performance, Difficulties, Samples.

AI for Cloud-Based Healthcare: Transforming Medical Services with Artificial Intelligence

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ABSTRACT

Artificial Intelligence (AI) and cloud computing have significantly transformed the healthcare industry by enhancing efficiency, scalability, and data-driven decision-making. This research paper explores the role of AI in cloud-based healthcare, focusing on applications, benefits, challenges, and future directions. AI-driven cloud solutions support diagnostics, predictive analytics, remote monitoring, and personalized treatment plans, improving patient outcomes and operational efficiency. Despite these advancements, concerns about data security, ethical considerations, and computational limitations must be addressed to ensure widespread adoption.

Keywords: Artificial Intelligence, Cloud Computing, Healthcare Technology, Personalized Medicine, Remote Monitoring.

Removal of Barium from Oil Industry Effluent Using Eichhornia Crassipes

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ABSTRACT

This study investigates the potential of Eichhornia crassipes (water hyacinth) for the removal of barium from oil industry effluents through an adsorption process. Barium, a toxic heavy metal, poses significant environmental and health risks when present in industrial wastewater. The adsorption capabilities of Eichhornia crassipes were evaluated under some experimental conditions. Results indicated that Eichhornia crassipes effectively adsorbs barium ions, achieving significant reduction in barium concentrations within the effluent. This research demonstrates the potential of utilizing Eichhornia crassipes as a sustainable and eco-friendly solution for barium remediation in the oil industry, contributing to improved water quality and environmental protection.

Keywords: Water hyacinth, Efficiency, Adsorption, Barium, XRD, FTIR.

Student Churn Prophecy Using Machine Learning

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ABSTRACT

Dropout is one of the critical issues faced by educational institutions in terms of both academic performance and institutional efficiency. The project, Student Churn Prophecy Using Machine Learning, aims at predicting the likelihood of dropout using machine learning algorithms. A broad range of student data, such as academic performance, attendance records, demographic details, and engagement levels, is processed and analyzed to identify key patterns and trends. This system generates predictive models that forecast at-risk students and allows timely intervention strategies. The approach enhances student retention and overall educational outcomes of institutions by adopting this methodology.

Keywords: Student dropout, machine learning, predictive analysis, academic performance, student retention

Early Detection of Endometriosis: Integrating Medical Imaging and Machine Learning Algorithms for Non-Invasive Diagnosis

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ABSTRACT

Endometriosis appears when tissue which should exist inside the body matches the uterus lining through it spreads outside the uterus. The out-of-place tissue inside the body performs as a lining similar to the uterus by getting thicker and bleeding during the menstrual cycle. Under normal circumstances this blood would exit through the uterus but external tissue prevents it from escaping which produces various complications. Women typically experience endometriosis through its development throughout ovaries along with fallopian tubes and pelvic lining. The spread of this condition is an extremely rare occurrence that moves beyond the pelvic area. Post-menstrual bleeding outside the uterus results in endometrioses or ovarian cysts as well as tissue irritation while screening tissue develops along with adhesive fibrous bands that fuse organs together. Women dealing with Endometriosis face reduced pregnancy prospects at below 2%. Endometriosis impacts ten percentage of all worldwide female population. Infertility occurs in 24% to 50% of women having endometriosis. Medical Imaging Alongside Pelvic Exams and Blood Tests and Laparoscopy help in the diagnosis of this condition. Medical professionals struggle to detect endometriosis since diagnostic symptoms and standard procedures show distinct patterns between patients. The diagnostic powers of machines enable physicians to detect endometriosis through exact and non-invasive medical tests at an early stage. The central research objective establishes the evaluation of ML algorithm diagnosis methods for endometriosis detection through clinical details combined with imaging results coupled with symptoms. Health records from patients and medical documentation and symptom-level measurements together with image-based feedback enable our models to operate support vector machines and random forests and deep learning neural networks. Model accuracy testing was performed in addition to specific and sensitive tests that compared against standard diagnostic procedures like laparoscopy. Evaluation results prove machine learning models improve medical diagnosis efficiency through their ability to accelerate endometriosis disease treatment while minimizing procedural invasiveness. New diagnostic systems for gynaecological healthcare practice require development following performance-enhancement assessments of critical features.

Keywords: Endometriosis, Machine learning, Random Forest, Support Vector Machine.

Drowsy Guard Real Time Detection System

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ABSTRACT

Driving while sleepy presents a serious risk to road safety, frequently resulting in collisions and fatalities. The goal of this project is to create a real-time drowsiness detection system that uses non-intrusive video camera technology to track physical indicators of driver fatigue, such as eye closure and head nodding. This approach uses computer vision techniques to analyse changes in the driver's eye state and posture, in contrast to traditional methods that require the attachment of sensitive electrodes to the driver's body, which can be uncomfortable and impractical. According to studies, driving while sleepy can be just as dangerous as driving while intoxicated because it impairs judgment and slows reaction times. Micro sleeps, which are short bursts of sleep lasting two to three minutes and are important markers of drowsiness, are what the system seeks to identify. The system can deliver timely alerts to improve driver awareness and avoid fatigue-related incidents by continuously monitoring the driver's eyes and other physical cues. By guaranteeing that the monitoring procedure is non-invasive while preserving accuracy and dependability, this project highlights the significance of real-world applicability.

Keywords: Eye tracking, Machine learning, Computer Vision, Open CV, Facial Landmark Detection.

Comparative Analysis of Machine Learning and Deep Learning Approaches for Predicting Closed Questions on Stack Overflow

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ABSTRACT

Stack Overflow, as a primary platform for programming-related knowledge sharing, faces ongoing challenges in maintaining content quality and managing duplicate questions. This research investigates two distinct computational approaches - Machine Learning and Deep Learning to predict question closure to enhance the efficiency of content question quality. The methodology encompasses two parallel approaches: an XGBoost classifier leveraging TF-IDF vectorization and a Convolutional Neural Network (CNN) architecture for semantic pattern recognition. The analysis utilizes a comprehensive dataset of labelled Stack Overflow questions, with both approaches incorporating text cleaning, tags removal and feature extraction in their respective pre-processing pipelines. Performance evaluation employs standard metrics including accuracy, precision, recall F1-score and confusion matrix. The comparative analysis provides insights into the relative strengths and limitations of traditional machine learning versus deep learning approaches, demonstrating each method's unique capabilities in identifying questions likely to be closed.

Keywords: Convolutional Neural Network, Deep Learning, Machine Learning, Stack Overflow, XGBoost Classifier.

Empowering Change: The Role of Women Entrepreneurs in Advancing Global Sustainability Through Sustainable Development Goals

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ABSTRACT

To promote equitable development and significantly contribute to social and fiscal stability, entrepreneurship boosts revenue growth, creates jobs, and inspires innovation. People and communities may use their entrepreneurial spirit and inventiveness to tackle important social issues like gender equality, poverty reduction, quality education, and environmental sustainability, which are all part of the Sustainable Development Goals (SDGs). There has been a dramatic improvement in the promotion of sustainable practices since women have been included in the business sector. Aside from boosting economic growth, promoting gender equality, and empowering communities, female entrepreneurs are a triple-win. Several obstacles, including limited access to capital, education, and institutional support, stand in the way of women achieving their entrepreneurial objectives. Promoting equitable opportunities, providing mentoring, guaranteeing access to resources, and carrying out capacity-building programs are all ways to empower women entrepreneurs. In order to achieve gender equality and use women's potential for long-term growth, we must address the unique needs and challenges faced by female entrepreneurs. As the society faces urgent environmental and social concerns, it is critical to acknowledge the immense potential of women entrepreneurs. The study highlights the importance of women's entrepreneurship in achieving the SDGs and promoting global sustainability in a fair and comprehensive way by recognising the interconnectedness of social, economic, and environmental factors. The following goals are further emphasised by the study:

- To understand the role that entrepreneurs play in achieving the SDGs on a global scale.

- To learn about the opportunities and challenges faced by female company owners in aligning their company objectives with the SDGs.
- Determine how much of an impact women business owners have on the worldwide corporate environment by way of sustainable initiatives.
- Determine the main challenges that prevent women from participating in business in order to advance the Sustainable Development Goals (SDGs).

For female entrepreneurs working on sustainable development projects, it is important to first determine what tools and regulations are at their disposal. A literature review, case study analysis, and presentation of empirical data highlight the different contributions of women entrepreneurs to the accomplishment of the Sustainable Development Goals (SDGs) in this research. It is critical to promote gender equality, provide individualised support, and foster an environment that is conducive to women entrepreneurs if we want them to reach their full potential in advancing sustainable development.

Keywords: Entrepreneurship, Women Entrepreneurs, Sustainable Development Goals (SDGs), Policy Implications, Inclusive Development.

Metamorphism of financial services beyond the landscape: Bridging the Financing Gap for Emerging Business Enterprises through Financial Inclusion in Developing countries

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ABSTRACT

The changing market and economic conditions due to erratic market and post pandemic effect, has redefined the role of financial services in the organisation. The leaders of finance have to transform their functions and are expected to be as much as business strategist as a financial expert. To respond to this rapidly evolving scenario, the finance sector must undergo a fundamental change and realign it to the changing business environment. There is need to retrospect the Financial Service Industry and actions taken by the industry players to find a remarkable place within sector with the objective of equitable economic growth This paper is based on an ongoing study on financial inclusion in India with reference to Emerging Business Enterprises. By analysing secondary data, the objectives of this study are to examine (i) the achievement of financial inclusion in India;(ii) the positive impact on Emerging Business Enterprises, particularly their access to formal funding sources; and (iii) the challenges and opportunities in increasing Emerging Business Enterprises 'access to formal funding in the country. The results of the analysis show that since the start of the financial inclusion policy after the 1997/98 Asian financial crisis, public access to formal financial institutions has continued to increase. However, only a small number of Emerging Business Enterprises, especially micro and small enterprises have access to credit for various reasons. This study concludes that much remains to be done so that all Emerging Business Enterprises can have access for smooth and continuous flow of credit.

Keywords: Emerging Business Enterprises, Financial Inclusion, Metamorphism Of Financial Services.

AI-Powered Solution for Improving Diagnostic Accuracy in Breast Cancer Prediction

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ABSTRACT

Breast Cancer, which influences about 12% of women global during their lifetime, stays a major reason of mortality among girls, highlighting the want of early and correct prognosis. Modern-day diagnostic methods face worrying conditions consisting of human errors, variability in expertise, and constrained utilization of diverse affected person records, principal to ignored or no longer on time diagnoses. Small datasets can lead to biased or over fitted models that may perform well in controlled environments but struggle to generalize to larger, more diverse populations. To address these challenges, we extend validation efforts to significantly larger and more diverse datasets. An AI-powered solution can beautify diagnostic accuracy through integrating clinical imaging, pathology, and clinical statistics, presenting dependable and actionable insights. This system proposed CNN for breast cancer prediction due to the fact it could routinely extract and examine complex features from scientific photographs, supplying excessive accuracy in detecting and classifying abnormalities. Doing so will ensure that the predictive models are not only accurate but also reliable across different clinical settings and patient populations.

Keywords: AI, Breast Cancer, CNN, Diagnosis, Image analysis, Machine Learning, Prediction.

A Hybrid CNN-LSTM Approach for Enhanced Prediction of Chronic Kidney Disease Using Deep Learning and Big Data

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ABSTRACT

Chronic Kidney Disease (CKD) is a significant global health issue requiring timely diagnosis and intervention. Traditional approaches have shown limitations in predictive accuracy and scalability, particularly when dealing with large-scale datasets. This work proposes a hybrid framework that integrates Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) networks for CKD prediction, augmented by the MapReduce distributed computing paradigm to handle big data. Detailed algorithms and mathematical models are presented to explain the architecture and functionality, and diagrams are included to visualize data processing and model workflow. Experimental results highlight the framework's superior performance, achieving a prediction accuracy of 94% with significant reductions in processing time.

Keywords: Chronic Kidney Disease, Convolutional Neural Networks, Long Short-Term Memory, Map Reduce.

Bus-Pass Management System

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ABSTRACT

The Bus Pass Management System is developed to streamline the process of issuing and renewing bus passes, reducing manual workload and improving overall accuracy. By minimizing paperwork and enhancing record-keeping, the system ensures a more efficient and reliable transportation management process. A key feature of the system is the integration of bus timetables, providing real-time schedule updates to help commuters plan their journeys more effectively. Additionally, the digital bus pass incorporates a QR code for validation, ensuring authenticity and preventing unauthorized usage. This feature enhances security while simplifying the verification process for transit authorities. The system is designed with a user-friendly interface. Furthermore, secure data management ensures that bus pass details and user information are safely stored, preventing unauthorized access and data loss. By incorporating these features, the Bus Pass Management System optimizes transportation operations while enhancing the overall commuting experience. It serves as a reliable, efficient, and accessible solution for managing public transit passes, contributing to a more organized and hassle-free travel system.

Keywords: **Bus Pass Management, Secure Data Management, Bus Timetables, Transportation Efficiency.**

Flex Sensor Based Communication Aid for Mute Communities

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ABSTRACT

This project focuses on developing an electronic device that translates finger gestures into text or speech, facilitating communication for mute individuals. At its core is a data glove equipped with flex sensors that capture finger movements, converting resistance changes into digital data processed by a microcontroller. The output is displayed on a 16-bit LCD for real-time readability and integrated with an MP3 module for open or voice playback, ensuring accessibility for the blind. By translating hand gestures into text or speech, this device enables seamless social interaction without the need for sign language interpreters. Additionally, it holds potential in healthcare, allowing ICU or sedated patients to communicate effectively with medical staff through simple hand gestures. The device combines cutting-edge sensor technology, efficient data processing, and user-friendly design to address a critical societal need. It empowers mute individuals, promotes inclusivity, and provides transformative applications in daily life and specialized fields like medicine.

Keywords: Cutting Edge Sensor, IoT.

Implementation of Industry 4.0 RFID Technology for Sustainable Packaging Solutions

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ABSTRACT

The adoption of Industry 4.0 RFID (Radio Frequency Identification) technology in packaging has revolutionized supply chain operations by enabling real-time marking, tracking, and tracing of materials. This paper explores the role of RFID technology in enhancing packaging sustainability through the reusability of pallets, boxes, bins, and containers, significantly reducing environmental impact and carbon emissions. By providing unique digital identities to packaging materials, RFID technology ensures seamless monitoring, improves inventory management, prevents counterfeiting, and enhances security measures. This paper discusses the different types of RFID tags—passive, active, semi-passive, and Near Field Communication (NFC) tags—and their specific applications in packaging. It also examines the role of RFID readers in supply chain visibility, enabling automated data collection and reducing operational inefficiencies. The benefits of RFID technology, including enhanced supply chain collaboration, improved customer service, and cost savings, are analyzed alongside challenges such as implementation costs, system integration, and data privacy concerns. Despite these challenges, RFID technology presents a transformative opportunity for industries to optimize packaging processes, promote sustainability, and achieve operational excellence. By leveraging RFID-driven automation, businesses can enhance efficiency, reduce waste, and drive long-term value in supply chain management.

Keywords: Industry 4.0, Packaging, RFID Technology, Supply Chain, Sustainability.

Heart Beat Guardian: Virtual Heartrate Monitoring

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ABSTRACT

Heart rate monitoring is a vital aspect of maintaining heart health. People from different age groups have different ranges for maximum and minimum values of heart rate, the monitoring system must be compatible enough to tackle this scenario. In this paper, an IoT based system has been implemented that can monitor the heartbeat from the output given by a hardware system consisting of an Arduino and pulse sensor. Further, an alert system is added which is executed if the heartbeat goes below or above the permissible level given in the devised algorithm. The alert message is given through system database. By using this prototype the doctors can access the heartbeat data of the patient from database. The nurses or the duty doctor available at the hospital can monitor the heart rate of the patient in the LCD monitor through the real-time monitoring system.

Keywords: Heart Rate, Sensors, Database, Alert.

Duty of Care – Safety Management and Crew Welfare

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ABSTRACT

This paper presentation would emphasize the issue of crew safety and welfare within the maritime context. Shipowners and managers must take adequate care concerning both physical and mental well-being, from ship design to mental health support. The crew needs to be guaranteed safety and welfare for operational effectiveness, health and well-being, and ethical considerations. Having a safe and healthy crew has many benefits, such as ensuring more output, fewer accidents, and higher morale. Advanced navigation systems, autonomous vessel technologies, remote monitoring and diagnostics, human factors engineering, artificial intelligence-based predictive maintenance, drone technology, smart wearables, and virtual and augmented reality are some of the maritime-industry-changing safety technologies. Maritime safety is regulated by different international, national conventions, Acts, and Codes, including but not limited to IMO conventions, flag state regulations, and port state control, and industry standards and best practice. Maritime companies shall implement risk assessments and mitigation, communication and training practices, feedback, and improvement to better utilize the existing practices to ensure crew safety and well-being. The concepts of continuous operation, proactive safety management, and efficient technologies keep the environment healthy and safe for seafarers. Key examples of operational experience in crew safety management include monitoring cargo handling, accident scenario training, safety inspections and audits, awareness and training sessions, and reporting and evaluation of performance. The well-being of the crew is one of the primary focuses aboard that is inextricably associated with technology, operation, and regulation. Top-down efforts concerning information technology, sound policies, and developing a safety culture can create a healthy working environment for seafarers. It calls for joint efforts by ship owners, operators, and regulatory authorities to make the future better and safer for seafarers.

Keywords: Seafarers, Challenges at Sea, Regulations Operational Constraints, Safe Ship Environment.

Exploring The Hydro Chemical Properties of Groundwater in Madurai District for Sustainable Water Management

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ABSTRACT

Groundwater is one of the most critical water resources on earth and it is a significant source of water for domestic consumption, agriculture and industry. Its reliability makes it invaluable, especially where there is a lack of surface water or seasonally varying surface water. In Madurai District, groundwater has been a lifeline to generations, supporting local communities and agricultural systems. Sadly, the present status of groundwater in Madurai is a cause for concern in terms of quantity and quality. Excessive extraction over the past decades has resulted in a noticeable reduction in groundwater levels in Madurai. Coupled with this, uncontrolled waste disposal, agricultural runoff and industrial effluent has dumped pollutants into the aquifers. Recent hydro-chemical investigations indicate high salinity, hardness and nitrates in some areas, which indicates that pollution is exerting a negative effect on water quality. Such changes undermine not only human health but also the long-term sustainability of agricultural production in the district. Resolution of these issues involves the adoption of sustainable water management practices appropriate to the particular context of Madurai District. Implementing best practices for groundwater management is essential for sustainable water resources. This involves promoting recharge initiatives to replenish aquifers, limiting water withdrawal to prevent over-extraction and establishing comprehensive monitoring systems to assess both water quantity and quality. Utilizing advanced hydro-chemical analysis and spatial mapping techniques, pollution hotspots can be accurately identified, allowing for targeted remediation efforts. These measures collectively contribute to maintaining a balanced groundwater supply, ensuring safe and reliable water for domestic, agricultural, and industrial needs.

