



RV College of
Engineering®

8th
CSITSS 2024

8th IEEE International Conference

Computational Systems and Information
Technology for Sustainable Solutions

7th to 9th November 2024 at RVCE, Bengaluru

Conference Record #64042



Organised By RV College of Engineering In Association With



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Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, with a Focus on Sustainable and Inclusive Technology.

Mission

- To deliver outcome based Quality education, emphasizing on experiential learning with the state of the art infrastructure.
- To create a conducive environment for interdisciplinary research and innovation.
- To develop professionals through holistic education focusing on individual growth, discipline, integrity, ethics and social sensitivity.
- To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.
- To focus on technologies that are sustainable and inclusive, benefiting all sections of the society.



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RV COLLEGE OF ENGINEERING®

(Autonomous Institution affiliated to VTU, Belagavi
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**8th IEEE INTERNATIONAL CONFERENCE
CSITSS-2024**

**Computational Systems & Information Technology
for Sustainable Solutions**

7th-9th November 2024

SOUVENIR 2024

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The 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions [CSITSS-2024]

7th to 9th November 2024

Organized by RV College of Engineering in association with Florida International University, Fachhochschule Dortmund, Germany. Technically Co-Sponsored by IEEE Bangalore Section, India.

This prestigious conference serves as a global forum where researchers, academicians, and industry professionals come together to share cutting-edge research and innovative technologies in key areas of computational systems and information technology for sustainable solutions. Topics will span across energy materials, nanomaterials, and smart materials, with an emphasis on sustainable practices and eco-friendly innovations. Participants will engage into robotics and automation, photonics, high-performance embedded computation, highlighting the role of artificial intelligence in transforming industries. Critical sectors such as renewable energy, green electronics, and digital transformation will be addressed, offering insights into modern computational engineering and scientific solutions. Emerging communication technologies, cybersecurity, and biomedical electronics will also be focal points, reflecting the ongoing evolution of next-generation systems, quantum computing, and blockchain applications.

In addition to technical paper presentations, the conference will feature keynote addresses from renowned experts, interactive lectures and tutorials aimed at enhancing participants understanding of emerging trends. The conference provides a platform for Ph.D. holders of previous year to showcase their research and innovation to obtain Best Ph.D. thesis Award. The event also offers numerous networking opportunities, fostering collaboration among professionals from academia, industry, and research institutions. CSITSS 2024 provides a unique platform for participants to explore innovative and sustainable solutions to tackle both current and future technological challenges.



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Inauguration of

8th IEEE INTERNATIONAL CONFERENCE CSITSS-2024 (7th-9th November 2024)

Computational Systems & Information Technology for Sustainable Solutions

Chief Guest

Prof. S.S Iyengar

Ryder Professor and Director, School of Computing and Information Science
Florida International University, Miami, USA

Guests of Honour

Ms. Chaitra Vedullapalli

Co-founder & CMO,
Meylah, Seattle, USA

Dr. -Ing. Vinod Rajamani

Professor, University of Applied
Sciences and Arts, Dortmund

Dr. T. Srinivas

Professor, IISc., Bangalore
Chair, IEEE Bangalore Section

Presided By

Dr.M P Shyam

President, RSST Bengaluru

All are Welcome
Faculty and Staff, RVCE

Date: 8th November 2024

Time: 9:30 AM

Venue: IEM Auditorium,
RVCE, Bengaluru

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**CSITSS2024: 8th International Conference on Computational Systems and
Information Technology for Sustainable Solutions**

Inauguration Agenda

Date: 8th November 2024

Time: 9.30 AM

Venue: IEM Auditorium

9.30 AM – 9.35AM	Invocation	Dr. Suma N Manjunath <i>Assistant Professor, Dept. of Mathematics</i>
9.35 AM -9.40AM	Lighting the Lamp	Dignitaries
9.40 AM –9.50 AM	Welcome Address	Dr. Subramanya KN <i>Principal, RVCE</i>
9.50 AM -10.05 AM	About the conference	Dr. Sagar BM <i>HoD- ISE, RVCE General Chair-CSITSS 2024</i>
10.05 AM - 10.15 AM	Release of Souvenir	Dignitaries
10.15 AM -10.20 AM	Signing of MoU <i>(Between RVCE & NIE, Mysuru facilitated by Dortmund University)</i>	Dr. -Ing Vinod Rajamani, <i>Professor, University of Applied Sciences and Arts Dortmund</i> Dr. Rohini Nagapadma <i>Principal, The National Institute of Engineering, Mysuru</i>
10.20 AM - 10.35 AM	Address by IEEE Chair	Dr. T Srinivas <i>Professor, IISc., Chair-IEEE Bangalore Section</i>
10.35 AM -10.45 AM	Address by Chief Guest	Dr. S.S Iyengar <i>Ryder Professor and Director, School of Computing and Information Science, FIU, USA</i>
10.45 AM -10.55 AM	Presidential Remarks	Dr. M P Shyam <i>President, RSST</i>
10.55 AM -11.00 AM	Vote of Thanks	Dr. Geetha KS <i>Vice Principal, RVCE</i>
11.00 AM -11.15 AM		High Tea Break

Best Ph.D. Thesis Award

8th International Conference on Computational Systems and Information Technology for Sustainable Solutions was organized by **RV College of Engineering®** in association with Florida International University, Fachhochschule Dortmund, Germany, technically Co-Sponsored by IEEE Bangalore Section, India. It was decided to give Best Ph.D. thesis Award for the candidates who have received Ph.D. degree between June 2023 to June 2024.

Panel of evaluators has been constituted and rubrics for evaluation were formulated to decide on the Best Ph.D. thesis among 28 nominations submitted.

Round-1 presentations by the nominees was scheduled on **25th and 26th of September 2024**.

Panel of Evaluators:

Panel -1

1. Dr. Krishna M, Professor & HoD, Dept. of Mechanical Engg.
2. Dr. Uttarakumari M, Professor, Dept. of ECE
3. Dr. Ramakanth Kumar P, Professor & HoD, Dept. of CSE
4. Dr. Sagar BM, Professor & HoD, Dept. of ISE

Panel – 2

1. Dr. H N Narasimha Murthy, Professor & Dean, R&D
2. Dr. Vidya Niranjan, Professor & HoD, Dept. of Biotechnology
3. Dr. Sathish Babu B, Professor & HoD, Dept. of AI & ML
4. Dr. Sudharshan B G, Associate Professor, Dept. of E&I

Rubrics for Evaluation:

SL No.	Parameter	Weightage in %
1	Quality of Research (Methodological Rigor) Analytical /Experimental/Simulation	15
2	Originality and Innovation	20
3	Breadth of Research (Interdisciplinary Reach)	20
4	Quality of writing	15
5	Scientific or Scholarly impact (Publications/Patents)	20
6	Significance to the field (Global/Regional Relevance)	10

The finalists for the Best Ph.D. Thesis award presentation is listed below(not in any particular order).

Name of the Applicant	Title of the Thesis
Dr. Zabiha Khan Associate Professor Nitte Meenakshi Institute of Technology	Development of Novel Approach towards Predicting Tumor and Progression in Gastrointestinal Carcinoma using Machine Learning

Dr. Sneha. M Assistant Professor, Dept. of CSE, RVCE	Mitigating Security Attacks Using ES ML Libraries And Improving the Latency and Throughput of a Network
Dr. Yashodha S R Assistant Professor Dept. of Physics RNS Institute of Technology, Bengaluru	Spectroscopic Investigations of Rare Earth Activated Lanthanum Oxychloride for Energy Saving and Environmental Applications
Dr. Shwetha K P Assistant Professor Department of Physics, RVCE	Development and evaluation of transition metal compound-carbon based composites as electrodes for supercapacitor applications

Awards and Benefits:

The final presentation of the above listed finalists (Round-2) is scheduled on **November 9th 2024**, Friday at RV College of Engineering campus. External experts will be evaluating the Round 2 presentations to decide the I, II and III prizes.

- a) Cash prizes of Rs.15,000/- , Rs.10,000/- and Rs.5000/- will be awarded respectively.
- b) Certificate of Award will be presented.
- c) Registration is free for the finalists and free to attend all the 3 days of the conference
- d) A research paper related to Ph.D. work carried out, is free for publication in RVJSTEAM (RV Journal of Science Technology Engineering Arts and Management, Published by: RV College of Engineering)



8th IEEE International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS-2024) organized from 7th-9th November 2024

SCHEDULE OF EVENTS Day 1: 7th Nov 2024

Pre-Conference Tutorial Track 1- AI for All

Venue: MV Seminar Hall (Dept Of Civil Engg., 3rd Floor)

9:30 - 11.00 AM	Mr. Raj Pagaku VP Engineering Security Business Unit Juniper Networks India Pvt Ltd, Bengaluru, India	Topic: Inclusive AI: Shaping the Future for Everyone
11.00 – 11.30 AM	TEA BREAK	
11.30 AM – 1.00 PM	Dr. Nagaraju G, Director, Ophthalmology. Director, Minto Eye Hospital, BMCRI, Bengaluru	Topic: AI in Healthcare

Track 2- Digital Transformation

Venue: ET Seminar Hall (Dept. Of Electronics & Telecom. Engg., Ground Floor)

9:30 - 11.00 AM	Dr. K B Shyam Prasad Momentive Performance Materials India Pvt Ltd, India Technology Centre, Survey No.9, Electronic City West, Hosur Road, Bengaluru Karnataka – 560100. India E-mail: kbshyamprasad@gmail.com	Topic: Accelerate Innovation through Digital Tools
11.00 – 11.30 AM	TEA BREAK	
11.30 AM – 1.00 PM	Mr. Abhi Anand Director (Financial Services Leader) PwC. Quay building, Bagmane Tech Park, C V Raman Nagar, Bengaluru, Karnataka 560093.	Topic: Sustainable AI Applications



SCHEDULE OF EVENTS

Day 2: 8th Nov 2024

08:30- 9:30 AM	Registration	Venue: IEM Auditorium
09:30-10.45 AM	Inauguration	Venue: IEM Auditorium
10.45- 11.15 AM	HIGH TEA	
11:15-11:50AM	Keynote Address by, Dr S S Iyengar Distinguished University Professor, Ryder Professor, Director, US Army Funded Digital Forensics Center of Excellence Knight Foundation School of Computing and Information Sciences FIU, Miami, USA	Topic: <i>De-mystifying Artificial Intelligence: From Concept to Reality</i> Venue: IEM Auditorium
11:50-12:30 PM	Invited Talk by, Chaitra Vedulapalli CEO, Meylah Technologies, Seattle, USA Co-Founder, WiC, USA	Topic: <i>The AI Renaissance: Redefining Industries and Human Potential in the Age of Automation</i> Venue: IEM Auditorium
12.30-1.00 PM	Invited Talk by, Mr. Sagar R Data Center Engineer, ATDXT	Topic: <i>Green Data Center</i> Venue: IEM Auditorium
01:00-02:00 PM	LUNCH BREAK	
02:00-05:00 PM Tea Break: 03:30-03:45 PM	SESSION 1: AI Venue : ISE SEMINAR HALL (Paper ID: 19, 32, 37, 59, 61, 76, 78, 79, 899)	SESSION 2: AI Venue : ISE 224 (Paper ID: 83, 86, 97, 108, 121, 122, 227)
	SESSION 3: AI Venue : CHEMICAL SEMINAR HALL (Paper ID: 143, 154, 157, 160, 190, 221, 224)	SESSION 4: AI Venue : TCE SEMINAR HALL (Paper ID: 138, 238, 251, 266, 292, 314, 315, 321)
	SESSION 5: AI Venue : ISE 110 (Paper ID: 329, 351, 354, 359, 368, 371, 916)	SESSION 6: Quantum Mechanics & Photonics Venue : PHYSICS SEMINAR HALL (PaperID: 102, 284, 317, 370, 572, 624, 634, 833)
	SESSION 7: Computational Analysis & Autonomous Vehicles Venue : MV SEMINAR HALL (Paper ID: 109, 128, 247, 276, 277, 477, 520, 683)	SESSION 8: Next Generation Venue : IS 304 (Paper ID: 119, 129, 197, 250, 261, 402)



	<p>SESSION 9: Next Generation Venue : IS 106A (Paper ID: 442, 489, 517, 576, 662, 669, 863)</p>	<p>SESSION 10: Digital Transformation Venue : ISE 112B (Paper ID: 10, 26, 84, 101, 139, 219, 220, 234)</p>
	<p>SESSION 11: Digital Transformation Venue : ISE 109 (Paper ID: 279, 282, 349, 438, 446, 496, 511)</p>	<p>SESSION 12: Cyber Physical Systems Venue : ISE 106B (Paper ID: 20, 23, 107, 135, 232, 242, 254)</p>
	<p>SESSION 13: Cyber Physical Systems Venue : ECE SEMINAR HALL (Paper ID: 325, 346, 365, 372, 391, 427, 523, 526)</p>	<p>SESSION 14: Bio Medical Electronics Venue : MCA 005 (Paper ID: 12, 131, 202, 233, 274, 281, 290)</p>
	<p>SESSION 15: Bio Medical Electronics Venue : MCA SEMINAR HALL (Paper ID: 332, 413, 420, 500, 504, 534, 549)</p>	<p>SESSION 16: Online Track 1 Venue : ISE Women in Cloud Lab (Paper ID: 62, 258, 304, 404, 501, 748, 760, 836, 911, 933)</p>
	<p>SESSION 17: Online Track 2 Venue : ISE VC COC Lab (PaperID: 40, 133, 134, 226, 336, 480, 676, 693, 960, 1048)</p>	<p>SESSION 18: Online Track 3 Venue : ISE 302 (Paper ID: 81, 280, 338, 343, 435, 461, 462, 528, 532, 625)</p>

Note: A musical performance by ALAAP team is arranged at 6.30 pm, Civil department terrace. We warmly invite all the participants to join us for this event.



SCHEDULE OF EVENTS

Day 3: 9th Nov 2024

09:30-10:30 AM	Plenary talk by, Prof. Dr.-Ing. Vinod Rajamani Vice Dean Internationalisation Mechanical Engineering, Dortmund University	Topic: <i>Relevance of sustainable engineering today and the way forward</i> Venue: EC Seminar Hall
10:30-10:45 AM	HIGH TEA	
	SESSION 19 : AI Venue : ISE 112B (Paper ID: 374, 380, 385, 396, 397, 412, 414, 422)	SESSION 20 : AI Venue : ISE 106 A (Paper ID: 440, 444, 451, 453, 456, 459, 486, 1009, 1019)
	SESSION 21 : AI Venue : CHEMICAL SEMINAR HALL (Paper ID: 529, 535, 537, 540, 543, 546, 586, 597, 733)	SESSION 22 : AI Venue : TCE SEMINAR HALL (Paper ID: 614, 618, 620, 621, 632, 657, 675, 685, 706)
11:00-01:00 PM	SESSION 23 : AI Venue : ISE 224 (Paper ID: 766, 768, 770, 775, 776, 796, 799, 804)	SESSION 24 : Quantum Mechanics & Photonics Venue : PHYSICS SEMINAR HALL (Paper ID: 205, 340, 545, 587, 826, 976, 1018, 1027)
	SESSION 25 : Computational Analysis & Autonomous Vehicles Venue : MV SEMINAR HALL (Paper ID: 824, 871, 872, 873, 919, 924)	SESSION 26 : Renewable Energy Venue : IEM SEMINAR HALL (Paper ID: 158, 179, 180, 181, 390, 941, 970)
	SESSION 27 : Next Generation Venue : ISE 302 (Paper ID: 670, 673, 674, 695, 701, 712, 732)	SESSION 28: Next Generation Venue : ISE 110 (Paper ID: 778, 779, 815, 818, 900, 931)
	SESSION 29: Digital Transformation Venue : ISE SEMINAR HALL (Paper ID: 527, 563, 569, 606, 628, 637, 704, 947, 959, 961)	SESSION 30: Digital Transformation Venue : ECE SEMINAR HALL (Paper ID: 720, 742, 765, 777, 789, 808, 831, 988, 1034)
	SESSION 31: Cyber Physical Systems Venue : ISE 106B (Paper ID: 574, 611, 622, 650, 767, 788, 943, 950)	SESSION 32: Bio Medical Electronics Venue : MCA SEMINAR HALL (Paper ID: 13, 561, 579, 589, 654, 660, 663, 665)
	SESSION 33: Online Track 4 Venue : ISE 304 (Paper ID: 324, 327, 328, 330, 341, 458, 491, 791, 216, 187)	SESSION 34: Online Track 5 Venue : ISE WiC CoE Lab (Paper ID: 157, 183, 347, 432, 559, 594, 767, 887, 355)
	SESSION 35: Online Track 6 Venue : ISE VC CoC Lab (Paper ID: 117, 120, 416, 856, 862, 890, 891, 932)	



01:00-02:00 PM	LUNCH BREAK	
2.00 – 3.45 PM	SESSION 36: AI Venue : ISE SEMINAR HALL (Paper ID: 806, 807, 819, 821, 822, 876, 958)	SESSION 37: AI Venue : ISE 106 A (Paper ID: 877, 913, 914, 917, 973, 1002)
	SESSION 38: AI Venue : ISE 112B (Paper ID: 394, 938, 951, 964, 966, 980, 981)	SESSION 39: Robotics & Green Electronics Venue : TCE SEMINAR HALL (Paper ID: 203, 362, 800, 939, 1015, 1033, 1037)
	SESSION 40: Robotics & Green Electronics Venue : CHEMICAL SEMINAR HALL (Paper ID: 24, 74, 253, 401, 515, 544)	SESSION 41: Robotics & Green Electronics Venue : PHYSICS SEMINAR HALL (Paper ID: 596, 631, 667, 749, 854, 994, 1012)
	SESSION 42: Renewable Energy Venue : MV SEMINAR HALL (Paper ID: 498, 578, 599, 644, 692, 721)	SESSION 43 : Renewable Energy Venue : IEM SEMINAR HALL (Paper ID: 726, 783, 845, 897, 952, 953, 960)
	SESSION 44: Renewable Energy Venue : ECE SEMINAR HALL (Paper ID: 983, 991, 996, 1004, 1007 , 1011, 1023)	SESSION 45 : Next Generation Venue : ISE 106B (Paper ID: 419, 946, 984, 1017, 1039, 1040)
	SESSION 46: Bio Medical Electronics Venue : MCA SEMINAR HALL (Paper ID: 847, 861, 875, 886, 903, 940,1010)	
3.45-4.00 PM	TEA BREAK	
04:00-04:30 PM	Valedictory Program	

MESSAGES

PREAMBLE



Welcome to the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS) 2024, hosted by RV College of Engineering in association with Florida International University and Fachhochschule Dortmund, Germany. This prestigious event, technically co-sponsored by IEEE Bangalore Section, India, organized during 7th to 9th November 2024.

In an era where sustainable solutions are paramount, this conference aims to bring together leading academicians, scientists, researchers, industry representatives, and research scholars, students from around the globe. Our goal is to foster an environment of knowledge exchange and collaboration, focusing on the advancements in the following broad themes:

1. Renewable Energy

- **Solar Power:** Innovations in perovskite solar cells have significantly increased efficiency and reduced costs. Bifacial solar panels, which capture sunlight on both sides, are also gaining traction.
- **Wind Energy:** Offshore wind farms are expanding, with floating wind turbines allowing for deployment in deeper waters. Enhanced blade designs and materials are improving efficiency and durability.
- **Energy Storage:** Advances in battery technology, particularly in solid-state batteries, are enhancing energy storage capabilities, crucial for balancing supply and demand in renewable energy systems.

2. VLSI (Very-Large-Scale Integration)

- **3D ICs:** The development of three-dimensional integrated circuits (3D ICs) is revolutionizing chip design, offering higher performance and lower power consumption.
- **AI Integration:** Incorporating artificial intelligence into VLSI design is optimizing chip performance and enabling more efficient processing capabilities.
- **Nanotechnology:** The use of nanomaterials and techniques is pushing the boundaries of miniaturization and performance in semiconductor devices.

3. Control Systems

- **Autonomous Systems:** Advances in control algorithms are enhancing the capabilities of autonomous vehicles, drones, and robotics, making them more reliable and efficient.
- **Smart Grids:** Improved control systems are enabling smarter and more resilient electrical grids, integrating renewable energy sources and enhancing grid stability.
- **Industrial Automation:** Enhanced control systems are driving the next generation of industrial automation, improving precision, efficiency, and safety in manufacturing processes.

4. Computing

- **Quantum Computing:** Significant progress in quantum computing is opening new possibilities for solving complex problems that are beyond the reach of classical computers.
- **Edge Computing:** The rise of edge computing is bringing data processing closer to the source, reducing latency and improving real-time decision-making capabilities.
- **AI and Machine Learning:** Continuous advancements in AI and machine learning are driving innovations across various sectors and helping to make better decisions.

5. Communication

- **5G Technology:** The rollout of 5G networks is enhancing connectivity, offering higher speeds, lower latency, and greater capacity for connected devices.
- **Satellite Internet:** Companies like SpaceX are advancing satellite internet technology, aiming to provide global high-speed internet access.
- **IoT (Internet of Things):** The proliferation of IoT devices is driving advancements in communication protocols and infrastructure to support the growing network of connected devices.

6. E-mobility

- **Electric Vehicles (EVs):** Improvements in battery technology, such as increased energy density and faster charging times, are making EVs more practical and appealing to consumers.
- **Charging Infrastructure:** Expansion of charging networks and the development of ultra-fast chargers are supporting the widespread adoption of EVs.
- **Vehicle-to-Grid (V2G):** Innovations in V2G technology are enabling EVs to interact with the power grid, providing energy storage solutions and enhancing grid stability.

These advancements are driving significant progress in their respective fields, contributing to a more sustainable and technologically advanced future.

The conference will feature keynote talks from international experts, peer-reviewed paper presentations, and interactive sessions designed to inspire innovation and address the pressing challenges of our time. By providing a platform for interdisciplinary research and discussion, CSITSS 2024 seeks to contribute to the development of sustainable technologies that benefit society as a whole.

We are excited to welcome participants from diverse backgrounds and look forward to the fruitful exchanges and ground-breaking ideas that will emerge from this gathering. Together, we can pave the way for a sustainable future through technological innovation and collaborative effort.

Sd/-

Dr. K N Subramanya

Principal

RV College of Engineering

From the desk of Dr. S S Iyengar, Keynote Speaker, CSITSS-2024



MESSAGE

Best wishes for the CSITSS-24: 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions

Dear all,

I extend my heartfelt congratulations to RV College of Engineering, Florida International University and the esteemed German researchers for hosting and organizing this incredible conference and to IEEE, under whose distinguished banner this event is being held. Your commitment to fostering academic excellence and innovation is evident in every detail of this gathering.

The selected papers represent outstanding research contributions, and the presence of renowned speakers from across the globe promises an enriching exchange of ideas. Conferences like this one are vital to the progress of science and technology. In a field as dynamic and fast-evolving as computational science and IT, we must continuously learn, adapt, and innovate. CSITSS offers a platform where ideas are exchanged, partnerships are formed, and breakthroughs are born. Today, we live in a globalized world where solutions to challenges often require cross-border cooperation. Conferences bring together scientists, researchers, and professionals from all corners of the globe, allowing us to build networks that transcend geographical boundaries. The intersection of academic research and industry application is where theoretical knowledge transforms into practical, real-world solutions. Conferences like CSITSS enable dialogue between the academic community and industry leaders, ensuring that new discoveries are not confined to research papers but translated into technologies that solve real problems. One of the greatest outcomes of these gatherings is the inspiration and mentorship they provide to younger generations. Conferences like this inspire students, early-career researchers and professionals, giving them the opportunity to interact with leaders in the field. These conferences are not merely a venue for sharing research—they serve as incubators of innovation and platforms for collaboration that shape the future of our industries.

The hospitality, vision, and organization displayed by RVCE and the continued support from IEEE have ensured that this conference will be a memorable and impactful one. We deeply appreciate your hard work in creating a space where ideas flourish, and where researchers, professionals, and students alike can come together to exchange knowledge and inspire one another. I am confident that the conversations, collaborations, and innovations that emerge from this event will shape the future of computational science and information technology. Thank you once again to RVCE, IEEE and the CSITSS organizing committee for this opportunity to be part of such a remarkable event. Let us all continue to strive for excellence, and together, let's push the boundaries of what's possible in science and technology.

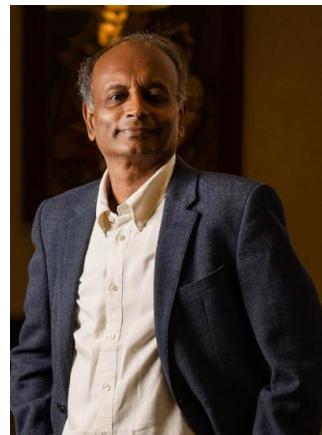
To all the participants, I wish you a fruitful and insightful experience as you delve into this vital area of global importance. May this conference expand your knowledge and inspire innovative solutions for a sustainable future!

Sd/-

Dr. S S Iyengar

Distinguished University Professor, Ryder Professor,
Director, US Army Funded Digital Forensics Center of Excellence
Knight Foundation School of Computing and Information Sciences
FIU, Miami, USA

From the desk of Dr. M P Shyam, President, RSST



MESSAGE

An unwavering commitment to nurturing transformative thought and harnessing the power of science and technology, is key to reshaping the world for the better.

On behalf of the RV Educational Institutions, I am honoured to welcome the delegates and participants of the IEEE 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS-2024).

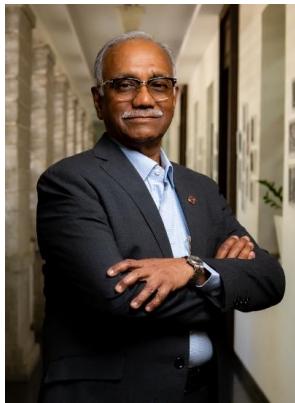
The confluence of brilliant minds from across the globe, represents a beacon of hope in our collective pursuit of innovation, sustainability and intellectual advancement. This prestigious event, organized by RV College of Engineering in association with IEEE, is an arena where the seeds of tomorrow's breakthroughs will undoubtedly be sown.

With this thought, I extend my wishes to a day of success, learning, connections and growth. May this event serve as a crucible for visionary ideas and profound collaborations.

With Deepest Regards,

Sd/-
Dr. M.P. Shyam
President, RSST

From the desk of Dr. (h.c) A V S Murthy, Hon. Secretary, RSST



MESSAGE

Dear Esteemed Delegates,

It is with great pleasure that I extend a warm welcome to all participants of the CSITSS-2024 Conference, held at RV College of Engineering on November 7-9, 2024. This gathering brings together bright minds from various fields, fostering an environment of innovation, collaboration and knowledge sharing.

As we navigate the ever-evolving landscape of technology and education (*Computational Analysis of Structural and Functional Materials, Green Electronics: Sustainable Practices, Robotics and Automation, Photonics, Optoelectronics and Mechatronics System, Artificial Intelligence for Sustainable World, Digital Transformation in Various Sectors of Economy, Renewable Energy and Environmental Engineering, Cyber-Physical Systems, Biomedical Electronics and Healthcare Applications, Quantum Mechanics and Computing and Next-Generation Communication Systems*), events like this play a crucial role in shaping the future. We are honored to host distinguished speakers, researchers, and practitioners who will share their insights and experiences, inspiring us to push boundaries and explore new horizons.

I would like to express my gratitude to all the organizers, sponsors, and volunteers whose hard work has made this conference possible. Your dedication is invaluable in promoting excellence in education and technology.