Keywords: **Hydro-Chemical Analysis, Sustainable Water Resource, Water Quality.**

Uncovering the Impact of Neuromarketing Strategies on Brand Equity

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ABSTRACT

This article investigates the influence of neuromarketing strategies on brand equity by analyzing how these pioneering techniques shape consumer perceptions, decision-making processes, emotional engagement, and brand loyalty. By combining neuroscience with marketing methodologies, neuromarketing reveals subconscious preferences and emotional stimuli often overlooked by conventional marketing strategies. Through the use of advanced tools such as eye tracking, neuroimaging, and biometric sensors, marketers are able to gain profound insights into consumer behavior, thereby enhancing brand recognition and recall. The research identifies several fundamental strategies utilized in neuromarketing to enhance brand awareness. Emotional engagement is achieved through advertisements that evoke feelings such as joy or nostalgia, creating enduring impressions that reinforce brand recall. The optimization of visual design elements, including logos and packaging, captures consumer attention and fosters recognition. Sensory marketing, which leverages stimuli such as sound, scent, and taste, further enriches brand recall by facilitating multi-sensory experiences. Additionally, priming techniques subtly shape consumers' emotional associations with brands. Moreover, the article emphasizes the contribution of neuromarketing to the cultivation of brand loyalty. Emotional engagement is identified as a pivotal factor, with favorable emotional responses bolstering customer retention and loyalty. Trust-building strategies, guided by neuroscientific insights, assist in establishing credible brand images, while personalized tactics that cater to specific consumer preferences enhance customer satisfaction and loyalty. Neuromarketing also plays a crucial role in refining customer experiences by identifying and addressing pain points, thereby amplifying satisfaction and brand advocacy. The discourse on measuring the effectiveness of neuromarketing strategies involves tools that monitor customer engagement, attention, and emotional reactions. Behavioral indicators, including increased website traffic and social media interactions, further illustrate the impact of these strategies. In conclusion, the article asserts that neuromarketing offers a comprehensive understanding of consumer behavior, empowering brands to formulate strategies that significantly enhance brand equity, awareness, loyalty, and customer satisfaction. The integration of neuroscience into marketing practices is transforming the way brands connect with and influence their consumers.

Keywords: Neuromarketing, Brand Equity, Consumer Behavior, Emotional Engagement, Neuroscience, Branding Strategies, Brand Management.

Food Minder

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ABSTRACT

Foodminder is an intelligent pressure-detection software designed to perceive emotional responses associated with consuming unpreferred foods with the aid of using device gaining knowledge of and behavioral analytics the app video display units nutritional behavior and detects pressure patterns connected to particular food possibilities food minder empowers customers with personalised insights and adaptive tips assisting them manage their emotional properly-being successfully this modern method bridges the distance between vitamins and mental fitness selling a holistic lifestyle wherein dietary alternatives align with emotional balance the app employs convolutional neural networks cnns to investigate facial expressions physiological indicators and behavioral cues permitting it to identify stress patterns associated with nutritional possibilities with foodminder customers get hold of tailor-made insights and tips enabling them to control strain efficaciously while cultivating a balanced dating among meals and emotional properly-being from ingesting unpreferred ingredients through leveraging machine gaining knowledge of and behavioral analytics the app video display units nutritional behavior and detects stress styles connected to precise meals preferences foodminder empowers customers with personalised insights and adaptive recommendations to manipulate their emotional well-being efficiently this innovative technique bridges the distance between nutrition and intellectual fitness fostering a holistic lifestyle in which nutritional choices align with emotional stability by utilising convolutional neural networks cnns to process facial expressions physiological alerts or behavioral cues the app identifies pressure styles linked to dietary alternatives foodminder provides personalised insights and tips permitting customers to manage strain efficiently at the same time as fostering a balanced courting between meals and emotional nicely-being.

Keywords: Stress Detection, Food Preferences, Emotion Recognition, Dietary Analysis, Behavioral Analytics, Personalized Stress Management, Health and Wellness, CNN, Diagnosis, Image analysis, Machine Learning.

Eco-friendly Light weight Paper Crete Bricks

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ABSTRACT

Construction materials have been in demand for now days on account of rapidly increasing population and urbanisation, which causes the prices of materials to rise. Depletion of natural resources for construction materials necessitates the use of recycled products, which not only reduces waste and environmental impact but also conserves resources. In this study, the utilisation of waste paper, fly ash, quarry dust, rice husk ash, and cement for the production of light weight bricks was examined. The SEM and EDAX have been analysed to find the chemical constituents of those materials. Trial mix proportions of paper sludge, cement, fly ash, quarry dust, and rice husk ash in various proportions made lightweight bricks. In addition to these, Dr.Fixit powder has been included by weight of cement. The mix's optimisation was identified based on the compressive strength, water absorption test, and bricks' unit weight. According to the trial mix results, these bricks can achieve the highest compressive strength and the lowest water absorption during production. As a result of the study, the self-weight on the structure will be decreased, allowing it to be used in the non-load-bearing walls of the building.

Keywords: Lightweight Bricks, Recycled Construction Materials, Dead Load Reduction, Water Absorption and Compressive Strength.

Exploring the intersection of AI and Ethics in Architecture: Implication for Design, Design Thinking and Built Environment

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing architecture by enhancing design processes, improving efficiency, and enabling sustainable solutions. However, the notion of AI replacing architects overlooks critical distinctions between human creativity and machine capabilities. This paper argues that AI should be viewed as a collaborator rather than a replacement, emphasizing its technical benefits and ethical implications. AI excels in automating repetitive tasks, analysing datasets easily, and generating multiple design iterations through tools like Autodesk's Generative Design and Spacemaker AI. These technologies help architects to optimize layouts for energy efficiency, structural integrity, and sustainability while accelerating workflows. For instance, generative design can produce numerous configurations based on given parameters, enabling architects to explore innovative possibilities that align with project goals. Similarly, AI-powered simulations predict energy consumption and environmental impact, aiding in the creation of eco-friendly designs. Despite these advantages, AI lacks emotional intelligence, cultural sensitivity, and ethical judgment—qualities essential to architecture as a human-centered discipline. Ethical concerns arise from potential algorithmic biases, loss of authorship clarity, and over-reliance on automation. For example, AI-generated designs may prioritize efficiency over communal or aesthetic values, underscoring the need for human oversight to ensure inclusivity and contextual relevance. The future of architecture lies in a balance between architects and AI. Architects will guide AI systems by defining project goals and interpreting outputs while infusing designs with creativity, cultural awareness, and ethical considerations. This collaboration ensures that AI enhances architectural practices without compromising the profession's human essence.

Keywords: Artificial Intelligence, Architecture, Generative Design, Ethics, Sustainability.

Architecture Practice in India: Navigating Public Relations, Marketing and Client Relation in A Competitive Market

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ABSTRACT

As the architectural industry grows, competition is becoming more intense. However, architects face legal restrictions on direct advertising, making it necessary to find alternative ways to promote their work. This paper explores how Indian architects can use public relations (PR) to establish a strong reputation while staying within ethical and legal boundaries. PR allows architects to gain visibility by sharing their expertise, engaging with industry professionals, and building meaningful connections. Indian firms like Studio Mumbai and Morphogenesis have successfully used PR strategies to enhance their presence. Studio Mumbai has gained global recognition through exhibitions and publications that highlight its craftsmanship. Morphogenesis, known for its focus on sustainability and research, has positioned itself as an industry leader by publishing studies and participating in global discussions. While PR is a powerful tool for growth, ethical practices must be maintained. Honest communication, transparent project representation, and responsible client interactions are essential to building trust and credibility. By adopting ethical PR strategies, Indian architectural firms can enhance their reputation, attract high-quality collaborations, and contribute to the industry's evolution. This approach ensures sustainable growth while maintaining professional integrity in a competitive market.

Keywords: **Architecture Practice, Public Relations, Marketing Strategies, Client Relations, Indian Architecture Market.**

Campus Route Map

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ABSTRACT

The Campus Route Map project is a user-friendly indoor navigation system designed to enhance accessibility within the campus. It provides a structured digital mapping solution that simplifies navigation for students, faculty, and visitors. Unlike traditional paper-based maps, the system leverages Flutter for mobile development and PHP with MySQL for backend support, ensuring seamless and efficient navigation. As a cost-effective alternative to augmented reality (AR)-based systems, it offers reliable guidance across campus locations through static map-based navigation. With its intuitive interface, the application enhances campus mobility, making it easier to locate classrooms, offices, and other facilities. By improving efficiency and accessibility, the Campus Route Map ensures a smooth navigation experience, reducing confusion and saving time for users as they move through the campus.

Keywords: Indoor Navigation, Campus Mapping, Digital Wayfinding, Smart Campus, Location-Based Services, User Accessibility, Mobile Navigation, Route Optimization, Cost-Effective Navigation, Educational Infrastructure, Technology Integration.

Predictive Segment Analysis in Atopic Eczema Using Machine Learning Algorithm

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ABSTRACT

Atopic eczema (AE) is a skin disorder that results in chronic inflammation and itch. Predicting atopic eczema patient segments likely to suffer from severe occurrences is important in early intervention as well as personalized therapy. The work here looks at the implementation of Convolutional Neural Networks (CNN) and Exploratory Data Analysis (EDA) methodologies to assess and forecast atopic eczema patient segments likely to exhibit high-risk occurrence. Utilizing a dataset of clinical, environmental, and genetic variables, this work seeks to improve the precision of AE risk stratification. Most notable findings show that CNNs are able to successfully extract spatial patterns from radiological images, while EDA methods assist in determining important trends and correlations within patient data. The suggested methodology shows remarkable enhancement in predictive capability over conventional statistical techniques, laying the groundwork for the incorporation of deep learning and data-driven results into clinical decision-making.

Keywords: Atopic Eczema, Convolutional Neural Networks, Exploratory Data Analysis, Predictive Analytics, Healthcare AI.

The Turbulent Hyperbolic Fluid's Unsteady Mhd Flow Via A Vertical Porous Plate Using Non-Fourier Law

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ABSTRACT

The analysis in this communication addresses the unsteady MHD flow of tangent hyperbolic liquid through a vertical plate. The model on mass and heat transport is set up with Joule heating, heat generation, viscous dissipation, thermal radiation, chemical reaction and Soret-Dufour in the form of partial differential equations (PDEs). The PDEs are simplified into a dimensionless PDEs by utilizing a suitable quantities. The simplified equations are solved by utilizing the spectral relaxation method (SRM). The outcomes shows that increase in the Weissenberg and the magnetic field degenerates the velocity profile. The thermal radiation is found to elevate the velocity and temperature profiles as its values increases. The impact of Soret and Dufour on the flow is found to alternate each other. The computational outcomes for concentration, temperature and velocity are illustrated graphically for all encountered flow parameters. The present outcomes are compared with previous outcomes and are found to correlate.

Keywords: Joule Heating, Non-Newtonian Liquid, Spectral Relaxation Method.

Cognitive Brain Age Estimation

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ABSTRACT

Cognitive brain age estimation combines computational techniques with health sciences to assess cognitive health. Traditional methods like neuroimaging and clinical evaluations are costly and not scalable. This research proposes a machine learning-based system for cognitive age estimation using non-invasive data, including speech patterns, behavioral metrics, and lifestyle factors. The system follows a modular architecture with data collection, pre-processing, feature extraction, and predictive modelling. By analysing behavioral logs, speech characteristics, and lifestyle metrics, it generates real-time cognitive age estimates. This scalable and cost-effective approach, free from neuroimaging, enables deployment in healthcare settings and wearable devices. It also supports large-scale applications, such as public health monitoring and aging studies, enhancing accessibility, early detection, and personalized interventions in cognitive health.

Keywords: Cognitive Brain Age, Machine Learning, Non-Invasive Assessment, Behavioral Patterns, Healthcare Innovation.

Synthesis and Characterization of Chiral Impurities of Edoxaban Tosylate Monohydrate, Used as an Anticoagulant Drug

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ABSTRACT

The present invention relates to identified and prepared chiral impurities in Edoxaban Tosylate monohydrate (1). This work describes the synthesis of chiral impurities of each intermediate, including KSM and its drug substance and their characterization by spectral data (IR, MS, ¹H-NMR, and ¹³C-NMR). During the process development of Edoxaban Tosylate monohydrate (1) several unknown peaks were detected by high performance liquid column chromatography (HPLC) using chiral column. Edoxaban Tosylate monohydrate is the Tosylate salt form of edoxaban with binding one water molecule, an orally active inhibitor of coagulation factor Xa (activated factor X) with anticoagulant activity. Edoxaban having three chiral centers and has total of eight isomers, out of them only (SRS)-Edoxaban presents pharmacological activity being other seven are Edoxaban impurities. During the process development of edoxaban, the control of chiral impurities is challenging, and this is critical to remove from drug substance. Enantiomer of compound is led to form its starting material, and it tread on the heels of mechanism path up to final active pharmaceutical ingredients (API). This work helps to improve the efficacy and quality of the drug substance; therefore, concentration of these impurities must be controlled to the acceptable level.

Keyword: Chiral; Characterization; Edoxaban; Anticoagulant; Drug; API.

Predictive Analytics for Soil Productivity Using Machine Learning

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ABSTRACT

A major factor in agricultural production is soil productivity, which is impacted by soil fertility as well as the compatibility of the crops cultivated there. In order to improve agricultural efficiency and sustainability, farmers must make educated judgments on crop selection and fertilizer use, which requires an accurate estimate of soil productivity. This study offers a predictive analytics method that uses machine learning and K-Means clustering and crop recommendation models to evaluate soil productivity. The K-Means clustering algorithm divides soil into three classes: Fertile, Highly Fertile, and Less Fertile, depending on the amount of nitrogen (N), phosphorus (P), and potassium (K) it contains. A Random Forest Regression model is used to forecast the best crop because soil productivity is influenced by both crop selection and fertility. In order to suggest crops that maximize production potential, this model examines a variety of soil attributes and environmental factors. Through precise soil fertility prediction and crop recommendation, this study offers farmers useful information that helps them maximize soil utilization, increase crop yields, and engage in sustainable agriculture. In the end, this data-driven strategy benefits both agricultural output and environmental preservation by enhancing farm productivity and resource management.

Keywords: Random Forest Regression, K Means Clustering, Fertility, Classification, Crop Recommendation.

Canine Breed Classification and Health Insights

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ABSTRACT

Breed-specific health management, veterinary diagnostics, and pet care all heavily rely on the identification and classification of canine breeds. The VGG16 model, a pre-trained Convolutional Neural Network (CNN) renowned for its excellent accuracy in picture recognition tasks, is used in this study to investigate a deep learning-based method for Canine Breed Classification and Health Insights. The model has been optimized to accurately identify dog breeds from photos. Furthermore, a health insights module is integrated, offering advice for preventive care, common diseases, and breed-specific health information. Because the Django framework was used to create the system, users can input dog photos and get immediate categorization results along with pertinent health data through an intuitive web interface. Deep learning and web-based deployment work together to improve accessibility, making it a

Keywords: Deep Learning, VGG16, Web Development and Django Framework.

Automated Hallucination Detection and Mitigation in Large Language Model

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ABSTRACT

The system is designed to improve AI credibility by providing reliable fact-checking solutions for various applications, including AI-powered customer service, legal consultation, and medical diagnosis verification. It accomplishes this by utilizing advanced Natural Language Processing (NLP) methods, integrating external APIs for real-time information retrieval, and applying sophisticated machine learning models for accurate analysis. The system operates through a structured four-stage pipeline: **data collection**, which gathers information from credible sources; **pre-processing**, where data is cleaned, standardized, and organized for efficient processing; **model training**, where AI is refined using extensive datasets to enhance accuracy and adaptability; and **real-time evaluation**, ensuring responses are verified dynamically before reaching users. With a modular architecture, the system prioritizes scalability and efficiency, enabling seamless data management, precise accuracy assessment, and an intuitive user interface for enhanced interaction. A key feature is its ability to validate AI-generated responses against trusted and authoritative data sources, minimizing misinformation and ensuring factual correctness. This validation process strengthens AI reliability, instilling greater user confidence in automated decision-making while upholding transparency and accountability across essential industries. Furthermore, the system is built to integrate seamlessly into various AI-driven applications, offering a responsive interface that balances efficient verification with optimal processing speed. By reinforcing AI trustworthiness and mitigating the spread of incorrect information, this solution promotes responsible AI adoption in critical fields such as automated customer support, healthcare, legal compliance, and financial analysis.

Keywords: AI Hallucination Detection, Fact-Checking AI, External API Integration, Semantic Analysis, Scalability & Efficiency, AI Response Validation, IEEE.

Bridging the gap: Addressing Challenges and Exploring Opportunities for Women in Indian Architecture

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ABSTRACT

Gender disparity in architecture continues to be a major issue, with women encountering systemic obstacles that impede their career advancement and professional development. This study focuses on the Indian context while incorporating global perspectives, and explores the ongoing challenges women face in the field, such as workplace discrimination, unequal pay, limited access to leadership positions, and insufficient mentorship. Employing a mixed-methods approach, the research combines surveys, interviews, and case studies to reveal how cultural and organizational norms within architectural firms reinforce gender inequalities. The findings indicate that although legal protections and institutional policies are in place, their inconsistent application perpetuates these disparities. The predominance of male role models further marginalizes women, limiting their visibility and access to mentorship. The study concludes with practical recommendations for policymakers, industry leaders, and educational institutions, highlighting their role in fostering a more inclusive and equitable environment. By tackling these barriers and promoting mentorship programs that showcase female architects, the research seeks to inspire meaningful change and contribute to the wider conversation on gender equity in architecture.

Keywords: Professional practice, Gender equity, Women in architecture, Workplace ethics, Mentorship.

Maximizing Returns with Linear Programming in Systematic Investment Plans

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ABSTRACT

Systematic Investment Plans (SIPs) have gained popularity as a disciplined approach to investing, allowing individuals to invest fixed amounts at regular intervals. However, optimizing the allocation of funds across various assets to maximize returns while minimizing risk remains a challenge. This paper explores the application of Linear Programming (LP) in optimizing SIPs. Using Python, the investment problem has been formulated as a linear programming model. It demonstrates how investors can maximize returns subject to constraints such as budget, risk tolerance, and investment horizon. The results indicate that LP can be a powerful tool for enhancing the efficiency of SIPs, providing a structured approach to asset allocation that aligns with investors' financial goals. The research highlights the role of LP in determining the optimal portfolio by solving objective functions that represent returns, while also factoring in real-world investment constraints. Through this approach, investors can potentially improve the performance of their SIP portfolios and make more informed decisions that align with their financial goals. The results demonstrate the effectiveness of LP in systematic investment strategies.

Keywords: Investment, Linear Programming (LP), Returns, Risk, Systematic Investment Plans (SIPs).

A Blockchain and AI-Powered Digital Marketplace for Optimizing Agricultural Trade Efficiency and Farmer Empowerment

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ABSTRACT

This paper addresses inefficiencies in agricultural trade resulting from intermediaries together with restricted direct market participation by farmers and volatile market prices. This paper proposes "A Blockchain and AI-Powered Digital Marketplace for Optimizing Agricultural Trade Efficiency and Farmer Empowerment" a mobile application that applies both blockchain technology and artificial intelligence to directly link farmers with buyers while securing fair prices and full market access. Farmers can register, list, and manage their products, and buyers can find products by proximity to receive the supply. The application provides dynamic pricing based on demand and seasonality, multilingual accessibility through NLP, and blockchain for secure transactions. Moreover, farmers get real-time order notifications which help them arrange for delivery through self-pickup, courier, or postal service. The proposed system incorporates linear regression and random forest regression algorithms for pricing optimization, matrix factorization and SVD for recommendation systems, and supervised learning and anomaly detection for fraud detection contribute to a more productive, efficient and profitable agricultural ecosystem.