Let us seize this opportunity to engage, learn and grow together, paving the way for a brighter future.

Best wishes for a successful conference!

Sd/-

Dr. (h.c) A V S Murthy
Hon. Secretary, RSST

From the desk of Mr. D P Nagaraj, Hon. Joint Secretary, RSST



MESSAGE

It is with profound pride that I warmly welcome all delegates and participants to the IEEE 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS-2024).

This occasion, hosted by RV College of Engineering in partnership with IEEE, is not merely a gathering, it is a vibrant celebration of collective creativity and an opportunity for impactful dialogue. As we embark on this journey of discovery and innovation, our steadfast commitment to fostering transformative ideas through the realms of science and technology is essential for crafting a brighter future.

The conference serves as a fertile ground where the breakthroughs of tomorrow will undoubtedly emerge. Here, numbers are an advantage, for it is the coming together of exceptional minds for the sake of intellectual enrichment and therefore innovative sustainable solutions.

May this event inspire ground-breaking ideas and collaborative ventures that will influence the future. Together, ignite the flame of innovation that will lead us towards sustainability and a prosperous tomorrow.

Sd/-
Mr. D P Nagaraj
Hon. Joint Secretary, RSST

From the desk of Mr. Nikhil A Murthy, Asst. Secretary, RSST



MESSAGE

The 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions is a prestigious international event that aims to bring together a diverse group of intellectuals who share common interests and aspirations for a tomorrow filled with promise and hope.

Organised by RV College of Engineering in association with IEEE, this conference provides a crucial platform for global researchers, academicians and industry experts to exchange knowledge and collaborate on innovations for a sustainable future.

As educators, we are dedicated to creating an environment where science and technology are leveraged to address real-world challenges. We firmly believe that these challenges are best tackled through collaboration with like-minded individuals, committed diligently towards a common goal. CSITSS-2024 perfectly aligns with our mission to promote academic excellence and foster meaningful collaboration.

On this day that seeks to elevate learning and connectivity, while providing a platform for global research, I wish you a successful and rewarding conference.

Sd/-
Nikhil A Murthy
Assistant Secretary, RSST

From the desk of Dr. K S Geetha, Vice-Principal, RVCE**MESSAGE**

It is with great enthusiasm that I extend my heartfelt congratulations to the organizers, participants, and contributors of the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS 2024). As a well-wisher, I am deeply inspired by the vision of this conference, which brings together a diverse group of researchers, industry professionals, and students to explore innovative solutions at the intersection of computational technology and sustainability.

One of the most remarkable aspects of CSITSS 2024 is its interdisciplinary approach. In today's complex world, addressing global challenges—particularly those surrounding sustainability—requires more than a single field of expertise. CSITSS 2024 recognizes this by embracing a wide range of disciplines, from data science and artificial intelligence to green computing, smart cities, and renewable energy. This collaborative exchange of ideas from multiple fields is crucial for developing comprehensive, practical solutions that benefit both society and the environment.

For students, this interdisciplinary platform is transformative. By interacting with experts from diverse domains, they are exposed to new perspectives and innovative methods of thinking that transcend traditional academic boundaries. This holistic learning experience encourages students to develop versatile problem-solving skills that will be invaluable as they pursue their careers in technology and sustainability. The conference offers students not just the opportunity to learn, but to engage with real-world challenges and collaborate with mentors who are leading ground-breaking research and industry practices.

Equally important is the bridge that CSITSS 2024 builds between academia and industry. The interdisciplinary nature of the conference fosters collaboration across sectors, ensuring that cutting-edge academic research is aligned with industry needs and applications. For students, this connection opens doors to mentorship opportunities, internships, and career pathways, empowering them to actively contribute to solving global sustainability issues. Industry professionals, in turn, benefit from the fresh ideas and innovative thinking emerging from academia, ensuring that their work remains forward-looking and impactful.

The significance of CSITSS 2024 extends far beyond the presentations and discussions held during the event. It serves as a catalyst for long-term partnerships, interdisciplinary collaborations, and the application of research to real-world sustainability challenges. This alignment of academic rigor with practical industry demands will drive innovation, spark new business opportunities, and accelerate the creation of sustainable solutions that can be implemented at scale.

I commend the organizers, participants, and supporters of CSITSS 2024 for their vision and commitment to fostering an interdisciplinary, collaborative, and solutions-oriented dialogue. May this conference continue to inspire students, strengthen ties between academia and industry and contribute meaningfully to a more sustainable and technologically advanced world.

Wishing CSITSS 2024 every success and lasting impact.

Sd/-

Dr. K S Geetha

Vice-Principal

RV College of Engineering

From the desk of Dr. Vinod Rajamani, Keynote Speaker, CSITSS-2024



MESSAGE

The Fachhochschule Dortmund is delighted to participate in the 8th Conference on Computational Systems and Information Technology for Sustainable Solutions. This collaboration with RV College of Engineering further strengthens the strong partnership between our institutions, which has flourished for more than five years. The conference theme aligns perfectly with the core values of Fachhochschule Dortmund - sustainability and digitalization.

In today's increasingly industrialized world, the overexploitation of resources is a significant concern, making sustainable solutions vital for safeguarding resources and ensuring a high quality of life for future generations. These solutions find applications in key areas such as the circular economy, sustainable agriculture, energy efficiency, smart manufacturing, and minimizing the carbon footprint, to name a few.

Technological advancements in recent years have equipped us with numerous tools—such as sensors, data communication, processing power, manufacturing capabilities, artificial intelligence, and improved mobility. Leveraging these innovations intelligently is essential for addressing the 17 Sustainable Development Goals set out by the United Nations.

It brings me great joy to see this conference continue to make significant strides in providing a platform for the exchange of sustainable solutions while also raising public awareness about their importance.

Sd/-
Dr. Vinod Rajamani
Professor
Fachhochschule Dortmund University

From the desk of Dr. Krishna M, Prof. & HoD, ME, RVCE



MESSAGE

Good day to one and all,

It is with great pleasure that I welcome you all to the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS), hosted by RV College of Engineering, Bengaluru. We are gathered here, at this esteemed conference to discuss and exchange ideas and advancements in various fields of engineering. Through this annual event, we look forward to explore and highlight research that can address challenges that we are facing in the technological domains and at the same time help to foster a sustainable future.

At this conference, we aim to move out of theoretical frameworks by working on practical solutions that have the power and potential to help the world make progress on the technological and societal front. We believe that this conference will be a testimony to the excellent academic and industrial research conducted under IEEE, in accordance with the Sustainable Development Goals laid down by the UN.

CSITSS 2024 brings together a diverse group of people, including scholars, professionals and researchers, with a unique blend of experience, expertise and excellence in their fields. Our institution, RVCE, which has a great legacy of supporting research-based education, continues to play an important role in upholding research and development.

Today, as we gather here to ignite new discussions, I would like to extend my heartfelt thanks to all the speakers, participants, collaborators and everyone who have directly and indirectly contributed to make this event a success and advance the goal of pushing the society of today to a sustainable tomorrow.

Sd/-

Dr. Krishna M
Professor & HoD
Mechanical Department, RVCE

From the desk of Dr. B M Sagar, Prof. & HoD, ISE, RVCE**MESSAGE**

Dear Participants,

It gives me immense pleasure to welcome you all to the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS 2024), organized by RV College of Engineering (RVCE), Bengaluru. This flagship conference at RVCE, year on year, continues to create a vibrant platform for the exchange of ideas, innovations and cutting-edge research in the fields of circuits, signals and information technology, all aimed at creating sustainable solutions for the future. The rapid technological advancements we witness today bring unprecedented opportunities as well as challenges. At CSITSS, we aim to address these dynamics through interdisciplinary collaboration, showcasing novel research that contributes to technological, societal and environmental sustainability. Our focus extends beyond theoretical discussions; the conference emphasizes practical applications that enhance global development in line with the Sustainable Development Goals (SDGs).

We are proud to host this event under IEEE, which upholds a tradition of excellence and is synonymous with quality in technological research. With contributions from distinguished researchers, academicians, industry leaders, and young innovators, CSITSS 2024 promises to be a unique amalgamation of expertise and innovation. RVCE has been a forerunner in technical education, known for its forward-thinking approach, cutting-edge facilities, and an unwavering commitment to fostering research that impacts both the academic and industrial landscapes. As one of India's premier institutions, RVCE is thrilled to serve as the organizing institution for CSITSS, contributing to global knowledge exchange and technological progress.

On behalf of the organizing committee, I extend my deepest gratitude to our keynote speakers, contributors, participants, sponsors and technical partners. Your contributions are what make this conference a success. I hope CSITSS 2024 will inspire each one of us to push the boundaries of our research and lead us towards a more sustainable and innovative future.

Thank you, and I look forward to your active participation.

Sd/-

Dr. B.M Sagar
Professor & HoD,
Department of ISE, RVCE

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**8th IEEE International Conference on Computational Systems and Information
Technology for Sustainable Solutions (CSITSS- 2024)**

Technically Sponsored by IEEE Bangalore Section

6th – 9th November 2024

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8th IEEE International Conference CSITSS – 2024, “Computational Systems and Information Technology for Sustainable Solutions”

7th to 9th November 2024

Keynote Talk – 1

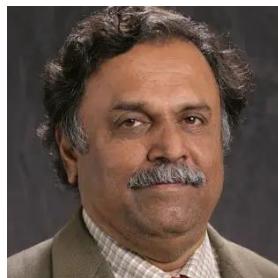
Date : 08-11-2024

Venue: IEM Auditorium

Time: 11:15 to 11:50

“De-mystifying Artificial Intelligence: From Concept to Reality”

Speaker Details:



S.S. Iyengar, Ph.D., D.Sc. (Hon.), Ph.D. (Hon.), Ph.D. (Hon.)

ACM Fellow, IEEE Life Fellow, AAAS Fellow, NAI Fellow, AIMBE Fellow, SDPS Fellow, AAIA Fellow

Member of the European Academy of Sciences, Member of the European Academy of Arts and Sciences

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Distinguished Chair Professor

National Forensics Sciences University

An Institution of National Importance under Ministry of Home, Government of India

Police Bhavan Rd, Sector 9, Gandhinagar, Gujarat 382007, India

Brief Biography:

Dr. S.S. Iyengar is currently the Distinguished University Professor, Founding Director of the Discovery Lab and Director of the US Army-funded Center of Excellence in Digital Forensics at Florida International University, Miami. He is also the Distinguished Chaired Professor at National Forensics Sciences University, Gandhinagar, India. He was awarded the 2023 Karnataka Rajyotsava Award (Karnataka State's 2nd Highest Civilian Award) on November 1st, 2023. He has been involved with research and education in high-performance intelligent systems, Data Science and Machine Learning Algorithms, Sensor Fusion, Data Mining, and Intelligent Systems. Since receiving his Ph.D. degree in 1974 from Missi. State Univ., USA, he has directed over 65 Ph.D. students, many number of postdocs, and many research undergraduate students who are now faculty at Major Universities worldwide or Scientists or Engineers at National Labs/Industries around the world. He has published more than 600 research papers, has authored/co-authored and edited 32 books and hold various patents. Over the lifetime, his work, Brooks-Iyengar Algorithm has over 5223 publication(s) within this topic and has received 138,976 citation(s). The topic is also known as: Brooks–Iyengar hybrid algorithm. His h-index is 67 and is identified among the top 2% cited scholars and world scientists (from Stanford University and EBMs of JSAN journal. The book titled "Fundamentals of Brooks-Iyengar Distributed Sensing Algorithm" authored by Prof. Pawel (Poland) and others and published by Springer in 2020 celebrates S.S. Iyengar's accomplishments that led to his 2019 Institute of Electrical and Electronics Engineers' (IEEE) Cybermatics Congress "Test of Time Award" for his work on creating Brooks-Iyengar Algorithm and its impact in advancing modern computing. His work has been featured on the cover of many scientific journals like IEEE transactions and the National Science Foundation's breakthrough technologies report to the US Congress by his research group in both 2014 and again in 2016.

He has served on many scientific committees and panels worldwide and has served as the editor/guest editor of various IEEE and ACM journals. His books are published by MIT Press, John Wiley and Sons, CRC Press, Prentice Hall, Springer Verlag, IEEE Computer Society Press, etc. One of his books titled "Introduction to Parallel Algorithms" has been translated into Chinese. During the last thirty years Dr. Iyengar has brought in over 65 million dollars for research and education. More recently in Spring 2021, Dr. Iyengar in collaboration with HBCUs were awarded a \$2.25 M funding for setting up a Digital Forensics Center of Excellence over a period of 5 years (2021-2026). He received an honorary Doctor of Science for 4 times and recently from Poznan University of Technology in Poland in May 2023. He has been awarded the Lifetime Achievement Award 3 times (INTERPOL, BHU, IEEE) and recently for his contribution to the for his contribution to the field of Digital Forensics on November 8, 2022, during the 7th INTERPOL DIGITAL FORENSICS EXPERT GROUP (DFEG) MEETING at National Forensics Sciences University, Gandhinagar, Gujarat, India. He has provided the students and faculty with a vision for active learning and collaboration at Jackson State University, Louisiana State University, Florida International University, and across the world.