Keywords: Agricultural Trade, Smart Marketplace, Blockchain, Artificial Intelligence, Recommendation System, Fraud Detection, Machine Learning, Dynamic Pricing, NLP, Secure Transactions, Direct Market Access, Regression Models, Anomaly Detection, Supply Chain Optimization.

Secure APK Installation Using Blockchain: A Decentralized Approach to Threat Prevention

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ABSTRACT

The rapid proliferation of mobile applications has heightened security concerns related to malware infections, data breaches, and unauthorized access. Traditional security mechanisms primarily rely on centralized verification models, which introduce vulnerabilities such as tampering, single points of failure, and slow response times to emerging threats. This paper introduces a blockchain-based approach for secure APK installation, incorporating immutable records, decentralized verification, and real-time threat detection. The proposed framework integrates machine learning for dynamic behavioral analysis and smart contracts to enforce security policies automatically. By leveraging blockchain, the system ensures the integrity of APKs, verifies developer authenticity, prevents tampering, and enables a collaborative threat intelligence network for real-time security updates. Furthermore, the decentralized nature of blockchain eliminates reliance on centralized authorities, providing a transparent, efficient, and tamper-proof APK verification mechanism. The focus will be on optimizing blockchain consensus mechanisms, advancing smart contract functionalities, and integrating AI-powered threat intelligence for dynamic cybersecurity.

Keywords: **Blockchain, APK security, smart contracts, threat detection, decentralized verification, machine learning, real-time monitoring, cybersecurity, crowdsourced intelligence, tamper-proof authentication.**

Car Damage Predictor

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ABSTRACT

This project introduces an innovative, web-based platform to predict car damage severity and estimate repair costs using advanced machine learning and deep learning techniques. The primary objective of this platform is to simplify and automate the vehicle damage assessment process, allowing users to upload images of damaged cars and receive fast, accurate evaluations. At its core is MobileNet, a lightweight convolutional neural network (CNN) widely recognized for its efficiency and precision in image classification tasks. The system categorizes damage into high, medium, or no damage levels and provides a detailed repair cost estimate, enabling users to make well-informed decisions about necessary repairs. This streamlined approach not only saves time but also empowers car owners with actionable insights to plan and prioritize repairs effectively. The system leverages Faster R-CNN for object localization and Mask R-CNN for precise instance segmentation, ensuring accurate identification and analysis of damaged areas. These advanced techniques work together seamlessly to bridge the gap between complex assessment methodologies and a user-friendly, automated solution. By providing a reliable, efficient, and accessible tool, the project aims to revolutionize the car repair industry, empowering vehicle owners to make informed decisions with confidence while saving both time and resources.

Keywords: Car damage, price prediction, image classification, machine learning, deep learning, MobileNet, damage detection, cost estimation, web-based platform, SQLite database, computer vision, transfer learning.

Holographic Leadership Redefining Corporate Presence

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ABSTRACT

Leadership is the backbone of any organization's success. Normally, traditional leadership styles rely on rigid hierarchical structures along with centralized decision making. This limits autonomy, creativity and innovation. In today's date, leadership has transformed into a more flexible, adaptive style that encourage collaboration and innovation and decentralization. In this fast-paced, technology-driven world, holographic leadership is redefining how organizations work. This approach emphasizes shared decision-making, team autonomy, and self-organization rather than centralized authority. This study explores the concept of holographic leadership. It examines the significant benefits such as fostering innovation, empowering employees and improving overall business performance. By encouraging a flat hierarchy and data-driven decision-making, it allows organizations to navigate change and digital transformation more effectively. However, while this leadership style presents many advantages, it also comes with challenges and limitations which have been discussed in the paper. This paper aims to explore the impact leadership styles on Job Satisfaction and Employee Performance through correlation and Binary logistic regression. A plan to adopt a holographic leadership style has also been discussed. Lastly, the role of AI in leadership is also stated. As leadership continues to evolve, integrating AI with holographic leadership can create a balanced model that blends technology with human empathy, cultural intelligence, and strategic foresight. This approach ensures that organizations remain adaptable, innovative, and competitive in and ever-changing corporate landscape.

Keywords: Decentralization; Holographic Leadership; Innovation; Leadership Styles; Technology.

Impact of Substrate Material On the Performance of Patch Antenna

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ABSTRACT

This paper presents the design of a circular loop antenna intended for millimetre wave applications within the frequency range of 26 GHz to 30 GHz. The objective is to enhance the antenna's bandwidth, achieved through the utilization of a genetic algorithm. The genetic algorithm employs tournament selection to identify the most suitable parents from the population. Furthermore, a multi objective function is formulated to optimize both the bandwidth and gain of the proposed antenna. The design of the antenna employs Rogers-4003 dielectric material, characterized by a dielectric constant (ϵ_r) of 3.55 and a loss tangent ($\tan \delta$) of 0.0027. Following the successful optimization of the proposed antenna, its performance is assessed by evaluating the return loss and gain characteristics. Finally, after fulfilling the predefined objectives, an analysis of the radiation characteristics is conducted to gain insights into the antenna's radiation properties in E-plane and H-plane.

Affordable Medicine Recommendation System

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ABSTRACT

The high cost of medications is a barrier to access for many individuals, particularly in low-income communities. While generic alternatives are often available, finding effective and affordable options requires careful comparison of their chemical compositions. This paper presents an Affordable Medicine Recommendation System that helps users identify cost-effective alternatives by comparing the chemical compositions of prescribed medications with available generics. Using Cosine Similarity, the system matches users' prescribed drugs with affordable alternatives, ensuring both therapeutic similarity and price effectiveness. The system is built using Flask for backend development and SQL for database management and is deployed on a cloud platform. We assess the system's performance and discuss the potential for wider adoption in improving access to affordable healthcare.

Keywords: Affordable Medicine, Generic Alternatives, Cosine Similarity, Chemical Compositions, Cost-effective Alternatives, Healthcare Access.

AI-Powered Plant Disease Detection and Recommendation System

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ABSTRACT

Plant diseases are a major threat to agricultural productivity, causing huge economic loss and food insecurity. Timely identification of the disease and timely treatment of the disease can minimize these impacts. In this project, we present a Plant Disease Detection and Recommendation System based on deep learning techniques and the integration of weather data to provide accurate and actionable information to farmers and other involved parties in agriculture. Heart of the system is a CNN model, trained on a powerful dataset of 87000 images of multiple plant species and diseases. The user can upload images of the plant through a simple user interface and the system will classify the disease in the plant. Then the weather information is drawn in real-time from the uploaded location, which provides the system with more flexibility by considering present climate information as well as the disease diagnosis in analyzing the overall status. The application is accessible to a diverse audience, including individual farmers and large-scale agricultural businesses. This app makes strategic use of machine learning, live data retrieval, and context-dependent suggestions to enhance the health and profitability of crops.

Keywords: Plant Disease Detection, Convolutional Neural Network, Image Classification, Weather data integration.

The Function of Photosynthetic Pigments in the Mesophilic Cyanobacterium *Westiellopsis Prolifica* in Reducing Heat Stress in the Presence of Sodium Sulfide

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ABSTRACT

Thermophilic cyanobacteria grow in sulphide-rich environments, such as hot water springs. The presence of sulfide promotes the growth of bacteria and cyanobacteria. Temperature stress, on the other hand, impairs the photosynthetic system in mesophilic cyanobacteria, resulting in oxidative damage, reduced efficiency, and alterations in cellular metabolism. Photosynthetic pigments such as carotenoids and chlorophylls are essential for cyanobacteria survival during heat stress, and various adaptive mechanisms may be used to maintain photosynthetic activity. The growth of cyanobacterial cultures depends on the amount of photosynthetic pigments during temperature stress. The current study intended to determine whether mesophilic cyanobacteria can tolerate high temperatures in the presence of sulphide. This study looks into the role of these pigments. Thus, the levels of Chl a, carotenoids, and phycobiliproteins in the test organisms were evaluated under heat stress and in the presence of sulphide

Keywords: **Cyanobacteria, Sulphide, Oxidative Stress, Temperature Tolerance.**

Evaluation of Cyanobacteria for Phycobiliproteins Production

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ABSTRACT

Phycobiliproteins (PBP) are naturally occurring water soluble fluorescent pigments produced by cyanobacteria and some eukaryotic algae. The present study focuses on finding a good source of phycobiliproteins. We report a new cyanobacterium *Nodularia sphaerocarpa* PUPCCC 420.1 as a good producer of PBP. The organism produced 445.6 μg PBP mg^{-1} dry biomass. Further the growth as well as phycobiliprotein production was maximum in the cultures supplemented with 5 mM KNO_3 and 10 mM NaNO_2 . Similarly, the growth and amount of phycobiliproteins production was maximum in the cultures grown in slightly alkaline medium with pH 8. Among different colours of light, green light supported maximum phycobiliprotein production in the test organism while the growth was maximum in the cultures under white light. The total phycobiliprotein production increased from 44% of dry wt. in white light to 49% of dry wt. in green light. Effect of light, temperature and pH on the stability of crude phycobiliproteins was also studied. The results revealed that these phycobiliproteins were most stable at 4°C. The amount of phycobiliprotein decreased by 49% in 22 days at this temperature while 51% decrease in the amount of phycobiliproteins was observed in 10 days at 28°C. These phycobiliproteins were found to be more stable under dark with 51% decrease in 10 days while under light 47% decrease occurs in 6 days. Total phycobiliproteins were more stable at pH 6 with 68% decrease in 6 days compared to 58% decrease at pH 7.0 in just 4 days.

Keywords: Phycobiliproteins, Cyanobacteria, Eukaryotic Algae.

Development of Hypothesis to Evaluate the Impact of Industry 4.0 Adoption on Sustainability Performance in the Manufacturing Industry

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ABSTRACT

This paper explores the impact of Industry 4.0 on sustainability performance, a topic that has generated significant concern. The goal of this study is to develop hypotheses that examine how adopting Industry 4.0 technologies influences sustainability in the manufacturing sector. To do so, the research looks at various factors and formulates appropriate hypotheses, focusing on different types of industries in India. The study uses a survey-based approach to collect insights from small and medium-sized enterprises (SMEs) about the perceived benefits of adopting Industry 4.0 technologies. The data gathered will be analyzed using advanced statistical methods, such as regression analysis, to test the proposed hypotheses. The findings aim to bridge the gap between academic research and real-world applications, providing valuable guidance for SMEs as they navigate their digital transformation toward a more sustainable future.

Keywords: Hypothesis Development, Industry 4.0, Sustainability.

Augmented Room Stylist Android Application

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ABSTRACT

The rapid growth of augmented reality (AR) technology has revolutionized industries ranging from gaming to education, and its application in interior design is no exception. This paper introduces the "Augmented Room Stylist Android Application" an innovative tool that harnesses the power of AR to redefine the way users approach home styling and furniture selection. By offering realistic visualizations, customizable options, and seamless integration with online shopping platforms, the application bridges the gap between imagination and reality, allowing users to make confident and informed decisions. The development process involved a systematic approach that combined user-centered design, Results demonstrated high user satisfaction, improved confidence in design decisions, and a significant reduction in return rates for furniture purchases. This paper explores the methodology, challenges, and outcomes of the application's development, emphasizing its potential to transform the interior design industry. The findings not only showcase the practical benefits of AR in enhancing user experiences but also highlight areas for future research and development in AR-powered design applications.

Keywords: Augmented Reality, Interior Design, Android Application, Room Visualization, User Experience.

The Commodification of Influence: Examining Consumer Culture in the Era of Sponsored Content

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ABSTRACT

In the contemporary era of the digital economy, sponsored content has emerged as a dominant force sculpting consumer culture. The proliferation of social media and digital advertising has blurred the distinction between organic user-generated content and paid promotions, fostering a new era of commodified authenticity. Influencers, brands, and media platforms engage symbiotic relationships where trust and credibility are strategically leveraged to drive consumer engagement. This paper critically examines the psychological and cultural mechanisms underpinning the reception of sponsored content, emphasising the role of parasocial relationships, digital trust, and algorithmic curation in shaping consumer perceptions. Furthermore, this study examines the ethical dilemmas surrounding transparency and consumer autonomy, questioning whether audiences can distinguish between genuine endorsements and profit-driven narratives. The increasing reliance on influencer marketing raises concerns about manipulating consumer behaviour as audiences form emotional attachments to digital personalities who seamlessly integrate advertisements into their content. By integrating perspectives from media studies, consumer psychology, and cultural theory, this research aims to comprehensively understand how sponsored content influences identity formation and purchasing decisions in the contemporary digital landscape. The findings contribute to ongoing debates on digital ethics, advertising regulation, and consumer culture's evolving nature in an algorithmic persuasion era.

Keywords: Sponsored Content, Consumer Culture, Digital Influence, Para-social Relationships, Authenticity, Algorithmic Curation, Media Studies.

Video Summarization Tool Using Machine Learning

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ABSTRACT

Video summarization is a crucial task in multimedia processing, allowing efficient content consumption by extracting the most relevant parts of a video. This research focuses on an automated video summarization system using machine learning techniques. The system integrates video processing, speech-to-text transcription, summarization, and translation. MoviePy is used for video extraction, Whisper for transcription, and the Hugging Face Transformers pipeline for text summarization. Google Trans is employed for multilingual support. The backend is developed using Django, while MongoDB serves as the database. This paper explores the methodology, implementation, and evaluation of the system, demonstrating its effectiveness in summarizing lengthy videos into concise textual representations.

Keywords: Video summarization, Machine learning, Whisper, Transformers, Django, MongoDB, Google Trans.

Ultrasound Nerve Segmentation Using Resu-Net Architecture

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ABSTRACT

Ultrasound Nerve Segmentation enhances the precision and safety of ultrasound-guided procedures by automating nerve identification using deep learning, specifically Convolutional Neural Networks (CNNs). This project employs an optimized U-Net architecture trained on labeled ultrasound datasets, with preprocessing techniques like augmentation and normalization to improve robustness. Dice Loss is used as the objective function, ensuring high segmentation accuracy, evaluated through metrics like Intersection over Union (IoU) and Dice Coefficient. Post-processing methods further refine segmentation masks for clinical reliability. By minimizing human error and improving workflow efficiency, this approach enhances patient safety and underscores the transformative role of AI in medical imaging. Future advancements include mobile deployment using TensorFlow Lite for real-time access in clinical settings and transfer learning to enhance model performance with limited datasets. The integration of automation in ultrasound imaging can revolutionize regional anesthesia and nerve block procedures, making them safer and more efficient. This study highlights the potential of AI-driven healthcare solutions, bridging technology with medicine to improve diagnostic precision and treatment outcomes.

Keywords: Automation; CNN; Deep learning; Dice Loss; Healthcare; Image pre-processing; IoU; Medical imaging; Nerve segmentation; Real-time deployment; Ultrasound; U-Net;

Educational Assistant for Visually Impaired People

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ABSTRACT

Developing educational resources that are accessible and effective for visually impaired individuals remains a significant challenge. Traditional learning tools often lack the necessary features to accommodate their needs, resulting in limited educational opportunities and resources. The current gap in accessible educational tools hinders the ability of visually impaired individuals to learn independently and efficiently. To address this issue, we propose to develop a mobile application using Flutter, designed specifically to serve as an educational assistant for visually impaired people. This application will aim to provide an intuitive and user-friendly interface, leveraging voice commands, screen readers, and other assistive technologies to enhance the learning experience and ensure that visually impaired users can access educational content with ease.

Keywords: Voice Interaction, Text to Speech, Natural Language Processing, Audio books.

Smartdrop: A Deep Learning Framework for Predicting College Dropouts

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ABSTRACT

Educational Data Mining (EDM) plays a key role in improving modern learning by using advanced techniques. This study focuses on predicting college dropout rates with a deep learning framework. By analysing student data, our model helps identify at-risk students early, allowing timely support. The dataset contains student details such as academic performance, socioeconomic status, and engagement levels. Using these details, our framework applies deep learning methods to detect early signs of dropout. This helps universities take quick action to support students and improve their learning experience. Our study checked how well different models predicted dropout rates. The K-Nearest Neighbours (KNN) model had 93% accuracy, while the Recurrent Neural Network (RNN) had 95% accuracy. When KNN and RNN were combined, accuracy dropped to 87%. However, combining KNN and Convolutional Neural Network (CNN) improved accuracy to 97%. The RNN and CNN combination scored 96% accuracy, and the standalone CNN model also reached 97% accuracy. The best-performing method in this study is the KNN and CNN combination, which achieved the highest accuracy of 97%. Even though the CNN model alone also reached 97%, combining it with KNN helps capture more patterns in the data. This approach improves student retention by identifying and helping struggling students early. Our findings show that deep learning can effectively predict dropout rates, allowing educational institutions to provide better student support and improve success rates.

Keywords: KNN, RNN, CNN, Deep Learning, Machine Learning, Neural Networks.

Wavelet-Based MRI Brain Image Analysis for Tumor Detection and Classification Using SVM & Random Forest

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ABSTRACT

Brain tumor detection and classification in MRI image data is a significant and challenging task in medical image analysis. This paper presents an efficient method that integrates Support Vector Machine (SVM) and Random Forest algorithms, developed with a Graphical User Interface (GUI) in MATLAB. The interface allows flexible combinations of segmentation, filtering, and other techniques to achieve optimal results. The proposed approach starts with preprocessing steps, including Gaussian filtering and morphological operations, followed by feature extraction using Discrete Wavelet Transform (DWT) and Continuous Wavelet Transform (CWT). Principal Component Analysis (PCA) is applied to decrease the feature set for more effective classification. The extracted first and second-order features are used to train the kernel SVM. Classification is then performed using both SVM and Random Forest to improve accuracy. Watershed segmentation is applied for precise tumor localization. The hybrid model achieved a classification accuracy of approximately 93% using only SVM, and an improved accuracy of 96% when combining SVM with Random Forest, outperforming traditional approaches in both accuracy and computational efficiency. Benchmark evaluation plays a crucial role in enhancing both accuracy and reliability. To ensure precise tumor localization, watershed segmentation was applied. These findings indicate that the proposed method offers a reliable, automated solution for brain tumor detection, demonstrating significant potential for integration into clinical diagnostic workflows.

Keywords: **Brain tumor detection, MRI, Support Vector Machine (SVM), Random Forest, Watershed segmentation, Wavelet transforms.**

Smart Shopping Cart

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ABSTRACT

Traditional shopping methods often result in inefficiencies, with customers manually scanning items at checkout, leading to long queues. The **Smart Shopping Cart Using IoT** integrates barcode and RFID scanning technology to automatically detect items when placed in the cart. It updates the total cost in real time and prevents item removal until payment is complete, ensuring secure transactions. The system uses a microcontroller and display unit, offering an intuitive interface for customers. This innovative cart reduces human effort and minimizes checkout delays. The real-time processing enhances shopping efficiency by streamlining the checkout process. Additionally, it eliminates manual scanning errors and improves overall accuracy. The Smart Shopping Cart optimizes the shopping experience, reducing wait times and enhancing customer satisfaction. This approach represents a significant improvement in modern retail operations. By leveraging IoT, it offers a seamless, efficient shopping experience for both customers and retailers.

Keywords: Smart Shopping Cart, IoT, Barcode Scanner, Automated Billing.