Dr. Iyengar is a Member of the European Academy of Sciences, Member of the European Academy of Arts and Sciences, a Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the Association of Computing Machinery (ACM), a Fellow of the American Association for the Advancement of Science (AAAS), a Fellow of the Society for Design and Process Science (SDPS), a Fellow of the National Academy of Inventors (NAI), and a Fellow of the American Institute for Medical and Biological Engineering (AIMBE). He has received various national and international awards including the crowning Test of Time Research (for his seminal work which has impacted billions of computer and internet users worldwide) and Scholarly Contribution Award from 2019 IEEE Congress on Cybermatics, the distinguished Fulbright Scientist, the Times Network NRI (Non-Resident Indian) of the Year Award for 2017, IEEE Meritorious Service award, most distinguished CVR Award at the Society for Design and Process Science (SDPS 2017), Innovation-2-Industry Award, LSU Distinguished Rain Makers for Leadership and Research Award, World's Best Technology Showcase award, Technology Innovation Award Louisiana Tech University Research Foundation Inventor Award, Distinguished LSU Research Master Award, IBM Distinguished Faculty Award, and the NRI Mahatma Gandhi Pravasi Medal at the House of Lords in London in 2013 among others. He was awarded Satish Dhawan Chaired Professorship at IISc, then Roy Paul Daniel Professorship at LSU. He has received the Distinguished Alumnus Award of the Indian Institute of Science. In 1998, he was awarded the IEEE Computer Society's McCluskey Technical Achievement Award and is an IEEE Golden Core Member. Professor Iyengar is an IEEE Distinguished Visitor, SIAM Distinguished Lecturer, and ACM National Lecturer. In 2006, his paper entitled, A Fast-Parallel Thinning Algorithm for the Binary Image Skeletonization, was the most frequently read article in the month of January in the International Journal of High-Performance Computing Applications. His innovative work called the Brooks-Iyengar algorithm along with Professor Richard Brooks from Clemson University is applied in industries to solve real-world applications. Dr. Iyengar's work had a big impact; in 1988, when he and his colleagues discovered "NC algorithms for Recognizing ChordalGraphs and K-trees" [IEEE Trans. on Computers 1988]. This breakthrough result led to the extension of designing fast parallel algorithms by researchers like J. Naor (Stanford), M. Naor (Berkeley), and A. A. Schaffer (AT&T Bell Labs).

His research has been funded by National Science Foundation (NSF), Defense Advanced Research Projects Agency (DARPA), Multi-University Research Initiative (MURI Program), Office of Naval Research (ONR), Department of Energy / Oak Ridge National Laboratory (DOE/ORNL), Naval Research Laboratory (NRL), National Aeronautics and Space Administration (NASA), US Army Research Office (URO), and various state agencies and companies. He has served on US National Science Foundation and National Institute of Health Panels to review proposals in various aspects of Computational Science and has been involved as an external evaluator (ABET-accreditation) for several Computer Science and Engineering Departments across the country and the world. Dr. Iyengar has also served as a research proposal evaluator for the National Academy. Dr. Iyengar has been a Visiting Professor or Scientist at Oak Ridge National Laboratory, Jet Propulsion Laboratory, Naval Research Laboratory, and has been awarded the Satish Dhawan Visiting Chaired Professorship at the Indian Institute of Science, the Homi Bhabha Visiting Chaired Professor (IGCAR), and a professorship at the University of Paris-Sorbonne.

Abstract:

Artificial Intelligence (AI) is often viewed as a complex, almost mystical technology, but its core principles are more accessible than they may seem. In this talk, titled “De-mystifying Artificial Intelligence: From Concept to Reality,” we will uncover AI by exploring how it works, its evolution, and its profound impact on various industries. From understanding the basics of machine learning and neural networks to examining real-world applications in healthcare, finance and cybersecurity, this presentation will offer a comprehensive yet approachable look at AI. We'll also discuss the ethical implications and challenges that come with AI's rapid development, ensuring that we are not just spectators but active participants in shaping its future. Whether you are an AI novice or looking to deepen your knowledge, this talk promises to illuminate the power and potential of AI in today's world.

PAPER PRESENTATION SCHEDULE

DATE: 08.11.2024 SESSION 1 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	19	Leveraging Ensemble Deep Learning for Enhanced Brain Tumor Analysis: Integrating YOLOv8, Mask R-CNN, and U-Net	Suhas S (Reva University)
	2	32	Comprehensive Non-Intrusive Patient Monitoring System Using Advanced AI and ML	Lavanya Narayana (Dr Ambedkar Institute of Technology), Varshitha S (Dr Ambedkar Institute of Technology), Shilpitha Manmatti Manmatti (Dr Ambedkar Institute of Technology), Shirisha M (Dr Ambedkar Institute of Technology), Asharani K P (Dr. Ambedkar Institute of Technology), Dr. Gowrishankar S (Dr. Ambedkar Institute of Technology)
	3	37	Empowering Young Adults: The Impact of Soft Skills Ventured through XGBoost and SHAP Analysis	Angelina George (Amrita School of Computing, Bengaluru), Rahul Anand (Amrita Vishwa Vidyapeetham)
	4	59	An Overview of Computer Vision Techniques For Image Retrieval	Amit Vajpayee (Parul Institute of Engineering and Technology, Parul University, Gujarat), Palak Preet Kaur (Apex Institute of Technology, Chandigarh University, Mohali, Punjab, India), Ankit Sharma (Apex Institute of Technology, Chandigarh University, Mohali, Punjab, India), Sakshi Gill (Apex Institute of Technology, Chandigarh University, Mohali, India)
	5	61	From Pixels to Pain: The Silent Health Risk Associated with Electronic Device Use	Sanchita (Dayananda Sagar College of Engineering)
	6	76	Parser for TINY Language	Chikkala Durga Priya (Amrita Vishwa vidyapeetham), Chilukuri vikram raju (Amrita Vishwa Vidyapeetam), Anguluri Issac Daniel (Amrita Vishwa Vidyapeetham), Rishik Patel Gandla (Amrita Vishwa Vidyapeetham), Meena Belwal (Amrita School of Engineering)
	7	78	Context Aware Recommendation System Using LLM	Asritha Veeramaneni (Amrita School of Computing), Venkata Chandra Madhav Kagolanu (Amrita School of Computing), Sai Vivek

Co-Chair: Dr. Usha J, Professor, Dept. of MCA, RVCE				Vinnakota (Amrita School of Computing), Meena Belwal (Amrita School of Engineering), Sangita Khare (Amrita Engineering College)
	8	79	Pseudocode to Python - A Compiler Approach	Sumanth Reddy Nara (Amrita Vishwa Vidyapeetham), Pothineni Syam Prasad (Amrita Vishwa Vidyapeetham), Mokshith P (Amrita Vishwa Vidyapeetham), Meena Belwal (Amrita School of Engineering)
	9	899	VisualDiet: Revolutionizing Dietary Tracking with Cutting-Edge Computer Vision	Soumya C S (MS Ramaiah Institute of Technology)

FACULTY COORDINATOR: Prof. Rashmi R, Dept. of ISE

DATE: 08.11.2024 SESSION 2 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	83	Adding constructs to 'C' through Flex and Bison	Yeshwanth N Reddy (Amrita School of Engineering), Nachiketh Arroju (Amrita School of Engineering), Nallabothula Vamsi (Amrita School of Engineering), Meena Belwal (Amrita School of Engineering)
	2	86	Multi-Modal Emotion Detection Using Deep Learning Techniques	Nishita Eeralli Prakash (PES University), Rashmi K R (PES University), Dr. Jayashree R (PES University), Arundhati Sitharam (PES University)
	3	97	Advancing Image Forgery Detection: A CNN-Based Approach	Nalini N (NMIT Bengaluru)
	4	108	Elevating Text Summarization: Mastering Precision with the Fine-Tuned PEGASUS Model	Nalini N (NMIT Bengaluru)
	5	121	Synergistic Integration of Q-Learning and Genetic Algorithm for Enhanced Gameplay Performance in the Snake Game	A Mamatha (Ramaiah Institute of Technology)
	6	122	Synergistic Approaches to Credit Scoring: Enhancing Predictive Performance with Attention	A Mamatha (Ramaiah Institute of Technology)

Chair:
Mr. Suresh
Vishwanathan,

Senior Engineer, Juniper Networks Co-Chair: Dr. Minal Moharir, Professor, Dept. of CSE, RVCE			Mechanisms and Ensemble Learning	
	7	227	AI Sentries: Evaluating Machine Learning Models for Superior Phishing Email Detection	Sahit S (BNM Institute of Technology), Vaishnavi S (BNM Institute of Technology), Vaibhav Reddy (BNM Institute of Technology), Chaitra M (BNM Institute of Technology)
FACULTY COORDINATOR: Prof. Swetha S, Dept. of ISE				
DATE: 08.11.2024 SESSION 3 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM Venue: CHEMICAL SEMINAR HALL	1	143	An Automated Alert System for Financial Fraud Detection with Learning Based Models	Mallanagouda Patil (RV Institute of Technology and Management), Aishwarya G (RV Institute of Technology and Management), Anukriti Sharma (RV Institute of Technology and Management), Malini M Patil (RV Institute of technology and Management), Deepak N A (RV Institute of technology and Management), Padmasree N (RV Institute of Technology and Management)
	2	154	Optimizing Automatic Speaker Recognition with Feature Fusion and Machine Learning Models: Insights and Performance Metrics	Navya A (Jain University), M N Nachappa (Jain University)
	3	157	Weather monitoring for curating Cricket pitches using Machine Learning and Arduino	Dr Gurupriya M (Amrita School Of Computing, Amritavishwa Vidyapeetham)*; Thangam S (Amrita School Of Computing)
	4	160	Personal Finance Management and Prediction using ML Algorithms	Sujay G Kaushik (BNM Institute of Technology), Sumukha S Kashyap (BNM Institute of Technology), Surabhi B V (BNM Institute of Technology), Chaitra M (BNM Institute of Technology), Santhosh

Chair: Dr. Geetha V, Associate Professor, Ramaiah Institute of Technology,				Reddy (BNM Institute of Technology), Anitha N (BNM Institute of Technology)
	5	190	Migration of GPU Applications from CUDA to SYCL Programming Model	Yogesh Narayan Gaur (Amrita Vishwa Vidyapeetham)
	6	221	An Assessment of Neural Network Efficacy in Hospital Readmission Prediction for Diabetic Patients	Atharv Revankar (PES University), Akshay Hegde (PES University), Lakshmi Snigdha Paladugula (PES University), Prarthana P Rajapurohit (PES University), Srinivas K S (PES University)
	7	224	Active Learning for Training Datasets	Vaishnavi Athrey (RV College of Engineering), Anala M R (RV College of Engineering), Aritra Raychaudhuri (RV College of Engineering)
FACULTY COORDINATOR: Dr. Jagadish Patil, Dept. of Chemical Engineering.				
DATE: 08.11.2024 SESSION 4 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	138	Intelligent Conversational AI for Microsoft Teams with Actionable Insights	Deena D (MS Ramaiah Institute of Technology), Chandrika C P (MS Ramaiah Institute of Technology)
	2	238	Breast Cancer Classification using Logistic Regression: An Efficient and Scalable Approach	Dr. Sangeetha V (MS Ramaiah Institute of Technology)
	3	251	Advanced Time Series Models for Predictive Modelling and Early Detection of SFP Failures	Bhuvan Vijay Kumar (PES University), Ruchitha V V S (PES University), Balakrishna Dichitha (PES University), Avanish Shenoy (PES University), Pranav Ambiga (PES University), Ranganath Prabhu VV (Hewlett Packard Enterprise)
	4	266	Hate Speech Detection using Deep Learning models	Shreyas S (PES University), Saathwick R Shankar (PES University), Vikas S Vathsal (PES University)
Chair: Dr Smitha Shekar Associate Professor, Department of CSE	5	292	Multi-Modal Sentiment Analysis for Product Reviews Incorporating Text and Image Data	J Biju (Bannari Amman Institute of Technology)
	6	314	Developing a Virtual Diagnosis and Health	Rajpurohit Shivani (student), Anjali Patel (student)

<p>Dr Ambedkar Institute of Technology,</p> <p>Co-Chair: Dr. Jasmine K S , Associate Professor, Dept. of MCA, RVCE</p>			Assistant Chatbot Leveraging LLaMA3	
	7	315	Neural Network Prediction of Stress Concentration Factors for r/d Ratios for various Cavity dimensions on Round Sleeve Automotive Terminals	Gourav Vivek Kulkarni (RV College of Engineering), Ramesh Sharma (RV College of Engineering)
	8	321	Exploring Compiler Optimization: A Survey of ML, DL and RL Techniques	Mithul Chevireddy (Amrita Vishwa Vidyapeetham), Hari Virinchi Manneppalli (Amrita Vishwa Vidyapeetham), Mohammad Abdulla Doodakula (Amrita Vishwa Vidyapeetham), Meena Belwal (Amrita School of Engineering), Sathvik Maddi (Amrita School of Engineering)

FACULTY COORDINATOR: Dr. Usha Padma, Dept. of TCE

DATE: 08.11.2024 SESSION 5 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
<p>Time: 02:00-05:00 PM</p> <p>Venue: ISE 110</p> <p>Chair: Dr. Mallanagouda Patil Associate Professor, Department of CSE RV Institute of Technology and Management</p> <p>Co-Chair:</p>	1	329	Fake Instagram Profile Detection	Asha P Bhat (BNM Institute of Technology), Chaitra M (BNM Institute of Technology), Dr. Anitha N (BNM Institute of Technology)
	2	351	Impact of Human-in-the-loop paradigm in AI labelling and Annotation	Meeth Davda (RV College of Engineering), Dr. Sindhu D V (RV College of Engineering)
	3	354	A Next-Gen Approach to Streamlined Canteen Management Systems using Mesa Framework	Manju Khanna (Amrita College of Engineering), Anantha Hothri (Amrita Vishwa Vidyapeetham), Advik Narendran (Amrita Vishwa Vidyapeetham), Srinidhi Sundaram (Amrita Vishwa Vidhyapeetham), Yashaswini Manyam (Amrita Vishwa Vidhyapeetam)
	4	359	Prediction of Liver Cirrhosis and Analysis	Vibha MC (Bangalore Institute of Technology), Kruthika K Bhat (Bangalore Institute of Technology), Shobha O Y (Bangalore Institute of Technology)
	5	368	Exploration of Explainable Deep Learning Model for Early Detection of Alzheimer's Disease	Shukla R Vernekar (BMS College of Engineering), Selva Kumar S (BMS College of Engineering)
	6	371	AI Legal Assistant for IPC	Kaushik Kumar Sarma (Bangalore Institute of Technology), Ayush