Foreign Shores and Fading Dreams: The Great Indian Labour Exodus

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ABSTRACT

A vast majority of Indians earn their income through labour by working in the unorganized sector. About 90% of Indian working population earn their livelihood through informal employment which has no job security, no employment benefits, no social protection and survive with lower earnings. However desperate people are risking their lives to seek employment by migrating to other nations by taking up illegal route and signing up for risky jobs. Unemployment Rate in India increased to 8.30 percent in December from 8 percent in November of 2024. The percent of youth involved in economic activities declined to 37 percent in 2022. According to the latest Periodic Labour Force Survey the urban unemployment data for the age group 15-29 for the five quarters between January 2023 and March 2024, has ranged between 16.5 per cent and 17.6 per cent, with the latest January-March 2024 quarter posting a 17 per cent unemployment rate. Given these conditions, it is natural that Indian youth are lured by promising careers abroad. A new wave of Indian workers are travelling to the West and the Gulf in search of better lives, some of them as illegal migrants. “Unemployment, systemic disorganisation, peer pressure and fear of drug traps were compelling rural households to send their young to foreign shores,” according to a study. This situation had led to youth being exploited at foreign shores and incidents of unfair wages, exploitations, illegal immigration, etc are now being reported. This paper discusses all these issues and presents suggestions to handle these issues.

Keywords: Labour Force, Unemployment, Migrants, Exodus.

Phytochemical Evaluation of Bark and Leaf Extracts of *Tecomella Undulata* (Sm.) Seem

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ABSTRACT

Tecomella undulata (commonly known as Rohida or Marwar teak) is found in arid regions of the world. Three morphotypes of the tree depending on the colour of the flowers have been reported in this plant i.e. red flowered, yellow flowered and orange flowered. Present study deals with the qualitative and quantitative evaluation of various phytochemical found in the plant. The qualitative analysis revealed the presence of many pharmaceutically important constituents like emodin, phenols, flavonoids, terpenoids, Phlobatannins, quinones, saponins in it. Plant polyphenols and especially, flavonoids are a most important class of defense antioxidants. They have a remarkable role in various pharmacological activities including anti-allergic, anti-inflammatory and antioxidant effects and hence have aroused considerable interest recently. The plant was quantitatively and comparatively evaluated for these two constituents. The comparison of the total phenol and flavonoid content in aqueous, acetone and methanol extracts of bark and leaves of different morphotypes of *T. undulata* revealed variation in their contents. The range of average phenol content in various extracts was 26.02 ± 1.61 mg/gm to 94.19 ± 10.71 mg/gm and flavonoid content was 16.0 ± 5.03 mg/gm to 156.89 ± 45.89 mg/gm of the extract. The HPLC analysis of the various extracts showed that plant contain many phenols and flavonoid like resorcinol, vanillic acid, ferulic acid, veratric acid, myristicin, caffeic acid, epicatechin in substantial amount. The bark extract of the plant contains more of these phytochemicals as compared to leaf extract. The result shows considerable amount of diversity in this species with respect to biochemical traits, which offers scope for selection and breeding to the breeder and pharmaceutical scientists.

Keywords: *Tecomella Undulata*, Phytochemicals, Flavonoid, Phenols.

Mechanical and Comfort Properties of Hemp and Hemp Blend

Fabric: A Comprehensive Review

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ABSTRACT

Hemp fabrics are well known for their mechanical strength, durability, and eco-friendliness but the inherent stiffness poses challenges for apparel applications. To develop yarns and fabrics with the desired mechanical and comfort performance, the interaction between yarn and fabric parameters and their corresponding influence plays an important part. Key findings indicate that ring-spun yarns enhance tensile strength, while rotor and vortex spinning improve abrasion resistance and smoothness. Higher twist levels increase mechanical strength but reduce moisture-wicking, whereas lower twist improves flexibility and comfort. Among fabric structures, plain weaves provide superior tensile strength, whereas twill and satin weaves enhance drape. Additionally, blending hemp with cotton, Tencel, or flax improves softness, breathability, and overall wearability without compromising durability. Understanding these factors is essential to optimizing hemp and hemp blend textiles apparel, activewear, and functional fabric. Hence, this review aims to offer valuable insights for researchers and industry professionals working towards the development of sustainable hemp-based fabrics.

Keywords: **Hemp, Hemp Blend, Mechanical Properties, Comfort Performance, Woven Fabric.**

A novel ML-based framework for securing communication in IoT devices

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ABSTRACT

Machine Learning Techniques for Reliable & Secure Communication in IoT Devices is an emerging research area that focuses on enhancing the communication protocols and security measures of Internet of Things (IoT) devices using machine learning (ML) approaches. IoT devices are widely used in various sectors such as healthcare, smart cities, agriculture, and industrial automation, where reliable and secure communication is crucial. Machine Learning (ML) techniques provide an effective approach to address these challenges by enhancing security, optimizing network performance, and mitigating cyber threats. The integration of ML into IoT security enables real-time anomaly detection, threat mitigation, encryption-based secure communication, unauthorized access can be detected, and threats can be mitigated in real-time basis as many security models fail to scale effectively with growing IoT networks.

Keywords: Machine Learning, Internet of Things design, Security, Communication.

Efficiency enhancement architecture of SQL Queries through Hierarchical Cache

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ABSTRACT

Secure Multi-Party Computation (MPC) enables privacy-preserving collaborative data analysis but suffers from high computational overhead, communication latency, and inefficient query execution. Traditional caching mechanisms, such as SMP Cache, attempt to optimize performance but face limitations due to high storage overhead, low cache hit rates, and inefficient cache lookup strategies. This study suggests a Hierarchical SMP Cache (H-SMP Cache) approach to address these issues, inspired by CPU caching, that introduces a multi-level caching structure (L1, L2, L3) to manage SQL queries in MPC environments efficiently. The proposed hierarchical caching model aims to classify queries based on execution cost, frequency, and computational complexity.

Keywords: Secure Multi-Party Computation (MPC), Hierarchical Caching, SMP Cache, SQL Query Optimization, L1-L2-L3 Cache, Privacy-Preserving Data Analysis.

Factors Influencing Consumers regarding Adoption of Electric Vehicles: A Conceptual Study

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ABSTRACT

The new global economic era has been hindered by carbon emissions. The main source of carbon emission is transportation sector since millions of petroleum-powered vehicles are driven on the road each day. That's why from last 10 years' electrification of transportation was the main area of research. Using electric vehicles for daily chores helps address the growing sustainability concerns and reduces environmental pollution to a certain extent. However, a lot of factors influence the acceptance of the same by consumers. So, the current conceptual paper aims to determine the factors influencing consumer acceptance of electric vehicles supporting through a thorough review of the literature. Consumers' adoption of electric vehicles is greatly influenced by a number of factors, including driving range, availability of charging infrastructure, personal conventions, attitudes, environmental concerns, Social influence and charging time. This review paper also suggests the area for future research of electric vehicles and help government in raising the share of electric vehicle adoption.

Keywords: Sustainability, Influencing factors, consumer adoption, E Vehicle.

Comparing Deep Learning Techniques for Detecting Network Attacks

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ABSTRACT

The Increase in Complex Network Attacks Has Led to The Implementation of Deep Learning Models for The Detection of Network Attacks, Particularly Cyber Attacks. Among These Models, Long Short Term Memory (LSTM), Recurrent Neural Networks (RNN), And Hybrid Models Such as LSTM Combined with RNN Have Become More Prominent. This Paper Compares the Deep Learning Methods, Emphasizing Metrics Like Accuracy, Performance, And Scalability, By Utilizing the CSIC 2010 Dataset to Evaluate and Compare Models Based on Key Metrics Such as Precision, Recall, and F1 Score. This Analysis Indicates That the Hybrid Model of LSTM with RNN Integrates the Advantages of Both to Enhance Detection Rates.

Keywords: LSTM, RNN, LSTM with RNN

Connected Healthcare Robot with IoT Integration

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ABSTRACT

The "Connected Healthcare Robot with IoT Integration" was designed to dispense medicines at scheduled times, stored in a dedicated box. It is equipped with sensors to navigate the home environment safely, avoiding obstacles, and ensuring smooth movement. A GPS system integrated into the robot connects to a smart watch or mobile device, allowing patients to track the robot's location in real-time within the house. This ensures timely delivery of medication to the patient. The robot enhances home healthcare by automating medication management and improving the efficiency in home patient care.

Keywords: Healthcare Robot, IoT, Medicine Reminder.

Optimized LSTM Model for Day-Ahead Solar Power Prediction

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ABSTRACT

The effective integration of photovoltaic (PV) systems into the grid which facilitates better planning and resource allocation depends on accurate day-ahead solar power forecasts. This paper proposes a Long Short-Term Memory (LSTM) model for forecasting solar power generation one day in advance with the algorithm inspired by Ant Colony Optimization (ACO). A year's worth of real-time data for a 4.5 kW PV system is used to train and test the model with input characteristics including temperature, PV power production and solar irradiation. Over the course of three seasons—summer, winter, and monsoon—the performance of the ACO-optimized LSTM model is contrasted with that of a simple LSTM model and an LSTM model enhanced by particle swarm optimization (PSO). This encompasses metrics like R-squared (R^2) values, Mean Absolute Error (MAE) and Root Mean Square Error (RMSE). The PSO-optimized LSTM model (MAE of 0.31 kW, RMSE of 0.38 kW and R^2 of 0.88) and the baseline LSTM model (MAE of 0.35 kW, RMSE of 0.42 kW and R^2 of 0.85) couldn't match the ACO-optimized LSTM model's summertime MAE of 0.27 kW, RMSE of 0.33 kW and R^2 of 0.92. Similar trends also surfaced throughout the monsoon and winter seasons, with the ACO-optimized model consistently outperforming the others. In the winter, for instance, it obtained an R^2 of 0.93, an RMSE of 0.26 kW and an MAE of 0.22 kW. With regard to hyper parameter optimization and overall performance, these findings demonstrate the ACO-optimized LSTM model's superiority over the baseline and PSO-optimized LSTM models highlighting its improved prediction precision for all seasons. The effectiveness of ACO in bolstering solar power forecast models is confirmed by this study and provides a solid basis for deep learning model improvement in practical PV applications.

Keywords: PV System, LSTM, Hyper Parameter Tuning, PSO, ACO.

Secure Energy Management Smart Metering Model System

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ABSTRACT

Increase in residential consumers will represent one of the significant challenges arising from a rapidly increasing population coupled with urbanization and increasing energy demands. Energy monitoring and management significantly contribute to energy conservation by leveraging the Internet of Things (IoT). IoT facilitates real-time monitoring and control of household energy consumption, enabling efficient usage patterns, automation, and remote management. This integration optimizes energy efficiency, reduces waste, and promotes sustainable energy practices in smart homes. This work deals with the design and implementation of an IoT-based energy monitoring and management system for smart homes. The system integrates microcontrollers, sensors, and wireless protocols to maintain a record of energy consumption for every appliance used within the household. The ESP8266 microcontroller ensures that this tracking and information are relayed in real time by the system. This data is accessed by users through a web interface or mobile application. Users can identify devices consuming too much power and remotely control the same in the service of optimizing energy usage and saving costs. The proposed system also contributes to environmental sustainability in the form of decreased energy wastage and significantly reduced carbon footprints associated with households. Experimental results have proven that the system works fine by offering accurate, real-time data on energy and enabling proactive management of energy, which is a step further toward creating intelligent, efficient homes.

Keywords: IoT (Internet of Things), Microcontroller (ESP8266), Sensors, Wireless Protocols, Cost Saving, Home automation.

Smart Prescription Recognition and Symptom Analysis for Healthcare Solutions

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ABSTRACT

The digital solutions for handling prescriptions and health monitoring become more and more popular as the consequence of an increasing need for efficiency in the healthcare industry. The goal of the project, "Smart Prescription Recognition and Symptom Analysis for Healthcare Solutions," is to provide symptom-based health predictions and automated the recognition of prescriptions that are handwritten. The system's fundamental characteristics are as follows: first, it uses optical character recognition (OCR) technology to accurately interpret medication data by converting handwritten prescriptions into an apparent digital variant. Second, it lets users enter three symptoms, which are then reviewed by machine learning algorithms to identify possible illnesses and recommend applicable drugs. This system enhances patient safety and healthcare service efficiency by lowering human error in dealing with prescriptions and offering a symptom-based diagnostic tool. In besides providing prompts, accurate support to both patients and physicians, the project hopes to speed up treatments.

Keywords: Smart Prescription Recognition, Optical Character Recognition(OCR), Symptom Analysis, Machine Learning Algorithms, Healthcare Automation.

Data Privacy and Consumer Trust in Social Media Marketing

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ABSTRACT

In today's digital landscape, social media marketing is pivotal in consumer engagement and brand outreach. However, the increasing concern over data privacy has raised significant ethical and regulatory issues. Companies leverage vast amounts of consumer data to personalize advertisements, but unauthorized data collection, lack of transparency, and frequent data breaches have eroded consumer trust (Smith et al., 2021; Jones & Patel, 2020). This research investigates the relationship between data privacy practices and consumer trust, analyzing key factors such as regulatory compliance, ethical data handling, and transparency in social media marketing. The study utilizes a survey of 100 respondents to evaluate consumer perceptions of data collection, privacy policies, and security practices. Findings indicate that a majority of consumers are skeptical about data security and demand stricter regulations, greater transparency, and control over their personal information (Brown & Green, 2018; Lee, 2019). Data breaches significantly impact brand loyalty, and businesses that fail to adopt robust privacy measures risk losing consumer confidence (Garcia & Lee, 2021). Ethical data handling, clear privacy policies, and compliance with regulations like GDPR and CCPA can help restore trust and sustain long-term consumer relationships (Davis et al., 2019; Wilson et al., 2022). This study underscores the necessity for businesses to balance personalized marketing with privacy protection. By implementing secure and transparent data policies, companies can foster consumer trust, enhance brand reputation, and ensure sustainable engagement in the digital marketplace.

Keywords: **Data Privacy, Consumer Trust, Social Media Marketing, Cybersecurity, Regulatory Compliance, Ethical Data Practices, Brand Loyalty.**

IoT-Based Water Pollution Detection Boat with Real-Time Monitoring

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ABSTRACT

Sustainable development, public health, and aquatic ecosystems are all seriously threatened by water pollution. Conventional monitoring techniques are frequently time-consuming, sedentary, and unable to offer real-time data from inaccessible or remote locations. The creation of an affordable, remote-controlled water pollution-detecting boat with necessary sensors and a live data transmission system is shown in this study. The boat can sail on its own or with a remote control, gathering data on temperature, turbidity, and pH in real-time [3], [15]. A web-based interface receives the gathered data, allowing for remote monitoring and analysis. For environmental organizations, researchers, and conservationists, the system offers a scalable, independent solution that makes water quality testing more effective and approachable. By automating data collection and enabling real-time access to water quality parameters, this project addresses critical environmental challenges related to pollution detection and resource management. [11]

Keywords: Water Pollution Monitoring, IoT-Based Water Quality Assessment, Real-Time Data Transmission, Blynk, Environmental Conservation.

The Impact of Age and Experience on Employee Retention: Understanding the Factors behind Intent to Stay

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ABSTRACT

Employee retention remains a critical challenge for organizations, influencing productivity and workforce stability. This study investigates the relationship between age, professional experience, and key factors affecting employees' intent to stay. Using a mixed-methods approach, data from 200 employees across industries reveal generational differences in retention priorities—while younger employees (20–35 years) seek career growth and recognition, senior professionals value stability and workplace culture. The findings emphasize the need for tailored retention strategies, aligning organizational policies with diverse employee aspirations. Implementing such strategies can enhance job satisfaction, reduce turnover, and strengthen long-term organizational success.

Keywords: Employee Retention, Age and Experience, Intent to Stay, Job Satisfaction, Workforce.

Deep Learning Model for Automated Landslide and Debris Flow Detection

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ABSTRACT

Landslides and debris flows pose significant risks to human life, infrastructure, and the environment, necessitating timely detection and monitoring. Traditional methods rely on manual analysis of satellite images and geological surveys, which can be time-consuming and prone to human error. This study introduces a novel approach using deep learning techniques, specifically the YOLOv11 architecture, to enhance image segmentation for accurate landslide and debris flow detection. By automating the identification of key risk areas, our method improves both the accuracy and efficiency of assessments. The dataset for this research was sourced from open-access satellite imagery repositories and annotated using Roboflow, ensuring high-quality training data. Model training and testing were conducted on Roboflow, utilizing its powerful computational resources. The results show that the YOLOv11 model effectively detects debris flow and landslide-prone areas, achieving high Dice and Intersection over Union (IoU) scores, validating its ability to produce consistent and precise detections. Furthermore, the adaptability of the YOLOv11 model enables it to be trained on diverse datasets, making it applicable to various geographical regions and terrain types by leveraging the power of deep learning and advanced image segmentation techniques, this research aims to contribute to the development of more effective and efficient disaster management strategies, ultimately reducing the impact of landslides and debris flows on communities and the environment.

Keywords: Artificial Intelligence; Deep Learning; Landslide Detection; Debris Flow; Image Segmentation; YOLOv11.

A Literature Review on Smart Traffic Management System Using AI

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ABSTRACT

In an urban setting, adjusting to changing traffic congestion is still quite difficult, even with a well build road system and sufficient infrastructure. The 40% yearly growth in car ownership is one of the main causes of issue. Most traffic control systems in use today follow cyclical patterns, changing their lights from red to yellow and back again. Typically, this calls for law enforcement to keep the roads in order. One of the biggest obstacles to the continued growth of smart cities is the rise in the number of vehicles and the inadequate transportation infrastructure. Air noise pollution, health problems associated with the stress and related conditions, fuel consumption, increased fuel inefficiency, and delays brought on by crowded roads are all made worse by high vehicle density. The limits of traffic signal control systems result in longer wait times, more carbon emissions, and more accidents. Regardless of the actual time of the day, all phases in the current fixed time system get signals of the same during peak hours and necessitate manual control by the traffic police at the intersection.

Keywords: Pollution, Infrastructure, Vehicles, Traffic Management. Smart city, Urban Planning.

Quantum Computing in Drug Discovery

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ABSTRACT

The drug discovery process in the pharmaceutical industry is plagued by high costs, long development timelines, and low success rates. Quantum computing (QC) has emerged as a promising solution, offering the potential to expedite complex molecular simulations and optimization tasks. However, practical applications are hindered by hardware limitations and the integration challenges with traditional systems. To bridge this gap, we propose a hybrid quantum-classical drug discovery pipeline. This pipeline integrates quantum algorithms, such as Variational Quantum Eigensolver (VQE) and Quantum Approximate Optimization Algorithm (QAOA), with classical machine learning (ML) models for tasks such as protein-ligand binding affinity prediction, de novo drug design, and drug property optimization. Utilizing Noisy Intermediate-Scale Quantum (NISQ) devices, our pipeline improves prediction accuracy and scalability, achieving 93.5% accuracy compared to 78.2% from classical methods. This hybrid approach not only accelerates drug discovery but also offers a more cost-effective solution, potentially revolutionizing the pharmaceutical industry's approach to innovation.

Keywords: Quantum computing, Hybrid quantum-classical pipeline, Drug discovery, VQE, QAOA, Machine learning, NISQ devices.

Voyage Vista – A Travel Planner Website

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ABSTRACT

The project focuses on developing an innovative travel website designed to enhance user experience through personalized travel plans and comprehensive budget management. The platform allows users to input their desired destination, trip duration, and estimated budget, generating a detailed day-by-day itinerary that covers activities, accommodations, dining, and travel suggestions between cities. Incorporating advanced algorithms like Dijkstra's Algorithm for finding the shortest path between cities, Kalman Filters for improving GPS data accuracy and providing smoother route transitions, and the Knapsack Problem Algorithm for selecting the best combination of travel activities within budget constraints, the platform ensures efficiency and value. Users can choose from pre-designed packages or customize every aspect of their travel plans. Real-time expense tracking enables accurate budget management, and the platform provides a clear summary of spending at the end of the trip. This project aims to offer a seamless, tailored travel planning experience, helping users create memorable trips while maintaining control over their budget.