Dr. Shantha Rangaswamy, Professor, Dept. of CSE, RVCE				Dutta (Bangalore Institute of Technology)
	7	916	Analyzing and Visualizing Causes of Poverty in India	Skanda P R (RV College of Engineering)
FACULTY COORDINATOR: Dr. Sindhu D V, Dept. of CSE				
DATE: 08.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 6 TRACK: Quantum Mechanics & Photonics				
Time: 02:00-05:00 PM	1	102	Public Key Security for Quantum Key Distribution	Mamatha G S (RV College of Engineering), Aneesh Adiga (RV College of Engineering), Chaithanya Ganesh (RV College of Engineering)
	2	284	Enhancing Differential Privacy in Federated Learning via Quantum Computation and Algorithms	Yash Gupta (MS Ramaiah Institute of Technology)
	3	370	Parallelized Clustering-Based Optimization for CVRP: Leveraging Quantum Computing and GPU Acceleration	Arfaat Mustak Tamboli (MS Ramaiah Institute of Technology)
	4	572	Innovative Approach to High-Performance Multiplier Design: Inexact Signed Wallace Tree Multiplier Utilizing Reversible Logic	Sudha K.L. (DSCE), Nandini S M (Dayananda Sagar College of Engineering)
	5	634	Quantum Algorithmic Approaches to Protein Folding: A Comprehensive Study of Diverse Lattice Structures	Nishanth Sarode (RV College of Engineering), Dr. Venugopal K (RV College of Engineering), Anagha Muralidharan (RV College of Engineering), Cherishma Subhasa (R V College of Engineering), Pranay Prasad (RV College of Engineering)
	6	833	Exploring the Synergy of Quantum Encryption and Light Fidelity for Secure Data Transmission	Smruthi S Kadagadkai (RV College of Engineering), Pranav V Jambur (RV College of Engineering), Aayushh K P Naik (RV College of Engineering)

Co-Chair: Dr. K. Sreelakshmi Professor and Head, Telecom Department, RVCE				
	7	317	Enhancing Chatter Resistance in Deep Hole Boring Through Modified Tool Design: A Study on impact of Length-to-Diameter (L/D) Ratio	Gopalakrishna H D (RV College of Engineering); Shraddha A (RV College of Engineering), Gourav V Kulkarni (RV College of Engineering)
	8	624	NiS/MWCNT-based supercapacitor for efficient energy storage	Shwetha K P (RV college of Engineering), Sudha Kamath (RV College of Engineering), Manjunatha C (RV College of Engineering)

FACULTY COORDINATOR: Dr. Vinutha Moses, Dept. of Chemical Engg

DATE: 08.11.2024 SESSION 7 TRACK: Computational Analysis & Autonomous Vehicles	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	109	A Novel Approach To Advancing Drowsiness Detection Using Headangle And Eye-Aspect Ratio	Dr. Shashidhar V (Rajarajeswari College of Engineering), Dr. RAJESH K S (Rajarajeswari College of Engineering)
	2	276	Optimizing Spatial Efficiency through Velocity-Responsive Controller in Vehicle Platooning	Hemanth Kumar G (REVA University)
	3	477	Secure Boot Implementation in Automotive Electronic Control Unit	Alaska Tengli (RV College of Engineering), Rohini S. Hallikar (RV College of Engineering)
	4	520	DEVELOPMENT OF DATA SECURITY ALGORITHMS IN V2V COMMUNICATION	Akash (RV College of Engineering); Sujata D Badiger (RV College of Engineering)
	5	683	Modelling and Simulation of Helicopter Swashplate Collective Control Response in UAV Applications	Vishal Hugar (RV College of Engineering), Pratik B Matt (RV College of Engineering), Chyawan Chandrashekhar (RV College of Engineering), Keshav M (RV College of Engineering)

Chair: Dr.Dawnee,Associate Professor, Department of Electrical and Electronics Engineering, MSRIT	6	128	Search Engine Optimization (SEO) Auditing Tool	Nischal V Pattedar (Amrita Vishwa Vidyapeetham), Yoshitha Chunduri (Amrita Vishwa Vidyapeetham), Jayarama Krishna A (Amrita Vishwa Vidyapeetham), G. Vishwa Prakshini (Amrita Vishwa Vidyapeetham), Ullas S (Amrita Vishwa Vidyapeetham), Vineetha K V (Amrita Vishwa Vidyapeetham)
	7	247	SmartSort Visualizer: Interactive Tool for Optimal Data Sorting and Algorithm Recommendation	Shilpita Vankayala (Amrita Vishwa Vidyapeetham), Harsda Shrivastava (Amrita Vishwa Vidyapeetham), Jiya Borikar (Amrita Vishwa Vidyapeetham), Lohitha Kanisettypalli (Amrita Vishwa Vidyapeetham)
	8	277	Deep Mole Skin Cancer Detection Using Convolutional Neural Network (CNN) Model	Naveen Kumar A (JSS Academy of Technical Education), Megha S A (JSS Academy of Technical Education)

FACULTY COORDINATOR: Dr. Ratna Pal, Dept. of Mechanical Engg.				
DATE: 08.11.2024 SESSION 8 TRACK: Next Generation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM Venue: ISE 304 Chair: Dr. Rajani V H, Professor, ECE, RNSIT. Co-Chair: Dr. Mahesh A, Associate Professor, Dept. Of ECE, RVCE	1	119	A Novel Approach to Feature Extraction in MI – Based BCI Systems	Arun Kumar S (Presidency University)
	2	129	Blockchain-based Communicator with Multicast Transmission	Praanesh B Nair (Amrita Vishwa Vidyapeetham), Varun Adhitya G B (Amrita Vishwa Vidyapeetham Bengaluru), Vineetha K V (Amrita Vishwa Vidyapeetham), Ullas S (Amrita Vishwa Vidyapeetham)
	3	197	Bi-Critical Reinforcement Learning Framework for Bit Rate Reduction and Quality Improvisation	Sandeepa G S (RV College of Engineering)
	4	250	Integration of SDN and ML Techniques for Detection and Prevention of DDoS Attacks	Santhosh M (Anna University), Harini V K (Anna University), Pooja Saravanan (Anna University), Jeyalakshmi V (Anna University)
	5	261	A Comprehensive Study of Virtual Reality (VR) In Defense Combat Training	Prathamesh M Hiremath (RV College of Engineering), Saravanan C (RV College of Engineering)
	6	402	Implementation of Land Registry System using Ethereum Blockchain and IPFS	Nithin Chandru (BMS College of Engineering), Niranjan Savanur (BMS College of Engineering), Asha G R (BMS College of Engineering), Vijayeshjeevan Matam (BMS College of Engineering)

FACULTY COORDINATOR: Dr. Vidya C, Dept. of Chemical Engineering.

DATE: 08.11.2024 SESSION 9 TRACK: Next Generation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	442	Multi-objective test case generation and prioritization using generative AI for ASIC verification	Phani Kumar Pullela (RV University)
	2	489	DApp for Exploring Blockchain's Utility for Agricultural Data	Anirudh Sai Poturi (RV College of Engineering), Nitya P Mohare (RV College of Engineering), Prarthana P Kulkarni (RV College of

Venue: ISE 106A Chair: Dr AM Vijaya Prakash, Professor, Department of VLSI, BIT. Co-Chair: Dr. Nagaraju P, Associate Professor, Dept. Of ETE, RVCE				Engineering), Niranjana R N (RV College of Engineering), Amulya Vinathi M (RV College of Engineering), Shweta Babuprasad (RV College of Engineering)
	3	517	A Comprehensive Framework for Network Traffic Analysis and Prediction Using Synthetic Data, Machine Learning, and Interactive Visualization	Amogh J Athreya (RV college of Engineering), Aditya Manjunatha (RV College of Engineering), Kiran V (RV College of Engineering)
	4	576	Performance Evaluation of Lens types for Scan and Gain Enhancement	Anju G Chavan (RV College of Engineering), Mahesh Appajappa (RV College of Engineering), Manoj M Acharya (RV College of Engineering)
	5	662	Access Point Management Using Java Based Microservice	Manoj Bhat (RV College of Engineering), Vishalakshi H Prabhu (RV College of Engineering)
	6	669	Design and Development of a Chrono-Controller using Synopsys Verdi Tool	Nidhi R Singh (RV College of Engineering), Govinda Raju M (RV College of Engineering)
	7	863	Deploying Multiple EV Fast Charging Stations in IEEE 33-Bus System Using Evolutionary Computation Technique	DR.SWETHA G (RR INSTITUTE OF TECHNOLOGY)*

FACULTY COORDINATOR: Dr. Veena Gadad, Dept. of CSE

DATE: 08.11.2024 SESSION 10 TRACK: Digital Transformation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	10	Ethical and Privacy Implications of Augmented Reality	Pranjali Gupta (Dayananda Sagar College of Engineering)
	2	26	TripleACrypt: Cryptography and Steganography for the Preservation of Ancient Discoveries	Angelina George (Amrita School of Computing), Ashik F (Amrita Vishwa Vidyapeetham), Alphonsa Jose (Amrita Vishwa Vidyapeetham), Kavitha C R (Amrita Vishwa Vidyapeetham)

Venue: ISE 112B Chair: Dr. M. Rajesh, Associate Professor, Department of IEM, MSRIT. Co-Chair: Dr Narahari N S, Professor, Dept. of IEM, RVCE	3	84	Blockchain Technology in Agriculture	Hari Ram Deep Reddy (Amrita School of Computing), Ashwin Kottath Veedu (Amrita School of Computing), Beena B M (Amrita School of Computing)
	4	101	Finance-In-Focus: Mastering Financial Basics through Online Learning	Sriya Surya Sai Lanka (B V Raju Institute of Technology), Siri Rao Velumula (B V Raju Institute of Technology), Bhavani Varikuppala (B V Raju Institute of Technology), Mohith Raja Reddy Vajrala (B V Raju Institute of Technology)
	5	139	Design and development of IoT based smart sericulture plant	Uttara Kumari M (RV College of Engineering), Pratham Gowtham (RV College of Engineering), Shreyas S (RV College of Engineering), Pavan Kumar C Banasode (RV College of Engineering), Pradyumna S Athreya (RV College of Engineering)
	6	219	Predictive Analytics and AI in Logistics: Driving Operational Excellence and Cost Reduction	Suraj P (PES College of Engineering), Prathiksha P Shetty (PES College of Engineering), Suhas B E (PES college of Engineering), Pranav H H M (PES College of Engineering)
	7	220	Digital Transformation in Banking and Financial Sector	Pavandeep Kaur (Chandigarh University), Ankit Sharma (Apex Institute of Technology)
	8	234	Search Listing Prioritization: Ordering Search Results Based on User Ratings	Ananya Subramanian (Amrita Vishwa Vidyapeetham), Raimee Shukla (Amrita Vishwa Vidyapeetham), Tirupathi Nikhitha (Amrita Vishwa Vidyapeetham), Rugmini Krishna (Amrita Vishwa Vidyapeetham), Vineetha K V (Amrita Vishwa Vidyapeetham), Ullas S (Amrita Vishwa Vidyapeetham)
FACULTY COORDINATOR: Dr Manjula Sarode, Dept of Chemical Engg..				

DATE: 08.11.2024 SESSION 11 TRACK: Digital Transformation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	279	Student Exchange Emporium: Promoting Sustainability and Community Collaboration	Usha Co J (RV College of Engineering), Anjali Singh (RV College of Engineering)
	2	282	An Approach to Intelligent Information	Raghav Joshi (Bangalore Institute of Technology), Yash Bubna

Venue: ISE 109 Chair: Dr K.T.Ramesh, Associate Professor, Dept of IEM, BMSCE Co-Chair: Dr Ramaa A, Associate Professor, Dept of IEM, RVCE			Extraction and Utilization from Diverse Documents	(Bangalore Institute of Technology), Sahana M (Bangalore Institute of Technology), Shruthiba A (Bangalore Institute of Technology)
	3	349	Resume Parser and Job Description Matcher	Spandana Kamkar (BNM Institute of Technology), Srushti Sanjay (BNM Institute of Technology), Vaishnavi P S (BNM Institute of Technology), Chaitra M (BNM Institute of Technology)
	4	438	Youtube comment summarizer and post content analysis	Aneesh Adiga (RV College Of Engineering), Chaithanya Ganesh (RV College of Engineering), Anish S (RV College of Engineering), Abhin Divakar V K (RV College of Engineering)
	5	446	Development of Digital Twin Framework for Design of Channapatna Handicraft Toys in the Digital Era	Meghasree V (RV College of Engineering), Dr C K Nagendra Guptha (RV College of Engineering)
	6	496	Decentralized Document Storage with NFT Authentication using Blockchain technology	Yashasvi Sorapalli (RV College of Engineering), Meeth Davda (RV College of Engineering), Aaryan Guglani (RV College of Engineering), Akshat Gada (RV College of Engineering), Rahul Roy (RV College of Engineering), Deepamala N (RV College of Engineering), Shobha G (RV College of Engineering)
	7	511	Development of an Integrated Framework for Quality & Reliability across the Supply Chain	Phani Kumar Pullela (RV University)
	FACULTY COORDINATOR: Dr. Roopa T S, Dept. of Mech Engg.			

DATE: 08.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 12 TRACK: Cyber Physical Systems Time: 02:00-05:00 PM	1	20	Improving Cyberbullying Detection Accuracy with Advanced Machine Learning Models	Vanitha K (Karpagam Academy of Higher Education)
	2	23	Multifactor Authentication using Blockchain in 6G	Anusha Khot (RV College of Engineering)

Venue: ISE 106B Chair: Dr. Shilpa Choudhari, Professor, Dept of CSE, MSRIT Co-Chair: Dr. K. Nagamani Professor, Department of ETE, RVCE	3	107	Enhancing Decentralized Finance for Scalability, Interoperability, and User Experience	Nalini N (NMIT Bengaluru)
	4	135	Enumeration and Post-Enumeration Attack on Active Directory and Their Detection Using Log correlation method	Meghana K (MS Ramaiah Institute of Technology), Shankaramma V Malige (MS Ramaiah Institute of Technology), Thippeswamy M.N (MSRIT), Anu S M (MS Ramaiah Institute of Technology), Chaithra M (MS Ramaiah Institute of Technology), Nagamani N (MS Ramaiah Institute of Technology)
	5	232	Lightweight Strobe Security Libdisco Scheme for IoT-Based Sensor data	Mohammedmujeer Ulla (Presidency University), Dr. Preethi (Manipal Institute of Technology, Mahe), Sameeruddhin Khan (Presidency University), Shakkeera L (Presidency University), Sunitha B J (Presidency University)
	6	242	A Novel Approach for Building Cyber Crime Prediction and Analysis Model using Random Forest	Akshaya R (RV College of Engineering), Saravanan C (RV College of Engineering), Divya T L (RV College of Engineering)
	7	254	Integration of Blockchain Technology and Machine Learning in Online Secure Banking System	Victoria Angelina Paul (RV College of Engineering), Poornima Kulkarni (RV College of Engineering)

FACULTY COORDINATOR: Dr. Shobha N S, Dept. of IEM

DATE: 08.11.2024 SESSION 13 TRACK: Cyber Physical Systems	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	325	Deep Neural Network Approach on Phishing Websites Detection, Identification and Proactive Prevention	Pallavi Joshi (Amrita Vishwa Vidyapeetam), Soundarya K (Amrita Vishwa Vidyapeetham), Siddaraju H S (Amrita Vishwa Vidyapeetham), Hitesh Tekchandani (KLEF Hyderabad), Navodit Bhardwaj (Bosch Global Software Technologies), Pooja Dr. Rani (Texas A&M Commerce)
	2	346	AI-Driven Zero Trust Architecture: Enhancing Cyber-Security Resilience	Vanitha K (Karpagam Academy of Higher Education)

Venue: ECE SEMINAR HALL Chair: Dr. Rajeshwari Hegde Professor BMS College of Engineering Bengaluru Co-Chair: Dr. H V Kumaraswamy Professor, ETE Department, RVCE	3	365	ConfigMaster: An interactive solution for system management	Divya K V (Amrita Vishwa Vidyapeetham), Ananya Ganapathi (Amrita Vishwa Vidyapeetham), Parikshith Sivakumar (Amrita Vishwa Vidyapeetham), Aditya Elango (Amrita Vishwa Vidyapeetham), Hardik Gupta (Amrita Vishwa Vidyapeetham)
	4	372	Ensuring Secure Cloud Communication with MedTech Devices Using a Public Key Infrastructure	Harshitha Krishna Prasad (The Oxford College of Engineering), Hitesh S (The Oxford College of Engineering), Mamatha K R (BMS Institute of Technology and Management), Praagnya Parimi (PES University, Electronic City Campus), Sandip Kumar Roy (S P Jain School of Global Management), Preeta Sharan (The Oxford College of Engineering)
	5	391	Leveraging IPFS and Smart Contracts for Secure File Collaboration	A Mamatha (MS Ramaiah Institute of Technology), Akshatha Kamath (MS Ramaiah Institute of Technology)
	6	427	Developing a Virtual Diagnosis and Health Assistant Chatbot Leveraging Real-Time Task Manager: A Python-Based Approach Using Psutil and Tkinter	Divya K V (Amrita Vishwa Vidyapeetham), K Karthik (Amrita Vishwa Vidyapeetham), K Bhargav Prasad (Amrita Vishwa Vidyapeetham), P Charan Sai (Amrita Vishwa Vidyapeetham), C Venkata Sai Pranav (Amrita Vishwa Vidyapeetham)
	7	523	Framework Analysis and Zero Trust Security Issues in Contemporary Network Systems	Nagaraja G S (RV College of Engineering), Shankaramma V Malige (MS Ramaiah Institute of Technology)
	8	526	Malware Classification Using XGBoost and Genetic Algorithm for Hyperparameter Tuning	Usha Divakarla (NMAM Institute of Technology), Chandrasekaran K (NITK), Harish S V (Manipal Institute of Technology), Pooja G Kanal (NITK), Shalini C (NITK)

FACULTY COORDINATOR: Dr. Sahana B, Dept. of ECE

DATE: 08.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
TRACK: Bio Medical Electronics	1	12	A Robust Model for Early Detection and Diagnosis of Breast Cancer using Linear Discriminant Analysis.	Somya Ranjan Sahoo (Vitap University)

Time: 02:00-05:00 PM Venue: MCA 005 Chair: Dr. Krushna swamy, Associate Professor, Dept. Of EIE, Dayananda Sagar College of Engineering Co-Chair: Dr. K B Ramesh, Associate Professor, Dept.of EIE	2	131	Computational Modelling of Lifestyle-Driven Mental Health Disorders: Gender-Based Insights	Manjunatha AH Reddy (RV College of Engineering), Prarthana A (RV College of Engineering), Subramanya K N (RV College of Engineering), Jagadish A (Abhaya Hospital, Wilson Garden, Bengaluru), Sumathra Manokaran (RV College of Engineering)
	3	202	Automated Multiclass Classification for Ocular Disease Diagnosis using Deep Learning	Rajatha K (RV College of Engineering), Savitri Kulkarni (RV College of Engineering)
	4	233	Level Up ASD (Autistic Spectrum Disorder)- Interactive Learning for Autistic Children	Ashwin Varier (Amrita Vishwa Vidyapeetham), Navdeep Malik (Amrita Vishwa Vidyapeetham), Khushi Kumari (Amrita Vishwa Vidyapeetham), Nandana Gireesh (Amrita Vishwa Vidyapeetham), Vineetha K V (Amrita Vishwa Vidyapeetham), Ullas S (Amrita Vishwa Vidyapeetham)
	5	274	EfficientNetB7-Based Deep Learning for Skin Lesion Classification	Shreya Ramesh (BNM Institute of Technology), Yuktha B N (BNM Institute of Technology), Chaitra M (BNM Institute of Technology), Santosh Reddy P (BNM Institute of Technology), Anitha N (BNM Institute of Technology)
	6	281	Non-Invasive Wearable Glove for Parkinson's Patient	Saranya G (Rajalakshmi Engineering College), Augustine Fletcher (SRM Institute of Science and Technology), Dr. Murugapandiyar P (Anil Neerukonda Institute of Technology and Sciences), Indhumathi G (Rajalakshmi Engineering College), Naveenkumar R (Sri Krishna College of Technology)
	7	290	Mechanical Analysis and Optimization of a Compliant Mechanism Prosthetic Finger Design	Jyosha Kumar Ratakonda (Amrita Vishwa Vidyapeetham), Vishnu Raj (Amrita Vishwa Vidyapeetham), Ganesh Udupa (Amrita Vishwa Vidyapeetham), Dr. Anand R (Amrita University)
	FACULTY COORDINATOR: Dr. Tabitha Janumala, Dept. of EIE			
DATE: 08.11.2024	SL NO.	PAPE RID	PAPER TITLE	AUTHOR NAME
SESSION 15 TRACK: Bio Medical Electronics				

Time: 02:00-05:00 PM Venue: MCA SEMINAR HALL Chair: Dr.Manisha Joshi, Professor and HoD, Dept.of Medical Electronics, BMSCE	1	332	Machine Learning (IQ tree 2) Integrated Phylogenetic Assessment Studies of Avian Influenza Virus A (H5N1) Considering Polymerase Basic Protein 1 (PB-1) Sequences	M.S. Upamanyu (REVA University), Preetham R S (REVA University), Ravi R B Varma (RV College of Engineering), I M Umesh (RV College of Engineering), R S Upendra (REVA University), Karthik Rajendra (REVA University)
	2	413	Robust Brain Tumor Classification of MRI Images Using Deep Learning via InceptionResNetV2	Dr. Mohana (RV College of Engineering), Rahul Patnaik (RV College of Engineering), Noel Shaji Mathew (RV College of Engineering), Muhammad Ammar Siddiqui (RV College of Engineering), Dr. P. Ramakanth Kumar (RV College of Engineering), Geetha KS (RV College of Engineering)
	3	420	Real-Time Food Detection and Nutritional Tracking Application for Personalized Health Management Using MobileNetV2	Divyabhavani Ganpisetty (RV Institute of Technology and Management)
	4	500	OcularInsight – VGG16 Powered Multilabel Disease Detection	Rishabh Srinivas Ramesh (MS Ramaiah Institute of Technology), Priya K (MS Ramaiah Institute of Technology), Akshatha Kamath (MS Ramaiah Institute of Technology)
	5	504	Design and testing of myoelectric control with swappable end-effector for prosthetic hand	Vishnu Raj (Amrita Vishwa Vidyapeetham), Anikesh Rajendran (Amrita Vishwa Vidyapeetham), Bhavana Baby Gudluru (Amrita Vishwa Vidyapeetham), Dr. Anand R (Amrita University), J Ramprabhakar (Amrita Vishwa Vidyapeetham), Ganesh Udupa (Amrita Vishwa Vidyapeetham)
	6	534	NLP Enabled Autonomous Indoor Navigation Robot for Kannada in RHCs	Kunal A Kathare (Samsung R&D Institute - Bengaluru), Kushal CG (PES University), Kevin Philip Kottukapally (PES University), Kshitij Sharma (PES University), Vadiraja Acharya (PES University)
	7	549	SMARTSIGHT: ANDROID-BASED RETINAL DISEASE DETECTION USING RETINAL FUNDUS IMAGES WITH XAI	Manisha Bagewadi (Basaveshwar Engineering College Bagalkot); bharati reshmi (Basaveshwara Engineering College Bagalkot); Nagaraj B Kalligudd (Basaveshwar Engineering College Bagalkot); krutika S Badiger (Basaveshwar Engineering college); Sakshi

				Sonagaj (Basaveshwara Engineering college); Sindurani Giraddi (Basaveshwara Engineering College Bagalkot)
FACULTY COORDINATOR: Dr. Deepashree Devraj, Dept. of EIE				
DATE: 08.11.2024 SESSION 16 TRACK: Online Track 1	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 02:00-05:00 PM Venue: ISE WiC CoE Lab Chair : Dr. Poornima G. Professor, BMS College of Engineering Bengaluru	1	62	Machine Learning Driven Routing Optimization for Named Data Networking in Mobile Adhoc Network	K. Manivannan (VSB Engineering College), P Arockia Mary (VSB Engineering College), R E Franklin Jino (VSB Engineering College), P Dineshkumar (VSB Engineering College), M S Harivisva (VSB Engineering College), P Harikrishnan (VSB Engineering College), B Gokulakrishnan (VSB Engineering College)
	2	258	Utilization of Glass Powder and Eggshell Powder as Fine Aggregate in Making Bricks	Rahul S Gowda (RV College of Engineering), Radha Krishna (RV College of Engineering)
	3	304	Breast Cancer Survival Prediction Using Gene Sequence Data-Machine Learning Methods	Vijaya Lakshmi (B V Raju Institute of Technology), Neha Reddy Dasari (B V Raju Institute of Technology), Dasari Tejashwini (B V Raju Institute of Technology)
	4	404	MRI and CT scan Images Quality Enhancement Using Generative Adversarial Network	Akshi Jain (Chandigarh University), Madan Lal Saini (Chandigarh University)
	5	501	Optimizing Multilayer Perceptron Classifiers for Predictive Heart Disease Diagnosis: A Hyperparameter Tuning Approach	Anvitha Vadlamudi (Vellore Institute of Technology)
	6	748	Optimizing Energy Efficiency in 5G Networks: Integrating Multi-Packet Reception with Reinforcement Learning and Genetic Algorithms	Arun V (SRM Institute of Science & Technology)
	7	760	State-of-the-Art Deep Learning Strategies for Multi-Label Classification of Chest	Kartik V Patil (KLE Technological University), Nagaratna V Yaligar (KLE Technological University), Sharon G (KLE Technological

Co-Chair: Dr. Andhe Dharani, Professor & Director, MCA, RVCE			X-Ray Thoracic Disorders	University), Prajwal Kulkarni (KLE Technological University), Pratapkumar Bhajantri (KLE Technological University), Hrishikesh M Tubachi (KLE Technological University)
	8	836	A Comparative Study of Ensemble Learning Models for Accurate Solar Irradiance Forecasting	Aditya Rajkumar Joshi (Trinity College of Engineering & Research, Pune), Tejaram Chaudhari (Trinity College of Engineering and Research)
	9	911	Integrating Cypress Testing with Web Interfaces in Cyber-Physical Systems	Jasmine K S (RV College of Engineering), Savitha R Iyer (RV College of Engineering), Prajna R Bhat (RV College of Engineering)
	10	933	Enhancing Postal Convenience and Security IoT-Enabled Smart Postboxes and Delivery Lockers using Cloud Computing	Srinivasan Chelliah (Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Saveetha University)

FACULTY COORDINATOR: Dr.Somesh Nandi, Dept.of AI and ML

DATE: 08.11.2024 SESSION 17 TRACK: Online Track 2	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	40	AudioFacialMatrix: Dataset for Voice and Face AI	Rahul Singh, Rita Singh
	2	133	Emporium: A second hand product marketplace assistant mobile application with shop reliability check, shop search, product swap, helpdesk facilities	Mahfuzulhoq Chowdhury (Chittagong University of Engineering & Technology), Estiak Ahmed Sazid (CUET, Chittagong University of Engineering and technology), MD. Shafiqul Hasan (CUET, Chittagong University of Engineering and Technology)
	3	134	Labour Care: A Garment Worker Assistance Mobile Application with Work Environment Checking, Employment, Leave Apply, Legal Aid Facilities	Mahfuzulhoq Chowdhury (Chittagong University of Engineering & Technology), MD. Shimul Mahmud (CUET, Chittagong University of Engineering and Technology), Shah Alam (CUET, Chittagong University of Engineering and Technology)
	4	226	Whistle Blower: An insurance awareness mobile application with insurance policy selection, fraud	Mahfuzulhoq Chowdhury (Chittagong University of Engineering & Technology), Kazi Md. Tawsif Rahman (CUET, Chittagong University of Engineering and Technology),