Keywords: Customized Travel Plan, Budget Management, Enhanced User Experience.

Enhancing Deep Learning to Improve Road Safety: An Accident Detection System

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ABSTRACT

This advanced accident detection system significantly improves road safety by enabling timely identification of traffic incidents and rapid emergency response. Current road safety systems often fail to provide accurate and prompt detection of accidents, resulting in delayed emergency services and increased casualties. To address this issue, an advanced system utilizes Convolutional Neural Networks (CNNs) and the You Only Look Once (YOLO) model for real-time accident detection and classification. By analyzing RGB frames and incorporating optical flow data, this system effectively handles dynamic scenarios such as high-speed traffic, varying weather conditions, and complex vehicle movements. Furthermore, a Real-Time Notification feature integrates to automatically alert nearby hospitals and dispatch ambulances immediately upon detecting an accident. Training and testing use the dataset from Kaggle, which includes CCTV footage frames of accidents and non-accidents, ensuring robust performance. This system detects accidents in real-time and promptly sends notifications via email to alert nearby hospitals and dispatch ambulances.

Keywords: Convolutional Neural Networks (CNNs); Real-Time Notification; RGB Frames; Optical Flow Data; You Only Look Once (YOLO).

Prospects of Coconut Waste Management for Sustainable Development in Patna

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ABSTRACT

Patna, the capital of Bihar is facing a significant upsurge in the burden of solid municipal waste in recent times. Coconut forms a heavy component of municipal solid waste. As residents of the town are becoming more health conscious and opt for natural beverages like coconut water over chemical-laden soft drinks, the demand for coconut and coconut water and its consumption is increasing continuously. The increasing consumption of coconut has increased the heaps of solid municipal waste in Patna. However, if coconut waste is managed systematically and scientifically it has the potential to produce cocopeat, coco pith, coco manure and biodegradable packaging material, etc. simultaneously, reducing the burden of landfill sites. There is increasing demand for cocopeat and coco pith for terrace gardens nurseries and other plantation activities in the town. Coconut waste has significant economic and environmental potential. There are abundant economic opportunities in coconut waste management with environmental protection which are untapped in the city. The paper is based on primary and secondary data. This research paper analyses the prospects of managing coconut waste for sustainable development in Patna.

Keywords: Municipal Solid Waste Management, Coconut, Coco-peat, Coco Manure.

AI-Powered Cardiovascular Health Chatbots: Design and Development

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ABSTRACT

Globally, cardiovascular disease remains a leading cause of morbidity and mortality, necessitating accurate predictive models for early detection and intervention. In our cardiovascular disease prediction project, we undertook a comprehensive evaluation of various machine learning algorithms to identify the most effective model for predicting cardiovascular risk. The dataset utilized in this study comprises features such as age, gender, blood pressure, cholesterol levels, glucose levels, smoking status, alcohol consumption, physical activity, and Body Mass Index (BMI). These features were instrumental in assessing the algorithms' performance across several key metrics: precision, accuracy, F1 score, and recall. Precision gauges the proportion of true positive predictions among all positive predictions made by the model, ensuring that positive diagnoses are accurate. Accuracy measures the overall correctness of the model's predictions across all classes. The F1 score harmonizes precision and recall, offering a balanced view of the model's performance, especially in the context of imbalanced datasets. Recall reflects the model's effectiveness in identifying true positive cases, which is crucial for early detection. Our final model achieved an accuracy of **97.04%**, demonstrating its robustness in predicting cardiovascular disease. To further enhance accessibility and real-time decision-making, we integrated an AI-powered chatbot that leverages machine learning (ML) and natural language processing (NLP) to provide users with personalized health recommendations based on predictive model outputs. This chatbot enables patients and healthcare professionals to efficiently assess cardiovascular risk by interpreting user input, analyzing symptoms, and offering tailored medical guidance. Developed using a Flask-based API and a user-friendly web interface, the chatbot ensures seamless interaction and enhances healthcare accessibility. By combining rigorous model evaluation with intelligent chatbot integration, our approach improves early diagnosis, supports clinical decision-making, and contributes to better patient outcomes.

Keywords: **Cardiovascular Disease (CVD), Machine Learning, Predictive Analytics, Random Forest, Support Vector Machine (SVM), AI-powered Chatbot, Natural Language Processing (NLP), Healthcare Automation, Early Diagnosis.**

A Critical Study of the Strategies for Women Empowerment in India in Present Scenario

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ABSTRACT

In the present research study, the researcher attempts to highlights that women have been always fighting for their rights and position in society. In a developing country like India where women are treated as a second-grade citizen and inferior to men, women empowerment is justified. Following are the main causes on account of which government decided to take such an initiative for women. Women empowerment is required most, because of the big gender gap or larger gender discrimination in the context of existing economic and other decision making processes which render the women voiceless and restricting their activities to the domestic sphere. Gender equality continuous to be elusive in the most countries today. Even in the developed west, one identifies numerous instances of social and cultural prejudices, which widen the gap between men and women. Though the constitution is prohibiting discrimination on the grounds of sex, the women in India are continued to be discriminated even after so many years of Independence.

Keywords: Gender equality, Problems, Struggle, Strategies, Indian Constitution, Government Initiatives, Empowerment.

Smart Hand Held Device for Measuring the Parameters of Cooking Oil Strategy

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ABSTRACT

Food safety and hygiene are among the key concerns in order to prevent the wastage of food. However, for lack of technology and ignorance about the effects of humidity, temperature, exposure to light and alcohol content on foods, food safety is not maintained well enough in our country especially cooking oil. This has led to massive losses in many food stores resulting from food decay. The growing health concerns on reused fried cooking oils are addressed globally in terms of total polar materials (TPM) of frying oil (FO). However, consumer perspective mandates the monitoring of absorbed oil (AO). This prompted the evaluation of AO quality by collecting 100 samples of fried products from different cities in India. The TPM of AO extracted (3.96%–24.59%) revealed a strong negative correlation with price (0.58–0.97), while that of para-anisidine (6.90–119.10) and TOTOX (13.67–126.8) showed a fairly negative correlation (0.45–0.95, 0.15–0.96, respectively) with price. No such trend was observed with the primary oxidation indicators. Furthermore, various products having different moisture contents were fried over 10 frying cycles and the oil extracted there from was evaluated. TPM of AO (17.75%) was higher than FO (14.89%) for high moisture raw materials and also increased with frying cycles.

Keyword: Quality Monitoring, Smart Contracts, Blockchain, Evaluation Models, Ethereum.

Revolutionizing Patient Diagnosis with Machine Learning Precision

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ABSTRACT

Artificial intelligence (AI) is reforming healthcare systems by creating faster and accurate diagnosis with the patients, but its true potential needs to be unlocked with challenges in data integration, supervision and interpretability. This article shows how Machine language models with Deep Learning algorithms, learn them with precise diagnosis, detection, analyze the patient's medical data and give immediate response. The AI could use a proper framework that combines convolutional neural networks (CNN) for image-based diagnostics with natural language processing (NLP) to understand the clinical notes, to reduce misdiagnosis rates and personalize treatment plans.

Keywords: Explainable AI, Misdiagnosis Reduction, Electronic Health Records, Precision Medicine, Natural Language Processing.

Web Traffic Analysis Using Machine Learning

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ABSTRACT

Web Traffic Analysis enhance the digital marketing strategies and user experience by analyzing website traffic, user engagement metrics, and customer behavior patterns. Time series analysis and forecasting in time series data finds its significance in many applications such as business, stock market and exchange, weather, medical, electricity demand, web traffic and user behavior, cost and usage of products such as fuels, electricity etc. Time series data contains a high volume of numerical data and a time dimension which captures a lot of information including inter-pattern trends and correlations. The Pattern Discovery Method (PDM) in Machine Learning is used for performing accurate analysis of time series data and making important decisions. The Pattern Discovery Method which includes the process of pattern deploying and pattern evolving to improve the effectiveness of using and updating discovered patterns for finding relevant and forecasting information.

Keywords: Pattern Discovery, Time series data, Web Traffic, Correlation, Inter Pattern Trends.

Topic Analysis and Prediction Using Multiple Platform Hub Model and Centralized Network Management Algorithm (CNMA)

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ABSTRACT

The system aims to collect data on user behaviour and preferences on various social media platforms such as Instagram and Twitter. The aim is to determine influential users and increase engagement. In contrast to conventional methods that focus on a single platform at a time, the Multiple Platform Hub and Authority Topic (MPHAT) model provides an overall view of users by examining their connections, interests, and favourite networks. The MPHAT model seeks to bring less prominent users into the limelight by overcoming limitations within recommendation systems that benefit popular users. It makes online traffic estimates based on platform-specific posts and user preferences. Furthermore, the MPHAT model excels over conventional techniques such as LDA in topic understanding, influence prediction, and user behaviour prediction. The centralized network management algorithm (CNMA) facilitates smooth integration and processing of user data within various networks.

Keywords: **Centralized Network Management Algorithm (CNMA), Influence prediction, Multiple Platform Hub and Authority Topic (MPHAT) model User preferences.**

Pi-Wall: Raspberry Pi Firewall

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ABSTRACT

Network security is vital for any digital infrastructure as we are completely moving towards a connected digital world. This project develops a low-cost, energy-efficient firewall using a Raspberry Pi, providing robust protection for home users and small businesses. Running a specialized firewall distribution, the Raspberry Pi acts as a powerful security device with customizable advanced features. Key functionalities include packet filtering using iptables/nftables, NAT and port forwarding for internet sharing, and an IDS/IPS system integrating Snort, Suricata, or Fail2Ban. It also offers DNS-based ad blocking with Pi-hole or AdGuard Home and supports VPN services with Open VPN. A web-based management interface simplifies configuration, while real-time monitoring via Grafana and Prometheus ensures security oversight. Advanced features include AI-powered threat detection, deep packet inspection (DPI), and Geo-IP blocking using MaxMind databases. It supports multi-WAN load balancing, IoT security with VLAN segmentation, and automated updates for self-healing mechanisms. This project delivers enterprise-grade security at a fraction of the cost, making it an ideal solution for small-scale environments. Leveraging open-source tools, it enhances cybersecurity while remaining lightweight and power-efficient, provides a customisable application to view and monitor the network, ensuring accessible and effective protection against cyber threats.

Keywords: Network Security, Firewall, Raspberry Pi, Cybersecurity, Packet Filtering, iptables/nftables, IDS/IPS, Snort, Suricata, Fail2Ban, VPN Services, OpenVPN, Deep Packet Inspection (DPI), Geo-IP Blocking, IoT Security, Automated Updates, Real-time Monitoring, Enterprise-grade Security.

MediAura – An AI-Driven Digital Healthcare Ecosystem for Seamless Medical Access

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ABSTRACT

In the modern digital era, it can be difficult to balance work and life, sometimes even difficult to access timely medical care. MediAura offers a cutting edge way of managing healthcare that provides an easy and convenient way of accessing a variety of services after registering a user. The solution allows users to consult with certified healthcare specialists remotely and obtain prescriptions from doctors, allowing them to order medications from their homes. A smart reminder system that helps improve medication adherence by sending users reminders, and users are able to schedule their appointments at their convenient time. It has an integrated intelligent health chatbot that uses spaCy for vectorization and cosine similarity to ensure that the user's input is matched with the most relevant responses from the database, providing instant medical advice, symptom analysis and wellness recommendations. A drug availability locator will help the user to identify where they can get the necessary medications from nearby pharmacies during a crisis. To encourage wellness, it has separate individualized diet care plans for every member depending on their health status. The application also has well-organized training and exercise regimes to encourage users to include exercise in their daily schedules. The main goal of the project is to improve the availability of healthcare services by integrating technology into people's lives in a correct way. In the light of this, the application is proposed to help people make time to consider their health in the midst of their busy schedules through a user friendly and all-encompassing application.

Keywords: **AI Health Chatbots, Spacy, Cosine Similarity, Symptom Analysis, Drug Availability Locator, Exercise Regimes, User-Friendly Application.**

Design and Simulation of Electric Vehicle's Battery Management System

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ABSTRACT

This research paper focuses on the modeling and simulation of battery systems, with the primary objective of establishing the mathematical relationship between input and output parameters of batteries using MATLAB. The growing interest in energy storage has profound implications for various sectors, including electrical utilities, energy service companies, and automobile manufacturers. The State of Charge (SOC) of a battery is a critical parameter for electric vehicle (EV) users, as it indicates the remaining charge available in the battery and helps estimate the vehicle's range. However, measuring SOC directly is challenging due to its dependence on temperature and operational conditions. This research addresses these challenges by developing a robust Battery Management System (BMS) that improves SOC estimation accuracy and enhances battery performance in real-world applications.

Keywords: **Battery Management System (BMS), State of Charge (SOC), Electric Vehicle (EV), MATLAB, Lithium-Ion Battery, Passive Cell Balancing.**

AI-Powered Fitness and Diet Recommendation System: A Personalized Approach to Health and Wellness

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ABSTRACT

With the rise of technology in healthcare, personalized fitness and diet recommendations have gained significant attention. This paper presents an AI-powered fitness and diet recommendation system that leverages machine learning (ML) and generative AI to provide tailored workout plans, meal suggestions, and health tracking features. The system analyzes user-specific parameters such as age, weight, height, fitness goals, and dietary preferences to generate customized recommendations. Implemented using React, Redux, Node.js, Flask, and MongoDB, the platform integrates AI-driven insights to enhance user engagement through gamification, social sharing, and progress tracking. Initial evaluations demonstrate the system's effectiveness in offering personalized and adaptive health recommendations. This study highlights the potential of AI in promoting healthier lifestyles and outlines future improvements to enhance accuracy and user experience.

Keywords: **AI-Powered Fitness, Personalized Health, Machine Learning, Diet Recommendation, Workout Optimization, Gamification, Data-Driven Insights, Digital Health, Adaptive Coaching, User Engagement, Smart Nutrition, Fitness Applications.**

**Shriram Transport Finance Limited and Shriram City Union
Finance Merger into Shriram Finance Limited: It's Socio-Economic
Implication, A Case Study**

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ABSTRACT

Bank mergers are proven beneficial in terms of cost reduction, better handling of NPAs, elimination of job redundancy, better service to customers, avoid duplication of work because of the opening of branches in every small region. Multiple bank mergers have happened in the recent few years and it is evidently known bank mergers bring both positive and negative impacts on the various factors, though the positive impact outweighs the negative one. This paper is based on the socio economic factors impact on Shriram finance Limited merger which includes determinant variables financial inclusion, operational efficiency, enhanced customer satisfaction, digital inclusion, community development, Environmental, Social and Governance(ESG).

Keywords: Merger, Socio-Economic Factor, Operational Efficiency.

Role of Co-Operative Work Environment in Team Building and Enhancing Employee Productivity: In Reference to Indian Start-Up Firms

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ABSTRACT

With the passage of time and beginning of an advance and upgraded business culture, many new age entrepreneurs are willing to fulfil their dreams in the form of Start-Ups. Start-Ups have gradually made a prominent mark on the face of Indian commerce. The sharks of Indian Commerce have started seeing them as a tough competitor. These types of business set-ups are well-aware about the current customer demands and choices and they also have updated technologies. In the earlier type of business set ups the organisation heads were not so bothered about the concepts like team-building and work co-operation. But with the due course of time, the method of doing work in an organisation has completely changed. These new types of business ventures know the importance of the concepts like team building, co-operative work environment and employee productivity. Young age entrepreneurs believe in creating a work culture which can bring employee loyalty and co-operation among each other to boost their productivity and encourage them to remain in the organisation as a loyal employee. As the time is changing the work culture is also evolving. The entrepreneurs of today's time respect their employees and care about their opinion and views. They try to create an environment where employees are working in a team rather individually. They believe that a happy employee will always put their best efforts in making the business flourish and a positive environment will help in enhancing the work productivity and make a successful growth of that business. Under this research article, the importance of developing a co-operative environment in a work space has been highlighted and how the new start-ups have given primary importance to team-building and enhancing work productivity are the concepts which have been discussed in detail. The entire research article will be based on the secondary data taken from the relevant research journals and books. The success rate of the start-ups will be shown through the graphs taken from the internet sources & newspapers.

Keywords: Team Building, Co-Operative Environment, Start-Up, Business Culture, Work Productivity.

The Rise of Gig Economy: How HR is Adapting to a New Workforce Model

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ABSTRACT

This paper explores the redefined HR functions in gig economy firms that differ significantly from traditional models. Recruitment, performance management, and compensation structures are largely technology-driven, often utilizing automated systems and rating mechanisms. Workforce planning, training, and development are customized for gig workers and requesters to ensure efficiency within digital labor platforms. While the gig economy offers autonomy and flexibility, concerns over job security, benefits, and labor rights persist. It also highlights ongoing debates regarding worker classification and protections. The paper also explains the ecosystem perspective, gig workers, requesters, and intermediary platform firms which interact in a highly interdependent manner. This ecosystem is sustained through strategic HR activities, including workforce analytics, digital transformation, and AI-driven decision-making. Despite these advancements, regulatory challenges remain. This paper also focuses on the expansion and outcome of gig economy on Human Resource Management. As the gig economy expands, HR professionals must adapt by leveraging technology, revising workforce policies, and implementing inclusive strategies. Businesses that embrace this transformation will be better positioned to attract talent, drive innovation, and remain competitive in the evolving labor market. Future HRM strategies must balance flexibility with worker's protection to ensure sustainability and fairness in the gig economy.

Keywords: Gig Economy, Gig Workers, AI-driven decision-making, Performance Management.

Empowering Education: A Cloud Based E-learning Platform

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ABSTRACT

This Application focuses on identifying and optimizing students' time allocation by analysing their activities and providing insights into areas where time may be underutilized. The platform aims to guide students toward strategic and efficient study habits through advanced analytics. It strives to revolutionize the way students approach their studies and career planning, by amalgamating time management tools, personalized counselling, and a robust e-learning ecosystem, our project seeks to empower students with the resources and guidance needed to excel in their academic pursuits and make informed choices about their future endeavours. Our project integrates personalized counselling features to assist students in making informed decisions about their educational and career paths. Overall, this abstract highlights the transformative potential of cloud-based e-learning platforms in empowering individuals to pursue lifelong learning, unlock their full potential, and contribute meaningfully to society. This platform presents a comprehensive approach to modern educational delivery. It commences with robust systems for user authentication and profile management, guaranteeing secure access and tailored experiences for students, teachers, and administrators. The platform facilitates the seamless delivery of a wide array of e-learning content, ranging from multimedia resources to interactive materials. Real-time assessments and tools for tracking progress ensure continuous evaluation and feedback, enriching the learning journey. Features for time management assist users in effectively organizing their schedules, while analytics offer valuable insights into performance and engagement metrics. By harnessing cloud-based infrastructure, the platform ensures scalability and reliability, capable of accommodating expanding user bases and resource requirements. Moreover, personalized counselling and career guidance modules provide individualized assistance to students, supporting their academic and professional growth. In essence, the platform empowers both learners and educators, cultivating a dynamic and adaptive e-learning ecosystem.

Keywords: Time Management, Elearning, Personalized Counselling, Academic Analytics.