Venue: ISE VC CoC Lab			detection, critical help, complaint features	Hossain Ahmad Maruf (CUET, Chittagong University of Engineering and Technology)
	5	336	Military Aircraft Detection from Optical Satellite Images using Convolutional Neural Networks	Tejaswini Kalahasti Kalahasti (Velagapudi Ramakrishna Siddhartha Engineering College), Manvitha Sri Kotturu (Velagapudi Ramakrishna Siddhartha Engineering College), Vasavi Movva (Velagapudi Ramakrishna Siddhartha Engineering College)
	6	480	Detecting Gene Sequence of Recurrence Cervical Cancer Interpolating Biomedical Sensors	Geetha S (M Kumarasamy College of Engineering), Ananth S (Mahendra Engineering College), Renuka Siva (M Kumarasamy College of Engineering), Mekala Ramesh (M Kumarasamy College of Engineering), Anitha K (M Kumarasamy College of Engineering), Sowmiya R (S A Engineering College)
	7	676	Optimizing Renewable Energy Using Scalable Solutions: IoT Integration in Renewable Energy Laboratories	Seyed Saeed Mirsafian (University of Applied Science and Art Dortmund), Christoph Hericks (University of Applied Science and Art Dortmund), Leon Otis Speith (University of Applied Science and Art Dortmund), Markus Thoben (University of Applied Science and Art Dortmund), Martin Kiel (University of Applied Science and Art Dortmund), Yves Rosefort (University of Applied Science and Art Dortmund), Tosten Füg (University of Applied Science and Art Dortmund), Vinod Rajamani (Fachhochschule Dortmund), Sönke Gößling (University of Applied Science and Art Dortmund), Shamsundar Subbarao (National Institute of Engineering)
	8	693	Path Towards Sustainable Net Zero Decentralized Fuels Using Carbon Capture	Vinod Rajamani (Fachhochschule Dortmund), Shamsundar Subbarao (National Institute of Engineering), Adarsh Naik (National Institute of Engineering), Wael Ahmed (National Institute of Engineering), Niharika C V (National Institute of Engineering); Ahmad Telfah (Fachhochschule Dortmund), Johannes Etzkorn (Fachhochschule Dortmund), Martin Kiel (Fachhochschule Dortmund), Yves Rosefort (Fachhochschule

Co-Chair: Dr. Ashwini K B, Associate Professor, Dept. of ISE, RVCE			Dortmund), Sönke Gößling (Fachhochschule Dortmund), Seyed Saeed Mirsafian (University of Applied Science and Art Dortmund), Christoph Hericks (Fachhochschule Dortmund), Leon Speith (Fachhochschule Dortmund), Markus Thoben (Fachhochschule Dortmund)
	9	960	Automation of a water treatment plant based on PLC integrated systems
	10	1048	Adaptive Caching of Routes in LEO Satellite Networks

FACULTY COORDINATOR: Dr. Sandya S, Dept. of CSE

DATE: 08.11.2024 SESSION 18 TRACK: Online Track 3	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-05:00 PM	1	81	SpeakSmart: Empowering Public Speakers, Elevating Every Speech	Chandu Dajiba Vaidya (VIT- Bhopal), Dipesh Nityanand Haldar (S B Jain Institute of Technology, Management and Research), Pranjal Y Lohi (S B Jain Institute of technology, Management & Research, Nagpur), Adeebur Rahman (S B Jain Institute of Technology Management and Research), P Harshita (S B Jain Institute of Technology), Management and Research), Dipesh Khemchand Siriya (Jain Institute of Technology)
Venue: ISE 302	2	280	Advancing Vascular Dementia Diagnosis Through Salp Swarm Optimized Convolutional Neural Network	Nivedita Manohar Mathkunti (Alliance University), Ananthanagu U (Alliance University), Vidya N Abdulpur (DYP, Kolhapur), D Mangaiyarkarasi (Vel Tech Rangarajan Dr. Sangunthala R&D Institute of Science and Technology Avadi), Anitha S (Sri Sairam Engineering College)
	3	338	Virtual Machine Fault Tolerance Placement in Data Centers using Multi-Objective Optimization	Balaji K (BV Raju Institute of Technology), Shreya S (BV Raju Institute of Technology)
	4	343	Lg = 10 nm Gate All Around Si based Nanowire MOSFET	Augustine Fletcher (SRM Institute of Science and Technology), Tamilarasi T (SRM Institute of

Chair: Dr Deepak N A, Professor, Dept of CSE, RVITM Co-Chair: Dr Vikram N B, Dept of IEM, RVCE			for High Performance Computing	Science and Technology), Saranya G (Rajalakshmi Engineering College), Dr. Murugapandian P (Anil Neerukonda Institute of Technology and sciences)
	5	435	An Overview of Implementation LAUNCHXL-F28069M for Power Electronics Converters by using SIMULINK and PLECS	Abhishek Ghosh (KIIT Deemed to be University), Akshaya Kumar Pati (KIIT Deemed to be University), Sunil Kumar Mishra (Kalinga Institute of Industrial Technology)
	6	461	Utilizing Artificial Neural Networks and MelFrequency Cepstral Coefficients for Gender Identification from Voice Data	Madan Lal Saini (Chandigarh University), Greeshmanth Edupalli (Chandigarh University), Bhanuteja Beeram (Chandigarh University), Abbas Khadar Ali Syed (Chandigarh University)
	7	462	Fake Indian Paper Currency Detection Using Deep Learning Techniques	Fardin Khan (Chandigarh University), Madan Lal Saini (Chandigarh University), Lokesh Jangid (Chandigarh University), Muhesh A (Chandigarh University)
	8	528	Comments and Feedback Verification System Using Large Language Model	Akshay Kumar Kushwaha (Chandigarh University), Shreya Jadon (Chandigarh University), Madan Lal Saini (Chandigarh University)
	9	532	Adaptive Multi-Fidelity Hyperparameter Optimization in Large Language Models	Benarji Mulakala (Chandigarh University), Madan Lal Saini (Chandigarh University), Ashirvad Singh (Chandigarh University)
	10	625	A Smart Bookshelf for Library Administration	S Poornima (MS Ramaiah Institute of Technology), Abhijeet Kumar (MS Ramaiah Institute of Technology), Ajudiya Shubham (MS Ramaiah Institute of Technology), Susuhant Kumar Singh (MS Ramaiah Institute of Technology), Ayush Avinav (MS Ramaiah Institute of Technology Bangalore)
	FACULTY COORDINATOR: Dr. Sneha M, Dept. of CSE			

DATE: 09.11.2024 SESSION 19 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 11:00-01:00 PM Venue: ISE 112B Chair: Dr. Sunita N R, Professor Siddaganga Institute of Technology Co-Chair: Dr. G S Mamatha, Professor, Dept. of ISE, RVCE	1	374	PROMPT PALATE: A Prompt-Based Restaurant Recommendation System with Scheduling and Chatbot Integration	Vidula N.A (Amrita school of Engineering), Hemanth Babu T (Amrita school of engineering), Gopi Kiran V (Amrita school of engineering), Roshni M Balakrishnan (Amrita Vishwa Vidhyapeetham), Sreebha Bhaskaran (Amrita Vishwa Vidyapeetham)
	2	380	Machine Learning Algorithms for Improved Script Evaluation	Mayuri Patwardhan (RV College of Engineering), Ashwini K B (RV College of Engineering)
	3	385	Intelligent Food Storage: Enhancing Freshness and Reducing Waste with Smart Containers	Ramya M V (JSS Academy of Technical Education Bangalore), Bharath H G (JSS Academy of Technical Education), Bhavya J (JSS Academy of Technical Education)
	4	396	An approach for Face Detection and Face Recognition using OpenCV and Face Recognition Libraries in Python using GPU	Koshti Vanshika Shaileshbhai (SRM Institute of Science and Technology), Himanshu Nainwal (SRM Institute of Science and Technology)
	5	397	Dimensionality Reduction via Graph-based Feature Selection.	Hrishik Sai Bojnal (RV Institute of Technology and Management), Parnika Singh (RV Institute of Technology and Management), Anitha J (RV Institute of Technology and Management)
	6	412	Detection of Manhole and Sewage Overflow Using Computer Vision	Shivabasamma Umesh Beli (RV College of Engineering), Manika Kesharwani (RV College of Engineering)
	7	414	Machine Learning based Classification and Recognition of Melakarta Ragas using Melakarta Chakra Analysis	Shreevatsa D S (BMS College of Engineering), Jyothi S Nayak (BMS College of Engineering)
	8	422	Prediction of Customer Purchasing Patterns for Retail Optimization using Market Basket Techniques	Zaiba Farheen (R.V College of Engineering), Dharani Andhe (RV College of Engineering)
FACULTY COORDINATOR: Prof. Rashmi R, Dept.of ISE				

DATE: 09.11.2024 SESSION 20 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 11:00-01:00 PM Venue: ISE 106A Chair: Dr Praveen Banasode, Associate Professor, Dept. of MCA, Jain College of Engineering Belagavi Co-Chair: Dr. Anala M R, Professor, Dept. of ISE, RVCE	1	440	Supervised Learning for Log-Based Anomaly Detection	Meghana C S (RV College of Engineering)
	2	444	Lungcanary-Pioneering Early Lung Cancer Detection Using Machine Learning Algorithms	Priya Govindarajan (Amrita Vishwa Vidyapeetham), Abhishek M (Amrita Vishwa Vidyapeetham), Niharika K (Amrita Vishwa Vidyapeetham)
	3	451	Detecting Fake News: A Comparative Evaluation of Machine Learning Techniques	Aishwarya C (NITPy), Dr. Venkatesan M (NITPy); Prabhavathy Panneer (VIT University); Akarsh Shetty (NITK)
	4	453	Machine Learning Based Health Hub (Health Diary)	Shivappa M Metagar (Walchand Institute of Technology Solapur)
	5	456	Advancing Sepsis Detection: Leveraging Svm and Cnn Integration For Next-gen Emergency Diagnostics	Roopa R (S. V. University)
	6	459	Parkinson's disease detection system	Akarshita Puneet Kochhar (RV Institute of Technology and Management), Anjali Sinha (RV Institute of Technology and Management), Aisha Nishat (RV institute of technology and management), P. Shireesha (RV Institute of Technology and Management), Malini M Patil (RV Institute of Technology and Management)
	7	486	Tool wear prediction using GRNN in Sustainable machining of AISI H13 steel	Venkata Ajay Kumar G (RV College of Engineering), Ramaa A (RV College of Engineering)
	8	1009	Secure Data Hiding: A Comprehensive LSB-Based Steganography Framework with Cryptographic Enhancements	Nishita N Murthy (RV College of Engineering)
	9	1019	A Tender Management System Using	Sukhada V Inamdar (RV College of Engineering)

			Blockchain and IPFS	
FACULTY COORDINATOR: Prof. Swetha S, Dept. of ISE				
DATE: 09.11.2024 SESSION 21 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 11:00-01:00 PM Venue: CHEMICAL SEMINAR HALL Chair: Dr. Naveen N C, Chief Academic officer, BHRIGHU Academy of e-learning	1	529	Sustainable Education: A Design Thinking Approach for Quality Education	Vijayalakshmi MN (RV College of Engineering), Ravikiran Aithal (RV College of Engineering), Shiva Kumar (RV College of Engineering)
	2	535	Rural Retail Revolution- AIML Driven Voice Based Billing System in Kannada	Seema R Kulkarni (Tontadarya College of Engineering), Dr Sharvani G S (Tontadarya College of Engineering), Nandeesh Kalakkatt (Tontadarya College of Engineering), Channaveeragouda Patil (Tontadarya College of Engineering), Krishna Chavan (Tontadarya College of Engineering), Soumya Patil (Tontadarya College of Engineering)
	3	540	Sustainable Water Management: A Regression-Based Approach to Predicting Demand and Distribution for an Indian Geography	Kshitij S Mahajan (RV University), Chidhananda R S (RV University)
	4	543	Optimising Small-Scale Agricultural Land Using IoT and Machine Learning for Sustainable Resource Utilisation	Phani Kumar Pullela (RV University)
	5	546	Self-Heal: Conversational Therapy Bot with AI Enhanced Features for Mental Health	Dr. Bhagyashri R Hanji (Global Academy of Technology), Charanya S (Dayananda Sagar Academy of Technology and Management), Divyanshi Gupta (Dayananda Sagar Academy of Technology and Management), Eesha Krishna (Dayananda Sagar Academy of Technology and Management), Harshita G Devadiga (Dayananda Sagar Academy of Technology and Management)
	6	586	Predictive Analytics in Cardiovascular and Diabetes Risk: An Integrated Machine Learning Approach	Hardik Pawar (RV College of Engineering), Karan Sathish (RV College of Engineering), Suma B (RV College of Engineering)
	7	597	Real-Time Text Extraction and	Aneesh Sai Grandhi (RV College of Engineering), Syed Umair (RV College of