Innovative Approaches to Secure Image Processing in Decentralized Environments

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ABSTRACT

Ensuring robust image security in cloud environments is a critical challenge due to risks such as unauthorized access, data tampering, and privacy breaches. This study introduces a Blockchain-based Secure Image Encryption (BC-SIE) method using Chebyshev Polynomial Fostered Hierarchical Auto-Associative Polynomial Convolutional Neural Network (CPHAPCNN) to enhance security, integrity, and high-fidelity image reconstruction. During encryption, the input image is divided into two unpredictable cryptographic shares, represented by black dot patterns, rendering them meaningless individually and preventing unauthorized access. These shares are then secured on a blockchain using an optimized BLAKE2b hashing algorithm, providing efficient and collision-resistant storage. Furthermore, the Chebyshev polynomial-based encryption strengthens security by introducing pixel scrambling, which makes the method resistant to cryptographic attacks. For decryption, the shares are recombined to reconstruct the image, but this introduces noise, impacting image quality. To mitigate this, a Hierarchical Auto-Associative Polynomial Convolutional Neural Network (HAPCNN) is utilized to reduce noise and preserve image details, ensuring near-lossless recovery. The performance of the BC-SIE-CPHAPCNN framework is evaluated using various metrics, including processing time, correlation coefficient, entropy, peak signal-to-noise ratio (PSNR: 28.44 dB), and mean square error (MSE). The results demonstrate superior encryption security and image reconstruction accuracy, with an updated computed SSIM accuracy of 91.75%. Additionally, the Delegated Proof of Stake (DT-DPoS) blockchain consensus mechanism enhances both security and scalability. Experimental evaluations confirm that this approach outperforms existing methods, making it ideal for cloud storage, medical imaging, and secure surveillance systems.

Keywords: **Blockchain, Image, Chebyshev, Visual Cryptography, Hierarchical Auto-Associative Polynomial**

AI Chatbots and Cognitive Behavioral Therapy in Digital Care

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ABSTRACT

AI-powered chatbots have been proposed as a scalable, accessible, and cost-effective means of providing Cognitive Behavioral Therapy (CBT) interventions within mental health settings. This study examined the effect of AI-based chatbots on CBT outcomes in digital mental health, specifically regarding the level of symptom reduction of depression, anxiety, and stress. By using NLP and machine learning, AI chatbots provide personalized therapeutic interactions that guide the user through important CBT techniques, such as cognitive restructuring, behavioral activation, and mindfulness. This paper highlights the most important benefits: real-time intervention, user engagement, and adaptation to individual emotional needs. Notable limitations of this technology are ethical concerns, data privacy issues, and a lack of human empathy in responses. The evidence shows that AI chatbots enhance mental health accessibility and support considerably, especially for people with mild to moderate psychological distress. Further research is necessary to optimize the effectiveness of such interventions, ensuring ethical implementation and integration with the traditional therapy model. The paper concludes with suggestions for improving AI chatbot-assisted CBT to enhance digital mental health care.

Keywords: **AI Chatbots, Cognitive Behavioral Therapy (CBT), Digital Mental Health, Symptom Reduction, Machine Learning (ML).**

Multicultural Workforces: HR's Role in Driving Equity and Inclusion

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ABSTRACT

This theoretical paper examines the place of Human Resources (HR) in developing cultural competency, inclusion, and equity in the current diverse global workplace. As companies confront the increasing challenge of multicultural team management, HR is responsible for designing workplaces that are inclusive and embracing of all employees. The paper discusses major HR strategies to foster inclusiveness such as inclusive hiring, cultural sensitivity training, fair career advancement, and the formation of employee resource groups. It also discusses standard challenges like biases and communication issues and highlights positive results of cultural competency, such as enhanced employee satisfaction, innovation, and organizational performance. In addition, the paper analyzes HR's role in building a positive work culture through open communication, cultural celebration, and psychological safety. Also examined is the relevance of measuring how effective inclusivity and equity initiatives are, where the use of metrics such as employee satisfaction surveys and diversity audits is emphasized. Lastly, the paper recognizes the necessity of ongoing improvement to support inclusivity within the workplace. Through the provision of these strategies and best practices, this paper illustrates HR's important role in fostering cultural competency and shaping fair work environments in the context of a diverse workforce.

Keywords: Human Resources, Cultural Competency, Inclusivity, Equity, Multicultural Workforce, Diversity, HR Strategies, Workplace Culture.

Modular Industrial Labeling and Stamping System with Conveyor Integration using PLC Controller

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ABSTRACT

This project is a comprehensive solution designed to optimize labelling and stamping operations in industrial settings. By integrating automated label application, stamping, and inspection processes, this system ensures high-quality output, reduces labour costs, and enhances productivity. The PLC controller enables precise control and monitoring, allowing for real time adjustments and minimizing downtime. The modular design facilitates easy customization and expansion, enabling businesses to accommodate diverse product lines and production requirements. This system is particularly suitable for industries requiring high-volume labelling and stamping, such as manufacturing, pharmaceuticals, and food processing. With its advanced features and flexibility, this system helps businesses improve product quality, reduce costs, and increase competitiveness in the market. By streamlining labelling and stamping operations businesses can focus on core activities drive growth and achieve operational excellence.

Keywords: Stamping System, Plc-Controller, Automation, Modular Design.

Experimental Investigation of Thermal Performance on Zirconium Based Oxide Coating on Al and SS304

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ABSTRACT

The thermal conductivity of Zirconium based oxide thin film developed on Aluminium and Stainless Steel-304 (SS304), using RF magnetron sputtering is extensively researched in this study. Characterization and thermal conductivity of film is analysed. For the study of characterization XRD tests are used whereas for study of thermal conductivity Fourier's law of heat conduction is used. The XRD study showed that with increase in substrate temperature, high intensity peaks of ZrO_2 were attained. A significant variation in thermal conductivity were observed with coated and uncoated substrate of Al and SS304. The research shows that when the substrate temperature is increased during deposition the value of thermal conductivity decreases. Thermal conductivity of zirconium oxide coated aluminium is lowest at $147.9\text{W/m}^{\circ}\text{C}$ and zirconium oxide coated SS304 is lowest at $45.7\text{ W/m}^{\circ}\text{C}$ for deposition temperature of 500°C .

Keywords: Zirconium Oxide, Thermal Performance, Nano Coating, Thin Film.

A Data Mining Framework for Enhanced Evaluation of Transactional Data Efficiency

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ABSTRACT

Evaluating transactional datasets is crucial for organizations to optimize business processes, derive meaningful patterns, and improve decision-making. This research proposes an improved framework for assessing the efficiency of transactional datasets by utilizing advanced data mining techniques. The framework incorporates association rule mining, clustering, and classification to examine data quality, eliminate redundant attributes, and extract valuable insights. Findings suggest that this framework enhances data interpretability and significantly improves decision-making efficiency.

Keywords: Data Mining, Decision-Making, Apriori Algorithm.

Automated Blood Cell Detection and Counting

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ABSTRACT

In general, medical examinations, complete blood cell (CBC) counting has been essential. Common methods, such as automated analyzers and conventional manual counting, were greatly impacted by how medical professionals operated. Deep learning algorithms for computer-aided object detection have been successfully used in various visual applications in recent years. To precisely identify and count blood cells on blood smear images, we present in this research an architecture based on deep neural networks. A publicly available BCCD (Blood Cell Count and Detection) dataset assesses our architecture's performance. Images from blood smears are frequently low resolution, with overlapping and fuzzy blood cells. Preprocessing was done on the original photos, which included blurring, sharpening, enlargement, and picture augmentation. Five models are built here with various parameters in the suggested architecture. We thoroughly examine the variables influencing their performance and evaluate how well they identify red blood cells (RBC), white blood cells (WBC), and platelets. The outcomes of the experiment demonstrate that when blood cells do not excessively overlap, our algorithms are capable of reliably identifying blood cells.

Keywords: Convolutional Neural Network, Deep Learning, Blood Cell Identification, And Blood Cell Counting.

Facial Biometrics-Driven Encoding and Deep Learning Integration for Secure Password Retrieval

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ABSTRACT

The proposed system includes face recognition- based systems designed for secure identity verification and decentralized data storage. The working is supposed to be done in three phases: data capture, training of the machine learning model, and decentralized data storage. Collection in the first phase will include face images of individuals and government-issued identification details, such as Aadhar and PAN. A machine learning model will be trained in the second phase for improving the accuracy in the face recognition process. The third phase ensures secure storage of the recognized faces and associated personal data through a decentralized approach similar to blockchain technology. Security, privacy, and resilience against tampering are further developed in this design. The proposed system will reliably meet the application requirements that involve strong authentication processes and protection of data, therefore making the sectors using these systems include government services and secured personal data management.

Keywords: Facial Recognition; Identity Verification; Machine Learning; Decentralized Data Storage; Data Security.

The Verse of Floras: A Linguistic Journey Through Botanical Nomenclature

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ABSTRACT

Botanical nomenclature, the classification of specifying plants, is profoundly entwined with etymological aspects. There is a complex rapport between language and botanical nomenclature especially in Karnataka, India. It discovers the evolution of plant names showing the importance of Sanskrit, Kannada and other regional languages exposing an amusing history of cultural and historical influences. This paper unravels into the etymology of precise plant names to unearth its cavernous meaning tracing the heritages and exposing the traditional data entrenched within them. The paper also observes the influence of colonization and globalization on the nomenclature landscape, stressing the encounters confronted by dialects while reconnoitring the advent of innovative terms and the amalgamation of systematic and traditional acquaintance structures. This research underscores the significant role of sustaining and fostering the abundant history of linguistic and cultural heritage interweaved into Karnataka's vibrant floral tapestry.

Keywords: Botanical Nomenclature; Linguistics; Vernacular names; Etymology.

Graph QL vs REST

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ABSTRACT

Graph-QL and REST are two popular approaches for creating APIs, each with unique benefits and drawbacks. The conventional method known as REST (Representational State Transfer) uses defined endpoints and common HTTP methods (GET, POST, PUT, and DELETE) to facilitate communication between clients and servers. REST frequently results in over-fetching (retrieving more data than necessary) or under-fetching (requiring numerous requests to gather all essential data), despite being rather simple to build and effective for simple applications. Performance may be impacted by this inefficiency, particularly in sophisticated applications handling huge datasets or a range of customer demands. By enabling users to define the precise data they require in a single query, Graph QL offers a more adaptable option. Unlike REST, which depends on established endpoints, Graph QL uses a single schema that allows clients to request several related bits of data in one request. As a result, data is retrieved more effectively, resulting in less needless network traffic and enhanced application performance. Modern, dynamic applications including intricate data linkages and real-time changes are best suited for Graph QL, whereas REST is best suited for simpler apps that don't require a lot of data customisation. Applications like social networking platforms, e-commerce websites, and data-driven dashboards that must manage dynamic or customized content choose it due to its capacity to effectively retrieve the precise data.

Analyzing Bug Fix Characteristics Across Projects: Investigating the Impact of Priority, Complexity, and Resolution Time

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ABSTRACT

Understanding how bug fix characteristics such as priority, complexity, and resolution time vary across different projects is crucial for improving software maintenance strategies. This research explores the impact of priority levels on resolution time, investigates whether different bug categories exhibit distinct resolution times, and analyzes the relationship between bug complexity (e.g., number of commits, lines of code changed) and resolution time. Additionally, a comparison is made between the bug resolution processes across open-source projects such as Cassandra, HBase, and Hive. Findings indicate that Critical and Minor priority bugs have the longest resolution times, while Blocker and Trivial bugs are resolved more quickly. Bug categories significantly affect resolution times, and while larger code changes exhibit a weak correlation with longer resolution times, the number of commits has little to no impact. Furthermore, Hive exhibits longer median resolution times compared to HBase, suggesting variations in project-specific bug resolution approaches. These insights can help software developers and project managers optimize their bug resolution.

Keywords: Bug Fix Characteristics, Resolution Time, Software Complexity, Priority Levels, Open-Source Projects.

Numerical Analysis of Milling Cutting Tool

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ABSTRACT

Milling is a machining operation that is carried out by a milling machine, which uses a rotating cutting tool to remove material from the work piece at a faster rate due to its high speed and many cutting edges, resulting in a high surface polish. The profile and qualities of the material used for the tool will affect the tool's performance. There are several sorts of milling machines where various types of operations will be performed on the work piece by various sorts of cutters. This machining procedure is mostly used in the manufacturing industry to remove undesirable material. The aim of our project is to get the optimum end milling cutting tool. Designing of the tool will be done by using SOLID WORKS and analysis of the tool in ANSYS workbench. Four different materials with rectangular profile threaded end milling cutter are used for the design and analysis purpose of tool. The variations in the tool design are, tool is designed with the profile of 'Rectangle' and materials which are used for tool are Tungsten Carbide, High Speed Steel, SAE 1020 (AISI 1020 Carbon Steel), SCM(Steel Composite Material) 415.

Keywords: End Milling Cutter, Stress, Strain, Displacements.

Ethical Challenges in AI and Robotics: Balancing Innovation and Responsibility

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ABSTRACT

Artificial Intelligence (AI) and robotics are rapidly transforming industries, governance, and human interactions. While these technologies present immense opportunities for progress, they also pose significant ethical challenges, including algorithmic bias, accountability, human autonomy, security risks, and the societal implications of AI integration. This paper examines key ethical dilemmas associated with AI and robotics, exploring issues such as fairness in automated decision-making, responsible AI governance, and the evolving role of AI in human identity. By proposing a structured ethical framework, this study advocates for transparent policies, regulatory oversight, and interdisciplinary collaboration to ensure that AI serves humanity responsibly. Addressing these concerns proactively will enable the ethical deployment of AI while safeguarding fundamental values such as fairness, autonomy, and security.

Keywords: Ethical AI, AI Bias, Algorithmic Fairness, AI Governance, Autonomous Systems, Human-AI Interaction, AI Regulation, AI Accountability, AI Ethics, Responsible AI, Cybersecurity in AI, AI Decision-Making, AI and Society, AI Transparency, AI Policy.

Understanding Teachers' Attitudes Towards E-Learning: A Psychological and Technological Perspective

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ABSTRACT

E-learning has become an essential aspect of modern education, driven by the rapid advancement of digital technologies that have transformed teaching and learning. However, the successful adoption of e-learning largely depends on teachers' attitudes, which are shaped by both psychological and technological factors. This study examines educators' perspectives on e-learning through key psychological frameworks, including the Expectancy-Value Theory, Self-Determination Theory, and Technology Acceptance Model (TAM). It explores how factors such as workload stress, resistance to change, motivation, and self-efficacy influence teachers' willingness to embrace digital learning environments. From a technological perspective, the study analyses the impact of digital competence, training availability, infrastructure access, ease of use of e-learning platforms, and institutional support on teachers' adoption of e-learning tools. Additionally, it highlights both the opportunities—such as increased flexibility and student engagement—and the challenges, including technological limitations and the digital divide, associated with e-learning. The COVID-19 pandemic significantly influenced educators' attitudes toward digital learning, accelerating the shift from emergency remote teaching to more sustainable e-learning models. This research compares pre-pandemic and post-pandemic perspectives, emphasizing key lessons learned and the evolving role of technology in education. To improve e-learning integration, the study proposes strategic measures such as professional development programs, gamification strategies, and institutional policies that encourage technology adoption. The findings provide valuable insights for educators, policymakers, and institutions aiming to implement e-learning in a way that is both psychologically supportive and technologically viable.

Keywords: **E-Learning, Teacher Attitudes, Technology Adoption, Psychological Factors, Digital Competence, Covid-19, Education Technology, Professional Development.**

A Systematic Study of Various Techniques of Obstacle Detection and Traffic Sign Detection used in Self Driving Car Application of IoT

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ABSTRACT

Due to the advancement in smart technologies like Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), and sophisticated sensors, self-driving cars are emerging as a significant innovation in the automotive sector. Accurately detecting obstacles and traffic signs is a critical component of autonomous driving. However, there are a number of difficulties with this method, including variations in lighting and weather conditions, sensor limits, and the requirement for fast real-time processing. Accidents or poor driving choices may result from a self-driving car's inability to accurately detect barriers or traffic signs. Present-day approaches for detecting obstacles and traffic signs in self-driving car application of IOT make use of deep learning-based models, LiDAR, and image processing. Nevertheless, these approaches have drawbacks such as high processing requirements, trouble identifying signs in low light, and sensor limits. This research focuses on studying different techniques of Obstacle and road traffic sign detection used in self-driving car, comparing their strengths and weaknesses, and exploring ways to improve their efficiency. The goal is to develop a more reliable detection system that enhances the safety and performance of self-driving cars.

Keywords: Obstacle Detection; Roaf Traffic Signs Detection; Self Driving Car.

Enerlink: Empowering EVS with Dynamic Vehicle-To-Vehicle Charging

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ABSTRACT

This project proposes a smart charging system aimed at optimizing the utilization of energy resources in vehicles. An Arduino Uno microcontroller, acting as the central processing unit, interfaces with various sensors, primarily a DC voltage sensor linked to a 12V battery. Continuously monitoring the battery's voltage level, the system detects when the battery is nearing depletion. At this juncture, the driver can trigger a request for charging assistance by pressing a designated push button. Upon activation, the system employs a ZigBee module to transmit the request to nearby vehicles equipped with compatible receivers. The recipients are then prompted to respond to the request through a real-time IoT webpage. Once a nearby vehicle accepts the request, acknowledgment status is relayed back to the initiator, informing them of the successful arrangement. This innovative system leverages IoT technology to foster efficient communication and collaboration among vehicles, enabling timely assistance in critical situations. By facilitating seamless interactions between drivers and their surrounding environment, the proposed solution aims to enhance overall energy management and ensure uninterrupted mobility, thereby promoting sustainability and convenience in the realm of vehicular operations.

Keywords: Arduino Uno, ZigBee module, IOT webpage.

A Study on Intellectual Capital and Innovative Work Behavior of Employees in it Sector

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ABSTRACT

This study examines the relationship between intellectual capital (human, structural, and relational capital) and innovative work behavior (IWB) among employees in the IT sector, utilizing a quantitative research design with data collected from 200 professionals in Technopark, India. Pearson correlation analyses revealed significant positive effects: human capital (HC) demonstrated the strongest association with IWB ($r = 0.679, p < 0.01$), underscoring the critical role of employee skills and creativity in driving innovation. Structural capital (SC) showed a moderate correlation ($r = 0.378, p < 0.01$), suggesting organizational systems and processes facilitate innovation indirectly, while relational capital (RC) exhibited a weak yet significant link ($r = 0.287, p < 0.01$), highlighting the supplementary role of external networks. Chi-square tests indicated no significant demographic influences (age, gender, income, education, experience) on IWB ($p > 0.05$), emphasizing universal applicability of intellectual capital strategies. The findings advocate for IT organizations to prioritize human capital development through targeted training, optimize structural capital via agile frameworks and knowledge-sharing platforms, and strengthen relational capital through strategic stakeholder collaborations. This research bridges theoretical gaps in intellectual capital literature and offers actionable insights for fostering innovation in a rapidly evolving industry, reinforcing the necessity of holistic intellectual capital management to sustain competitive advantage.

Smart Gas Leakage Detection System Using IoT

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ABSTRACT

A gas leak results in financial and personal loss. Great efforts have been focused on avoiding such a leak and creating trustful methods of detection of leaks by sensors. Such sensors typically give an alarm after sensing a harmful gas near them. The following is a system that detects a gas leakage from cylinders that alerts the user through the application. The system is composed of an LPG gas leakage sensor that transmits an alarm signal. The primary aim is to establish an Internet of Things (IoT) system for gas leakage, combined with voice notification and automated exhaust fan switching. It is safer by way of fast response to gas leakage, and hence it can be used in diverse environments, ranging from domestic settings to industrial compounds. The project facilitates environmental conservation, energy efficiency, and accessibility in promoting safer and more sustainable communities. Upon sensing a gas leak, the system reacts with real-time voice alarms, alerting occupants in real-time and enabling them to make necessary precautions. At the same time, automated exhaust fan controls are triggered to dissipate the gas and mitigate the environmental impact.

Keywords: Gas leakage detection, Internet of Things (IoT), Liquefied Petroleum Gas (LPG), Sensor technology, Voice alerts, Automatic Exhaust Fan Activation.

Effective Workplace Stress Management Techniques in Talent Management

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ABSTRACT

Workplace stress has become a significant challenge in talent management, directly impacting employee productivity, retention, and overall organizational success. With the increasing complexities of job roles and workplace dynamics, organizations must implement effective stress management techniques to foster a positive work environment. This study aims to analyse the effectiveness of various stress management strategies in IT companies in Mysuru City and their impact on employee performance and retention. A descriptive research methodology was employed, collecting primary data from 400 IT employees using a structured questionnaire based on a five-point Likert scale. Secondary data was gathered from company reports and HR policies. The study utilized descriptive statistics, ANOVA, and Tukey's post hoc test to evaluate the relationship between stress management techniques and key talent management indicators. Findings indicate that flexible work hours ($M = 4.21$, $SD = 0.92$), organizational support ($M = 3.87$, $SD = 0.91$), and supervisor support ($M = 3.92$, $SD = 0.81$) significantly contribute to reducing stress and improving retention. The ANOVA results ($F = 5.72$, $p = 0.002$) confirm the effectiveness of stress management strategies in enhancing workplace outcomes. The study suggests integrating advanced wellness programs and AI-driven stress monitoring tools to enhance future talent management practices.

Keywords: **Workplace Stress, Talent Management, Employee Productivity, Stress Management Techniques, Organizational Support.**

Health Insurance Price Prediction Using Machine Learning

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ABSTRACT

The insurance industry increasingly relies on machine learning (ML) technologies to streamline operations and optimize business models. However, some health insurance providers have been criticized for exploiting emergency situations and offering inaccurate pricing options to customers, highlighting the need for more accurate, customer-centered predictive models. This project seeks to address these challenges by applying and comparing various ML regression algorithms to forecast health insurance premiums based on individual health indicators. By using a selection of regression techniques, the study aims to identify the model that most accurately predicts insurance costs, offering fairer pricing structures. Each model's performance is assessed based on Mean Squared Residual Error (MSRE) values to determine its predictive accuracy. This comparison provides valuable insights into the potential of ML in creating ethical, data-driven pricing models in health insurance, ultimately supporting more transparent and equitable insurance practices.

Keywords: Regression algorithms, Mean Squared Residual Error(MSRE)

Design and Performance Analysis of a Hybrid Inverter for Solar and Wind Energy System

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ABSTRACT

This paper focuses on the design and implementation of a hybrid inverter for solar and wind energy systems, aimed at enhancing renewable energy utilization. The inverter integrates power from both sources, optimizing energy conversion and ensuring efficient delivery to the load or grid. Advanced power electronics and control strategies are employed to manage the variable inputs from solar panels and wind turbines. The system is designed to provide seamless operation, including energy storage management and grid synchronization. Emphasis is placed on maximizing efficiency, reliability, and cost-effectiveness. Real-time monitoring and adaptive algorithms enhance performance under varying environmental conditions. The project also includes hardware prototyping and testing to validate the design's functionality and robustness. This hybrid inverter serves as a sustainable solution for decentralized renewable energy systems, contributing to global energy needs.

Keywords: **Hybrid Inverter, Renewable Energy, Solar and Wind Integration, Energy Conversion, Performance Optimization, Environmental Adaptation, Grid Synchronization, Energy Utilization.**

The Study on Trends and Analysis of the 10 Year Bond Yield

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ABSTRACT

The 10-year yield bond plays a crucial role in shaping economic trends, influencing investment choices, and guiding monetary policies. Its performance offers valuable insights into market stability and investor confidence. This study takes a closer look at the historical trends, market dynamics, and investor sentiment surrounding 10-year yield bonds, shedding light on their broader economic significance. By analysing price fluctuations, return patterns, and different investment strategies, this research compares the effectiveness of long-term holding versus short-term trading. The results indicate that while holding bonds for the long run provides steady, moderate returns, short-term trading can be riskier, exposing investors to greater market volatility. Additionally, macroeconomic factors such as inflation expectations, interest rate shifts, and central bank policies play a major role in shaping yield movements. The study also examines the challenges of forecasting bond yields, highlighting the limitations of predictive models. It emphasizes the need for a balanced approach that combines technical analysis with fundamental economic indicators. Key recommendations include refining investment strategies to improve risk-adjusted returns, strengthening regulatory policies to manage market fluctuations, and promoting financial literacy to help investors make well-informed decisions. Overall, this research highlights the 10-year yield bond as a key indicator of economic stability and confidence. Understanding its trends can help investors navigate uncertainties and develop more effective investment strategies.

Keywords: **10-Year Yield Bonds, Bond Market Trends, Investment Strategy, Economic Indicators, Financial Market Analysis, Risk Management.**

Sign Language-To-Speech and Speech-To-Sign Language

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ABSTRACT

Deaf and mute individuals face significant challenges such as communication barriers, limited access to interpreters, and social isolation, restricting their opportunities in education, healthcare, and employment. This paper proposes a real-time sign language-to-speech and speech-to-sign language system as a solution, acting as a virtual interpreter to enable seamless communication. Built using technologies like Flutter for mobile development, Tensor Flow Lite for gesture recognition, and Firebase for backend support, the application ensures inclusivity and adaptability. Techniques like CNNs and NLP enhance gesture and speech recognition, while offline functionality addresses connectivity issues. Deployed on mobile devices, it empowers individuals with hearing and speech impairments to overcome societal barriers and improve their quality of life.

Keywords: Sign Language, Speech-To-Sign, Accessibility, Gesture Recognition, Communication Barriers, Assistive Technology, Natural Language Processing (NLP), Flutter Development.

Improving Melanoma Detection Efficiency, A Hybrid Approach Using Res-Net, Efficient-Net and Dense-Net

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ABSTRACT

Melanoma, a highly aggressive skin cancer, is increasing in India, where late diagnosis reduces survival rates. The most recent comprehensive statistics are from 2020, when India reported 3,916 new melanoma cases, accounting for 0.3% of all cancer cases in the country. Recently, there is a noticeable upward trend in skin cancer incidence. This increase is attributed to factors such as heightened ultraviolet (UV) exposure due to lifestyle changes and environmental factors. Projections indicate that the overall cancer incidence in India is expected to rise by approximately 12.8% between 2020 and 2025. Traditional detection methods are slow and specialist-dependent, causing delays. AI-driven deep learning models, ResNet, DenseNet, and EfficientNet offer promising solutions. ResNet addresses vanishing gradients. DenseNet enhances feature propagation, and EfficientNet optimizes accuracy with fewer parameters. This paper proposes a hybrid ResNet-DenseNet-EfficientNet model for improved melanoma detection. Tested on dermoscopic images, it outperforms traditional methods, highlighting AI's potential in early melanoma diagnosis.

Keywords: Melanoma, Skin Cancer Prediction Model, Resnet, Dense Net. Deep Learning, Image Classification, Data Preprocessing Feature Extraction, Training Dataset, Validation.

Smart and Dynamic AI-Powered Travel Planning: A Machine Learning Approach for Personalized and Real-Time Itinerary Generation

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ABSTRACT

Travel planning is a complex process influenced by dynamic factors such as user preferences, real-time flight and accommodation availability, weather conditions, and local attractions. Traditional travel itinerary planners often lack adaptability and personalization, leading to suboptimal recommendations. This research proposes a Smart and Dynamic AI-Powered Travel Planning System that leverages machine learning, real-time data aggregation, and predictive analytics to generate highly personalized itineraries. The system integrates Natural Language Processing (NLP) for user interaction, collaborative filtering for recommendation refinement, and reinforcement learning for itinerary optimization. Real-time API integrations for flights, hotels, weather, and attractions enable seamless data retrieval and itinerary accuracy. The system is developed using the MERN stack (MongoDB, Express.js, React.js, Node.js) with machine learning components built on Tensor Flow and Scikit-learn. Experimental evaluation demonstrates significant improvements in itinerary efficiency and user satisfaction. This study highlights the potential of AI-driven dynamic planning in enhancing travel experiences through real-time adaptability and intelligent decision-making.

Keywords: **AI Travel Planning, Dynamic Itinerary, Machine Learning, Real-Time Data, NLP, Reinforcement Learning, Collaborative Filtering, Predictive Analytics, MERN Stack.**

AI-Driven Performance of Fintech: Navigating Challenges and Unlocking Potential

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ABSTRACT

The use of artificial intelligence in financial technology has changed the way financial services work. It has greatly improved how well the market performs, how users experience services, and how efficiently businesses operate. This paper looks at how it affects the finance technology industry in different ways. It focuses on important measures like market share, sales, profits, new users, and growth since the start of the Fin-Tech companies. The main points show that AI tools help improve decision-making, reduce risks, and tailor user interactions. This leads to a larger market presence in digital payments, lending, and wealth management areas. The use of AI has facilitated fin-tech companies, especially those started in the past ten years, to make a lot more money and profit. They use advanced technology to do better than old banks and financial institutions. The study looks at how quickly more people are using financial technology. This growth is supported by artificial intelligence, which creates different customer needs while keeping everything safe and following the rules. Even with these improvements, there are still problems, like rules to follow, worries about ethics, and issues with data privacy. Fintech needs careful planning to ensure long-term sustainability.

Keywords: Artificial Intelligence, Financial Services, Fintech Companies, Sustainability, Data Privacy, Digital Payments, Market Performs, Wealth Management.

The Impact of Artificial Intelligence on Social Media Marketing:

Data-Driven Insights and Strategic Implications

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ABSTRACT

The integration of Artificial Intelligence (AI) in social media marketing (SMM) has revolutionized how brands engage with consumers, personalize content, and optimize campaigns. This paper explores AI's transformative role in SMM, supported by empirical data analysis and industry findings. Using a mixed-methods approach, the study investigates AI-driven content creation, audience targeting, sentiment analysis, and performance optimization. Key findings reveal significant improvements in engagement rates, conversion efficiency, and brand sentiment when AI tools are strategically implemented. The paper also addresses ethical concerns, algorithmic biases, and the evolving landscape of AI technologies in marketing. Recommendations for businesses and future research directions are provided.

Keywords: **AI in Marketing, Social Media Analytics, Customer Engagement, Digital Transformation, Data-Driven Strategy.**

Design and Implementation of SIW Antenna for 5G Application

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ABSTRACT

With the advancement in technology, the millimetre-wave mobile communication for 5G has become very popular. There is a rapid growth of millimetre-wave band antennas for use in different applications. At higher frequency, an emerging substrate integrated waveguide (SIW) technology is very promising. SIW is a transition between micro strip and dielectric-filled waveguide. With the help of visa, we can convert the dielectric-filled waveguide to substrate integrated waveguide. This paper aims to provide an overview of different slotted SIW based antenna and arrays at single-band and dual band frequency of 28 and 38 GHz. At mm wave slotted SIW antenna is an excellent candidate as there is no dielectric loss. Various antenna designs considered with examples include slot array antenna, empty SIW antenna, and cavity-backed antenna are discussed and presented with their performance enhancement methods, including size reduction, bandwidth improvement, high gain, and sharp radiation pattern.

Keywords: Millimetre-Wave, 5G Mobile Communication, SIW

Enhanced EV Management System: Safety and Monitoring

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ABSTRACT

Enhanced EV Management System is an advanced Android-based alert system designed to enhance the safety and efficiency of electric vehicle (EV) charging stations and surrounding battery operations. It provides real-time monitoring and proactive alert mechanisms, ensuring optimal performance and security by continuously tracking key charging parameters such as voltage, current, and temperature. The system instantly notifies users and operators of any abnormalities or potential hazards, allowing for timely intervention. By integrating cutting-edge Android technology, Power Flow Guardian ensures seamless connectivity and user-friendly interfaces, enabling remote monitoring and management of EV charging processes. This innovation enhances the reliability of charging infrastructure, ensuring a safe environment for both users and operators. Additionally, the system promotes sustainable energy practices by ensuring the safe operation of nearby battery systems and preventing overcharging or overheating. The Power Flow Guardian offers an efficient and reliable solution for the EV ecosystem, supporting the safe and effective use of electric vehicles while safeguarding battery health. With its robust features, including real-time data monitoring and instant alerts, the system sets a new standard for smart technology in EV infrastructure, fostering a safer, more efficient, and eco-friendly future for electric mobility.

Keywords: Enhanced EV Management System, Real-Time Monitoring, Proactive Alert Mechanisms, Charging Parameters, Sustainable Energy Practices, Battery Health.

Adaptive Autonomous Assistance Using Raspberry Pi

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ABSTRACT

This project focuses on the development of a general-purpose humanoid robot designed to perform a wide range of tasks across diverse environments. The robot aims to enhance human-robot collaboration by integrating advanced features such as natural language processing, gesture recognition, and facial expression analysis to facilitate seamless and intuitive interaction. Machine learning algorithms are embedded to enable the robot to adapt and improve its functionality over time by learning from user interactions and experiences. Additionally, the design emphasizes energy efficiency, reliability, and cost-effectiveness to make the system scalable for potential mass production. The project envisions a socially aware humanoid robot capable of operating in settings ranging from home care to office assistance, contributing to automation and human productivity. By addressing limitations in existing humanoid systems, the project aspires to create an intelligent and adaptable solution for real-world applications.

Keywords: NLP, AI, Gesture Recognition and Automation, ML.

IoT Based Avoid Fire Accident in E Vehicle with Multiple Fault Detection and Battery Management Using AI

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ABSTRACT

The Thermal Management System (TMS) of the battery is one of the most significant systems in the building of an electric vehicle, with the goal of improving the battery's performance and life. The purpose of this paper is to critically evaluate previous studies and research on the types, designs, and operating principles of BTMSs used in the building of various-shaped lithium-ion batteries, with a focus on cooling methods. Nowadays electric vehicles have increased over the past decade as consumers' demand eco-friendlier solutions to combat climate change. Due to the Absence of a Thermal Management System Notification Alert (Battery Temperature), some people has lost their life. Monitor the Battery Temperature & Smoke Detection to Alert the Electric Vehicle and its busing cooling system user's via Smartphone Notification, Alarm the Buzzer and also to Auto Cut off the Electric Vehicle to Avoid Further Damages.

Keywords: Battery Thermal Management System(BTMS), Overheating Prevention, Alarm System, Automatic Power Cut-off.

Flexible EBG Structure Antenna for ISM Band Apply

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ABSTRACT

This paper presents the design and analysis of a flexible Electromagnetic Band Gap (EBG) structure antenna optimized for applications in the Industrial, Scientific, and Medical (ISM) band. The proposed antenna integrates a compact EBG structure into a flexible substrate to enhance performance parameters such as gain, bandwidth, and radiation efficiency, while ensuring compatibility with wearable and conformal applications. The EBG structure is engineered to suppress surface waves and minimize mutual coupling, enabling improved isolation and directivity. A flexible dielectric material, such as polydimethylsiloxane (PDMS) or polyimide, is utilized as the substrate, ensuring durability and adaptability to curved surfaces without compromising antenna performance. Simulation results demonstrate a resonant frequency within the ISM band (2.4 GHz) with a return loss below -10 dB, a wide impedance bandwidth, and a significant gain improvement compared to traditional flexible antennas. The design is validated through experimental prototyping and testing, confirming its suitability for wireless communication, IoT, and healthcare monitoring systems.

A Hybrid Yolo FPGA Architecture for Real - Time Object Detection in Edge Computing

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ABSTRACT

The proposed Hybrid YOLO FPGA Architecture for Real-Time Object Detection in Edge Computing enhances the traditional FPGA-based YOLO system by integrating advanced optimization techniques to improve output efficiency and processing speed. This architecture combines the strengths of both hardware and software approaches, allowing for dynamic adaptability to varying computational loads while maintaining low power consumption. Utilizing Xilinx Vivado for the design and implementation, the system achieves an impressive detection rate of 20 frames per second (FPS) with an accuracy of 98.5%, while consuming only 2.8W of power. The architecture is specifically tailored for edge computing environments, where rapid processing and real-time decision-making are essential. By incorporating features such as model pruning and quantization, the system not only reduces resource usage but also enhances the overall performance of object detection tasks. This research significantly contributes to the field of real-time object detection, offering a robust solution for applications in autonomous vehicles, smart surveillance systems, and other edge-based technologies.

Keywords: **Hybrid YOLO, FPGA Architecture, Real-Time Object Detection, Edge Computing, Xilinx Vivado, Detection Rate, Power Consumption, Model Pruning, Quantization, Autonomous Vehicles, Smart Surveillance Systems.**

Cardio Monitoring and Cardiac Disease Prediction Using Machine Learning

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ABSTRACT

Heart disease is the biggest cause of death in the globe. The method of predicting cardiac disease and monitoring is exceedingly complex. It can only be done properly if the doctor has a lot of expertise and is well-versed in the condition. IoT-based illness prediction is a relatively recent technology for accurately classifying diseases based on sensor data. This system proposes an enhanced deep learning-based framework for predicting the heart disease. The general publicly available Hungarian heart disease dataset is utilized for the implementation, which includes heart disease related data collected from patients through IoT sensor devices. The body sensor networks are one of the core technologies of IoT developments in health care system. IoT and GSM based monitoring system is proposed for continuous monitoring of patient's health condition using different sensors. The Internet of Things (IoT) with smartphone technologies contains vast applications in solving the problems of heart diseases in patients needing care. With wireless sensors and smart devices, remote monitoring can identify the real-time physical status of heart patients during normal physical activities. Doctor can monitor the patient condition on his/her smart phone.

Keywords: Heart Disease, IoT, Sensor Data, Body Sensor Networks, Health Care System, GSM Monitoring, Wireless Sensors, Remote Monitoring, Real-Time Physical Status, Web Server Application, Continuous Monitoring, Disease Classification, Patient Health Condition.

Classification of WBC using VGG-19 Architecture

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ABSTRACT

White Blood Cell (WBC) classification plays a crucial role in diagnosing various hematological disorders, including leukemia and infections. Traditional manual methods of WBC classification are time-consuming and prone to human error. Deep learning techniques, particularly Convolutional Neural Networks (CNNs), have demonstrated remarkable accuracy in medical image classification. This study explores the use of the VGG-19 architecture for automated WBC classification to enhance diagnostic efficiency and accuracy. The proposed model is trained on a labeled dataset of WBC images, leveraging the deep hierarchical features of VGG-19 to classify different WBC types, such as neutrophils, eosinophils, basophils, monocytes, and lymphocytes. Transfer learning is employed to fine-tune the pre-trained VGG-19 model, improving its performance on the specialized medical dataset. The model's performance is evaluated using accuracy, precision, recall, and F1-score metrics. Experimental results indicate that the VGG-19-based approach achieves high classification accuracy, outperforming conventional machine learning methods.

Keywords: U-Net, Adam, Convolutional, Separate Unseen Blood Cell Images.

Low-Latency Approximate Adder in FPGA

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ABSTRACT

Approximate computing has gained significant attention for applications where absolute precision is not critical, such as image processing, machine learning, and signal processing. The proposed design divides the addition process into two stages: a main sub-adder for high-speed approximate computation and an error sub-adder for refining accuracy. By limiting carry propagation in the main sub-adder, the critical path delay is significantly reduced, achieving low latency. Simultaneously, the error sub-adder operates in parallel to correct errors, ensuring a balance between performance and precision. Experimental results demonstrate the design's superior trade-off between speed, accuracy, and energy efficiency compared to conventional adders. The proposed architecture is highly scalable and suitable for resource-constrained and performance-critical applications, such as real-time image processing and low-power machine learning accelerators.

Keyword: Low-Latency, Approximate Adder, Dual Sub-Adder Architecture, Error Recovery Mechanism, Carry Propagation, Critical Path Delay, High-Speed Computation, Energy Efficiency, Scalability, Real-Time Image Processing, Low-Power Machine Learning Accelerators, Signal Processing.

A Planar Semi-Circled Horn-Like Bow-Tie Antenna for Armature Radio Applications

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ABSTRACT

This article presents the construction and examination of a Bow-Tie antenna on a FR4 substrate. The proposed antenna geometry was chosen as a hybrid structure known as a semi-circled horn-like bow-tie antenna was built. The semi-circle diameter and the feedline length of a single antenna are 41.66mm and 21.44mm respectively. CST Microwave Studio was used for design and simulation. The proposed antenna array was printed on a 1.6mm thick substrate with a length of 90.00mm, a width of 56.00mm and a dielectric constant (ϵ_r) of 4.4. According to the experimental results, the proposed antenna has a return loss of -20.12dB at S_{11} , a VSWR of 1.2 at S_{11} and Maximum Gain of about 2.94dB with isolation -3dB. The antenna array was tested in the 2.4GHz to 2.5GHz frequency range with loss tangent 0.01. The proposed semi-circled bow-tie antenna array was compared to the rectangular bow-tie antenna, and it was observed that the proposed antenna has outperformed the rectangular bow-tie antenna at 2.45GHz. As a result, the proposed antenna is a suitable candidate for Mobile and Amateur Radio Applications.

A Planar Semi-Circled Horn-Like Bow-Tie Antenna for Armature Radio Applications

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ABSTRACT

This article presents the construction and examination of a Bow-Tie antenna on a FR4 substrate. The proposed antenna geometry was chosen as a hybrid structure known as a semi-circled horn-like bow-tie antenna was built. The semi-circle diameter and the feedline length of a single antenna are 41.66mm and 21.44mm respectively. CST Microwave Studio was used for design and simulation. The proposed antenna array was printed on a 1.6mm thick substrate with a length of 90.00mm, a width of 56.00mm and a dielectric constant (ϵ_r) of 4.4. According to the experimental results, the proposed antenna has a return loss of -20.12dB at S11, a VSWR of 1.2 at S11 and Maximum Gain of about 2.94dB with isolation -3dB. The antenna array was tested in the 2.4GHz to 2.5GHz frequency range with loss tangent 0.01. The proposed semi-circled bow-tie antenna array was compared to the rectangular bow-tie antenna, and it was observed that the proposed antenna has outperformed the rectangular bow-tie antenna at 2.45GHz. As a result, the proposed antenna is a suitable candidate for Mobile and Amateur Radio Applications. **Keywords**—Bow-Tie antenna, FR4 substrate, semi-circled horn-like bow-tie antenna, CST Microwave Studio, antenna array, return loss, VSWR, Maximum Gain, isolation, 2.4GHz to 2.5GHz, rectangular bow-tie antenna, Mobile Applications, Amateur Radio Applications.

Securing Fintech: Evaluating the Impact of Multi–Factor Authentication on Cyber Threats

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ABSTRACT

FinTech's introduction of digital technology has completely changed how modern organisations operate. It has changed conventional enterprises into technologically advanced point-of-sale firms. FinTech is enabling a great evolution of financial services through large investments in critical financial areas such as banking, e-commerce, insurance, and personal finance management. It has made a major impact on the world economy.

There is a discussion of cybersecurity principles to safeguard digital information from cyber threats and cyber threat actors. The three main tenets of data protection are availability, integrity, and confidentiality. Two further principles accountability and authenticity are added to these existing ones. The primary drivers of cyberattacks include political unrest, financial instability, data breaches, and disruptions to service.

An authentication mechanism serves as a crucial security layer, distinguishing between authorized and unauthorized users. Particularly in sensitive processes like online banking, it plays a pivotal role in safeguarding users against service attacks and unauthorized access. The effectiveness of an e-banking website hinges on the usability and security of its authentication mechanism.

Despite separate studies on usability and security, there's a notable gap in research synthesizing their contributions and evaluating multifactor authentication methods. Without a comprehensive understanding of the usability-security interplay in authentication, the process risks becoming both cumbersome and insecure. This undermines a key objective of authentication: user convenience.

This research investigates the effectiveness of multi-factor authentication (MFA) systems in mitigating financial cyber threats within fintech platforms. With the rapid growth of digital financial services, ensuring robust security measures is paramount to safeguarding sensitive user data and transactions. Multi-factor authentication, requiring users to provide multiple forms of verification, has emerged as a promising solution to enhance security in online platforms. However, despite its widespread adoption, there remains a need to assess its efficacy in effectively thwarting financial cyber threats. This study aims to address this gap by evaluating various MFA methods and their impact on mitigating cyber risks such as unauthorized access, account takeover, and financial fraud. Through a comprehensive analysis of MFA implementation across different fintech platforms, including examination of user experiences and security outcomes, this research aims to provide insights into the strengths and limitations of current authentication practices. Ultimately, the findings aim to inform policymakers, financial institutions, and cybersecurity professionals in enhancing the security posture of fintech ecosystems to better protect against evolving cyber threats.

Keywords: Fintech, MFA (Multi-factor authentication), Cyber Risks, Fintech Platforms, Cyber Security.

Analysis of the Impact of Digital Healthcare on Service Quality in Mental Healthcare

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ABSTRACT

Service quality plays a crucial role in shaping customer satisfaction and loyalty, particularly in the healthcare sector. This study evaluates the perceived service quality of digital healthcare services using the SERVQUAL model, analyzing the gaps between customer expectations and actual service performance. A structured questionnaire was used to collect responses, covering five key dimensions: Tangibility, Reliability, Responsiveness, Assurance, and Empathy. To ensure the reliability and validity of the dataset, Cronbach's Alpha was calculated, confirming strong internal consistency across the survey items. The SERVQUAL Gap Analysis was then performed to quantify the difference between customer expectations and perceptions, identifying significant service deficiencies across all five dimensions.

Keywords: Digital Healthcare, SERVQUAL

A Survey: Transformer-Based Models in Code Summarization

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ABSTRACT

Code summarization in software engineering refers to the task of automatically generating short natural language descriptions for source code, which has been addressed by the development of transformer-based models such as BERT, GPT, and CodeBERT in deep learning. These approaches have played a significant role in enhancing the capability of automated code documentation and producing good summaries. This paper provides an in-depth review of the latest transformer-based models for code summarization in terms of architectures, performance metrics, and diverse applications. Through the analysis of the strengths and weaknesses of these models, we aim to give insights that could guide future research and development in the area of automated code documentation. Through this survey, we will evaluate the progress of transformer-based models and give a foundation for further advancements in code summarization technologies.

Keywords: **Code Summarization, Natural Language Descriptions, Transformer-Based Models, BERT, GPT, Code Bert, Performance Metrics, Automated Code Documentation.**

Electron Beam Irradiated Studies on Conducting Polymer Composites for Energy Storage Applications

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ABSTRACT

Conducting Polymer composites were prepared by chemical reaction method. Synthesized composites were characterized by XRD, SEM, TEM & FTIR. FTIR gives the confirmation about Interaction between the molecules, from XRD we understand the Crystallinity of samples and SEM helps to understand the morphological behavior of Samples. Irradiation studies confirms that these nanocomposites are suitable for Energy Storage, Electrochromic & Optoelectronics devices.

Keywords: SEM, XRD, FTIR, PPY, DSC

Studies On Conducting Polymer Composites for Energy Storage Devices

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ABSTRACT

Polymer composites were synthesized by chemical oxidative polymerization technique using monomer aniline and ammonium per sulphate as an oxidant. The prepared composite was characterized by Scanning electron microscopy (SEM), And also we study on the performance of a room temperature LPG gas sensor based on polymer composites and there electrical properties.

Keywords: GAS, DC, SEM, Chemical, Energy

A Study on Brand Preference Towards Foreign vs. Local Brands in the Indian Smartphone Market

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ABSTRACT

The Indian smartphone market has witnessed a surge in both foreign and local brands, raising critical questions about brand preference, loyalty, and the factors influencing consumer decision-making. This study examines the brand preferences of Indian consumers by comparing their inclination towards foreign and domestic smartphone brands. Using a descriptive research design, the study employs a structured survey. A sample of 200 respondents was selected using convenience sampling to analyse key determinants such as price sensitivity, technological features, brand perception, social media marketing, and the impact of globalization on purchasing behaviour. Secondary data from industry reports and academic studies further supplement the findings. The research aims to address critical questions: Why do young Indian consumers prefer foreign or local smartphone brands? What role does brand loyalty play in their decision-making process? How do social media and digital marketing strategies influence their brand perception? The study also tests multiple hypotheses to determine the significance of factors such as price, brand image, and advertising strategies in shaping consumer preferences.

Keywords: Foreign vs. Local Brands, Indian Smartphone Market.

Development of Special Purpose Machine using PLC

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ABSTRACT

This project focuses on the development of an SPM controlled using a Programmable Logic Controller (PLC) to enhance efficiency, precision, and reliability in production processes. The demand for automation in manufacturing industries has significantly increased, leading to the development of Special Purpose Machines (SPM) tailored to specific industrial needs. The proposed system integrates PLC technology for seamless automation, minimizing human intervention while ensuring high-speed operations with reduced errors. The machine is built to execute specialized tasks with optimized logic programming, enabling real-time monitoring and adaptive control mechanisms. By utilizing sensor inputs, actuator control, and logical sequencing, the PLC ensures smooth operation, adaptability, and real-time monitoring. Additionally, a Human-Machine Interface (HMI) is incorporated to enable user-friendly interaction and control adjustments. This study explores the PLC programming logic, signal processing, and overall electrical automation strategies that drive the SPM. Comparative analysis with traditional control systems highlights the advantages of PLC-based automation, such as higher flexibility, improved system diagnostics, and reduced downtime. The results demonstrate that an efficient electrical and PLC-driven control system can significantly enhance the performance of SPMs in industrial applications, setting the stage for smarter and more automated manufacturing solutions.

Keywords: PLC, Industrial Automation, VFD, Servo motor, HMI, SPM.

Recruitment Process using Federated AI: An Unbiased Approach

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ABSTRACT

Artificial Intelligence is changing almost all aspect of one's life, directly or indirectly. Those who have nothing to do with computer science or its applications, cannot say that they are not at all affected by AI. Employment is something that affects everyone's life. AI is transforming the recruitment process significantly. For recruiters it is a big challenge to hire people who are most suitable for the positions they are being hired. Those being hired not just have to have the required skill set but also should be fit in the organization in all respect. They should be academically, technically and socially fit for the organization. Profile screening of the aspirants is vital in this regard. The most important aspect of such profiling and screening process is that it should be free from all biases and prejudices. AI technologies such as ML and FL are providing ground breaking breakthroughs. FL is especially playing a significant role in the profiling process. After recruitment also AI is playing a critical role in workforce management. Application of technology is improving efficiency of both the recruiters as well the workforce. This paper presents an overview of AI techniques such as ML and FL on the recruitment process and workforce management. This paper also tries to assess the impact of this un-bias approach on the overall efficiency of the organization as well as of its workforce.

Keywords: Cylinder Block, V8 Engine, Design, Analysis.

Agro-Franchising for Farm Input and Market Linkage Delivery: A Case Study of DeHaat in Bihar

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ABSTRACT

Agriculture remains a crucial sector in Bihar, with smallholder farmers forming the backbone of rural livelihoods. However, challenges such as limited access to quality farm inputs, inadequate market linkages, and insufficient advisory services hinder agricultural productivity. Agro-franchising, an emerging business model, offers a promising solution by integrating farmers with a structured supply chain and knowledge-sharing network. This study examines the DeHaat model in Bihar, a pioneering agro-franchising initiative that facilitates access to farm inputs, expert advisory, and market linkages. The paper evaluates its impact on farmers, the operational structure of DeHaat, and the challenges and opportunities associated with agro-franchising in Bihar.

Keywords: **Agro-Franchising, Dehaat, Farm Input Supply, Market Linkages, Bihar, Smallholder Farmers.**

AI-Powered Smart Shopping Trolley

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ABSTRACT

Trolleys are widely used in various places like shopping malls, hospitals, and colleges, but in supermarkets or malls, long queues during peak shopping hours often result in time loss for both shoppers and staff. This paper aims to design and develop an AI-Powered Smart Shopping Trolley to transform the conventional shopping experience by leveraging advanced technologies to enhance efficiency and customer satisfaction. The key objectives include automating checkout processes to save time, utilizing barcode scanners for accurate product tracking, and implementing real-time inventory management to prevent stock shortages and overstocking. The system also provides a personalized shopping experience by offering product recommendations based on customer preferences. Each item has a barcode linked to its price, and the trolley is equipped with indicators and alerts to assist with budgeting: a red light and buzzer activate when spending exceeds the preset budget, while a green light blinks when spending remains within limits. If an item is removed, the system recalculates the total, and the change is indicated via a buzzer and the embedded LCD screen. This allows customers to monitor their expenses and pay the total directly at the counter, eliminating traditional product scanning and reducing waiting time. By automating the billing process, the system minimizes human errors and helps shoppers prioritize essential purchases, ultimately saving time and money. Additional features, such as the ability to delete scanned products, further optimize the shopping experience. The hardware prototype is developed using an Arduino platform and comprises components such as an AI-integrated barcode scanner, LCD, push buttons, visual indicators, a Wi-Fi module, and a PIC microcontroller.

Keywords: Flex sensor, HC-05Bluetooth Module, Aurdino Nano, Voltage Divider, LCD.

FitAI-Personalized Diet and Fitness Planner

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ABSTRACT

Maintaining a healthy lifestyle in today's fast-paced world is a challenge due to the lack of personalized guidance on diet and fitness. **FitAI: Personalized Diet and Fitness Planner** is an **AI-powered web application** designed to provide customized health recommendations based on user-specific data. The system collects key inputs such as **age, height, weight, gender, exercise habits, dietary preferences, and existing health conditions** to generate **tailored diet plans and fitness routines**. By leveraging **machine learning algorithms**, FitAI analyzes these inputs to offer **dynamic and adaptive** suggestions that evolve based on user progress. The application is developed using **Python, Streamlit, and Mediapipe**, ensuring a **seamless, interactive, and user-friendly** experience. **Streamlit** enables an intuitive web interface, while **Mediapipe** assists in real-time health and fitness tracking. The AI-powered recommendation system refines its outputs over time, making health management more efficient and effective. FitAI aims to bridge the gap between generic health plans and personalized fitness strategies by providing **data-driven insights** that empower individuals to achieve their **wellness goals**. With its **intelligent recommendation system**, the application enhances user well-being by offering **customized, adaptable, and research-backed** diet and fitness guidance. Ultimately, **FitAI** serves as a **smart health assistant**, promoting a **sustainable and balanced** lifestyle for users.

Keywords: Personalized Diet Planner, AI-Powered Fitness, Machine Learning, Streamlit, Mediapipe, Health Tracking, Adaptive Recommendations, Nutrition Guidance, Fitness Monitoring, Smart Healthcare.

Skyscrapers Beyond Limits: A Futuristic High-Rise Vision

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ABSTRACT

With the over exploitation of natural resources to fulfill the global energy demands, we are already headed towards creating a catastrophic situation which has gathered attention of several experts of various disciplines worldwide. An attempt to minimize the tremendously high energy needs, majorly from the building sector, would only help in detaining further harm that has already been caused to the planet. High-rise buildings conjure an image of major energy consumers with their ever increasing energy loads, especially due to densification of cities to meet the rising global population in urban areas. However, a step towards building wisely would definitely contribute to atleast slowing down the rapid consumption of natural resources. Advancement of technological features and availability of innovative construction techniques is encouraging the development of numerous tall buildings with an intent to minimize the harm to the environment. Some of the skyscrapers are built just to create a landmark and to attract global attention in the present scenario, wherein, each tower is actually being built to surpass the earlier one. Such a situation has encouraged us to identify and incorporate climate responsive building designs for an increased energy efficiency by shifting the focus towards development of eco-friendly high-rise. This paper reviews some of the iconic towers in different climatic regions of the world that have been designed and built more responsibly incorporating sustainable design principles, climate responsive facades, utilizing renewable sources of energy to meet their own possible energy requirements to the possible extent.

Keywords: Building Innovation, Energy Efficiency, Environment-friendly, Green Skyscrapers Sustainable high-rise

Educare: An Integrated Platform for Student Attendance Management and Academic Performance Tracking

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ABSTRACT

Educare is a student monitoring and profiling system that uses facial recognition technology to automate attendance taking. It will accurately track student attendance and provide detailed information about the courses they are following. This system enhances administrative efficiency by reducing paperwork and ensuring real-time updates. Educare captures a group photo of students and automatically marks their attendance, eliminating the need for manual roll calls. With the use of Educare, an institution will be able to generate accurate records of student information for improved management and streamlined operations.

Keywords: Facial Recognition, Student Monitoring, Attendance Automation, Educational Management, Real-Time Tracking.

AI-Driven Autonomous Hygiene Solution for Public Toilet

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ABSTRACT

The envisioned AI-powered Autonomous Sanitation System is designed to innovate the upkeep of public toilets by leveraging smart technology, thereby enhancing hygiene, operational efficiency, and sustainability. This system integrates IoT sensors that track air quality, occupancy levels, and water usage, allowing for real-time oversight of cleaning operations, odor management, and usage patterns. An automated cleaning system, featuring motorized brushes and intelligent odor control mechanisms, ensures a clean environment, while UV lights contribute to sterilization. AI-driven algorithms evaluate sensor data to forecast cleaning demands, streamline resource allocation, and predict maintenance schedules for equipment. The system is energized by a 50W solar panel and is complemented by a rainwater harvesting system to curtail water consumption. With data analytics and predictive maintenance functionalities, the system guarantees optimal performance, with real-time data available through a mobile app or cloud interface. This autonomous and self-sufficient system reduces the necessity for manual intervention, enhances public sanitation, and provides an environmentally sustainable solution.

Keywords: AI Autonomous Solution, Predictive Maintenance, Self-Sufficient System.

The Impact of Integrating Machine Learning and Block Chain for SMS Spam Detection

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ABSTRACT

The widespread use of mobile communication has led to a significant rise in SMS-based spam, posing challenges for users and service providers. This paper explores the integration of machine learning (ML) and blockchain technology to enhance SMS spam detection. We assess the effectiveness of various ML algorithms in identifying spam messages and examine the potential of blockchain to provide a secure, decentralized platform for data sharing and model updates. Our findings indicate that combining ML and blockchain can significantly improve the accuracy and reliability of SMS spam detection, offering a comprehensive solution to this growing issue.

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Thank You