Co-Chair: Dr. Rajashree Shettar, Professor, Dept. of CSE, RVCE			Video Interpreter System	Engineering), Bolla Sai Naga Yaswanth (RV College of Engineering) Aditya Ravi (RV College of Engineering), Dr. Padmashree T (RV College of Engineering), Dr. B M Sagar (R.V. College of Engineering)
	8	733	Predicting PM2.5 Concentrations in Bengaluru Using Ensemble Machine Learning Models and Explainable AI Techniques	Pragna K P (Global Academy of Technology), Keerthana A V (Global Academy of Technology), Suhani Shetty (Global Academy of Technology) Surabhi A S (Global Academy of Technology), Sushma K Sattigeri (Global Academy of Technology), Raju N V (Global Academy of Technology)
FACULTY COORDINATOR: Dr. Jagadish Patil, Dept. of Chemical Engineering.				
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 22 TRACK: AI				
Time : 11:00-01:00 PM	1	614	An Empirical Study of ResNet50 Hyperparameter Tuning for Plant Disease Classification	S Prajwall Narayana (RV College of Engineering), Abhishek R (RV College of Engineering), Aditya S (RV College of Engineering)
	2	618	Develop On - Device Large Language Model Android Application	Sohail Bagawan (RV College of Engineering)
	3	620	Parameterized Complexity for Query Subset Optimization	Namya Dimri (RV College of Engineering), Arunesh Srivastava (RV College of Engineering), Malepati Ananya (RV College of Engineering) Sinchana Math (RV College of Engineering), Dr. VENUGOPAL K (RV College of Engineering), Dr. Kavitha S N (RV College of Engineering)
	4	621	Generative AI Explored: Bridging Theory and Practice with Insights from DocQA Implementation	Ritika Singh (RV College of Engineering), Dharani Andhe (RV College of Engineering)
	5	632	Leveraging LLM and RAG for Automated Answer Script Evaluation	Pranav Darshan (RV College of Engineering), Nihar Mandahas (RV College of Engineering), Pratheek Rao MP (RV College of Engineering); Raghuveer N Rajesh (RV College of Engineering), Deepamala N (RV College of Engineering)
	6	657	Harvest Smart : An ergonomic harvester for improved	Vijay Adithya G (MS Ramaiah Institute of Technology), Vindya R Kashyap (MS Ramaiah Institute of Technology), Shreya

Chair: Dr. Girish Rao Solanki, Professor and Head, AI&ML, GAT			productivity and worked well being	Shashidhar (MS Ramaiah Institute of Technology) Komal Kulkarni (MS Ramaiah Institute of Technology) Karthik Reddy (MS Ramaiah Institute of Technology) M Rajesh (MS Ramaiah Institute of Technology)
	7	675	AI on the Edge: A Novel Approach to Detect Waste on Water Bodies	Ishan Shekhar Prasad (RV College of Engineering), Medha Sanketh (RV College of Engineering), Chandra Kumar R (RV College of Engineering)
	8	685	Improving Students' Understanding of Education using Generative Adversarial Networks: Bridging Text and Visuals	Ganeshayya Shidaganti (MS Ramaiah Institute of Technology), Kavyashree K N (MS Ramaiah Institute of Technology); Vishwachetan D (MS Ramaiah Institute of Technology)
	9	706	Limitations of Large Language Models	Erin Sanu (RV College of Engineering), Guduru Dinesh (RV College of Engineering), Prasiddha Bhat (RV College of Engineering) T Keerthi Amudaa (RV College of Engineering), APOORVA U CHATE (RV College of Engineering), Dr. P. Ramakanth Kumar (RV College of Engineering)
FACULTY COORDINATOR: Dr. Usha Padma, Dept. of TCE				

DATE: 09.11.2024 SESSION 23 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 11:00-01:00 PM	1	766	DROPEX: Disaster Rescue Operations and Probing using EXpert drones	Dr. Vindhya P Malagi (Dayananda Sagar College Of Engineering); Kausthub Kannan (Dayananda Sagar College Of Engineering)*; Adithya Awati (Dayananda Sagar College Of Engineering); Smruthi Rao (Dayananda Sagar College Of Engineering)
	2	768	ANN Technique for the Prediction of Solar Power Generation	Vandana Jha (Rv College Of Engineering, Bengaluru)*
	3	770	Real-Time Identification of Fake Currency Notes Using YOLOv9 and GELAN	Mukesh Pandey (Uttaranchal University), Vivek Kumar (Quantum University)
	4	775	Analyzing Climate Trends and Predictive Modeling in Major Indian Cities - A Big Data Approach	Pratiba D (RV College of Engineering), Dr. P. Ramakanth Kumar (RV College of Engineering), Dwarakacherla Navya (RV College of Engineering); Abhijit Madhusudan (RV College of Engineering), K V Karthik (RV College of Engineering), Akshaja V Maiya (RV College of Engineering)
	5	776	Tucker Decomposition based Lossless Image Compression for 3D Medical Image	Rekha Biradar (Karnataka State Akkamahandevi Women's University Vijaypur)*
	6	796	"Application of AIML and IOT for reliable Microgrid installed at Billenahoshalli and Lakshmanapura by NIE-CREST "	Thanusha A Patel (The National Institute of Engineering), Vikas S (The National Institute of Engineering), Smaran A (The National Institute of Engineering), Sinchana G (The National Institute of Engineering), Angel Paul (The National Institute of Engineering), Yadunandan K (The National Institute of Engineering), Vimal K A (The National Institute of Engineering), Shamsundar Subbarao (The National Institute of Engineering), Shubhachethan (Mysuru Green Technologies), Akarsh (Mysuru Green Technologies), Anil Kumar (Rachanaenercare), Suhas Darshan D (The National Institute of Engineering)
	7	799	Meta-Learning Enhancements in Waste Classification: Leveraging ResNet-50 and MAML for	Syeda Roohi Fatema (Ramaiah Institute of Technology), Sumana Maradithaya (Ramaiah Institute of Technology)

Professor & HoD, Dept. of CSE, RVCE			Efficient Few-Shot Learning	
	8	804	A tool for analyzing and detecting anomalies in unstructured log data	Sharayu Subhash Bokade (RV College of Engineering), Poornima Kulkarni (RV College of Engineering)
FACULTY COORDINATOR: Prof.Vandana Jha, Dept.of EEE				
DATE: 09.11.2024 SESSION 24 TRACK: Quantum Mechanics & Photonics	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time : 11:00-01:00 PM Venue: PHYSICS SEMINAR HALL Chair: Dr. Raghavendra Rao K, Professor ,	1	205	Modified Duobinary RZ modulationOWCfor Bengaluru Weather Conditions	Vijayashri V Belgaonkar (SIR MVIT)
	2	340	Performance Analysis of 3D-SIFT and ICP Algorithms for Pose Estimation	Rohith HM (RV College of Engineering), Hoysala S (RV College of Engineering), Varshita M (RV College of Engineering), Saraswathi Karanam (RV College of Engineering)
	3	545	Cyclone Intensity Estimation using Quantum Machine Learning	Vedant Rajendra Raut (Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology), Kaina Shaikh (Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology), Vaishnavi Shendge (Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology), Digambar Padulkar (Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology)
	4	587	Design and Implementation of Smart Door Lock System using IoT	Amit Kumar Singh (RV College of Engineering), Laxmi G (RV College of Engineering), Nagarathna H (RV College of Engineering), Shamith Kumar (RV College of Engineering), Krishna M (RV College of Engineering), Keshav M (RV College of Engineering)
	5	826	Efficient Ring Counter Design Using Pre-charged and Non-Pre-charged TSPC D-Flipflops	Aditya Varma (RV College of Engineering), Nischay B S (RV College of Engineering), Syed Abdur Rahman (RV College of Engineering), Santhosh V (RV College of Engineering)
	6	976	Quantum Antenna Behavioral Analysis Using Quantum Tunneling	Manoj Shsh (RV College of Engineering), Priyanka N (RV College of Engineering), Shanthi P (RV College of Engineering)

Department of Physics, PES University. Co-Chair: Tribikram Gupta, Assistant Professor, Dept. Of Physics, RVCE	7	1018	Implementation of Multi target detection in Automotive Radar with Low SNR	M Santhosh Kumar (RV College of Engineering), Prajwal K T (RV College of Engineering), K Sreelakshmi (RV College of Engineering), Roja Reddy B (RV College of Engineering)
	8	1027	UAV Tracking using 5G	Natasha D Abraham (RV College of Engineering), Muktha V Naik (RV college of Engineering)

FACULTY COORDINATOR: Dr. Vinutha Moses, Dept. of Chemical Engg

DATE: 09.11.2024 SESSION 25 TRACK: Computational Analysis & Autonomous Vehicles	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM-01:00 PM	1	824	In Silico Target Tracking: Molecular docking and pharmacokinetic studies of naturally occurring flavonoid glycosides and their activity against COVID-19 viral proteins	Sumathra Manokaran (RV College of Engineering), Aisiri H U V (RV College of Engineering), Maanas R Rao (RV College of Engineering), Anusha Keerthi (RV College of Engineering), Shweta Kallapur (RV College of Engineering), Manjunatha AH Reddy (RV College of Engineering)
	2	871	Study of Heat Treatment Effects on Al6061	Yashwanth R (RV College of Engineering), Param Kotturshettar (RV College of Engineering), Hemanth BS (RV College of Engineering), Gangadhar Angadi (RV College of Engineering), Roopa T S (RV

Venue: MV SEMINAR HALL Chair: Dr M J Chandrashekhar, Professor and HOD Dept. of EEE,SJBIT Co-Chair: Dr S G Srivani, RVCE, EEE				College of Engineering); Nataraj J R (RV College of Engineering)
	3	872	Metal-Reinforced Thermoplastics: A New Frontier in Structural Materials	Neetha MV (Government Polytechnic Gauribidanur), Gangadhar Angadi (RV College of Engineering), Krishna M (RV College of Engineering), Roopa T S (RV College of Engineering)
	4	873	SMART PHONE FOR MEASUREMENT OF REFLECTIVITY OF ROAD PAVEMENT MARKINGS	Anjaneyappa (RV College of Engineering), Varuna M (RV College of Engineering), Archana M R (RV College of Engineering), Sunil Siddaraju (RV College of Engineering), Ravishankar Holla (RV College of Engineering), Mahendra B M (Vidyashilp University), Shrish Shrinath Vaidya (RV College of Engineering)
	5	919	Assessment of Distress in Concrete pavement using Smartphone	Deekshith P.R (RV College of Engineering), Anjaneyappa (RV College of Engineering), Archana M R (RV College of Engineering), Anala M R (RV College of Engineering)
	6	924	Design and Verification of DDR5 Subsystem using UVM Methodology	Kumar Muchalambi (RV College Of Engineering)
FACULTY COORDINATOR: Dr. Nagesh S, Dept. of Mechanical Engg.				

DATE: 09.11.2024 SESSION 26 TRACK: Renewable Energy	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM-01:00 PM Venue: IEM SEMINAR HALL Chair: Dr. V Muralidhara, Professor, EE Department BNM Institute of Technology Co-Chair: Dr Sahana B, Dept. Of ECE, RVCE	1	158	Li-ion Battery State of Charge estimation and cell balancing using Extended Kalman Filter	Mohammed Nizamuddin (BMS College of Engineering), Prema V (BMS College of Engineering)
	2	179	Interior Permanent Magnet Synchronous Motor For EV Applications.	Annapurna G Javalagi (KLE Technological University), Krupa Timlapur Manjunath (KLE Technological University)
	3	180	CLLC Resonant Power Converter For Electric Vehicle Charging Applications	Annapurna G Javalagi (KLE Technological University), Radhika Nagraj Mundargi (KLE Technological University)
	4	181	ANN-Based Optimal Power Point Tracking For an Independent Solar Power System	Annapurna G Javalagi (KLE Technological University), Radhika Nagraj Mundargi (KLE Technological University)
	5	390	Eco Drive: Revolutionizing Electric Mobility with Synergistic Fuel Cell and Photovoltaic Integration	S G Srivani (RV College of Engineering), V Srinivasulu (RV College of Engineering), Mallikarjunagouda Tejigoudar (Borgwarner)
	6	941	Adaptive Traffic Signal Timing: Leveraging YOLOv10 and Computer Vision for Real-Time Optimization	Suhas Papanashi (RV College of Engineering), Santosh S Huddar (RV College of Engineering), Manya Chadaga (RV College of Engineering), Kshithi R (RV College of Engineering), K Sreelakshmi (RV College of Engineering), Dr. P. Ramakanth Kumar (RV College of Engineering)

	7	970	Optimal Design of Vedic Multiplier for Computation in Memory Applications	Nikita Kulkarni (RV College of Engineering), Deepika P (RV College of Engineering)
FACULTY COORDINATOR: Dr. Shobha N S, Dept.of IEM				
DATE: 09.11.2024 SESSION 27 TRACK: Next Generation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM-01:00 PM	1	670	Advanced Verification Strategies for Memory Block Integration in Processor Design	Manjunatha Gowda N (RV College of Engineering)
	2	673	Design and Verification of Power Efficient Built-In Self-Test	Shrinivas Anand Kamath M (RV College of Engineering), Sujatha Hiremath (RV College of Engineering)
	3	674	Advanced ESD Protection Mechanism for a CMOS Low Noise Amplifier	Roriech P A (RV College of Engineering), Ravish Aradhya H V (RV College of Engineering)
Venue: ISE 302	4	695	Advanced SoC-Level Interrupt Verification Utilizing ARM GIC-700	Sudhanva V S (RV College of Engineering)
	5	701	Verification of Long Reach Serializer/Deserializer PHY compatible with Fiber Channel and Ethernet Standards	Vaishnavi L G (RV College of Engineering), Ramavenkateshwaran N (RV College of Engineering)
Chair: Dr. Prakash Tunga P, Associate Professor,	6	712	Inventory Management via	Pratham Gowtham (RV College of Engineering), Sahana B (RV College of

Dept. Of ECE, RNSIT Co-Chair: Dr. Shushrutha K S, Associate Professor, Dept. Of ECE, RVCE			Dynamic Ad-Hoc Network with Synchronized ESP- NOW Protocol	Engineering), Shreyas S (RV College of Engineering)
	7	732	Robust and Efficient Implementation of Design for Testability for Integrated Circuits	Skanda V Jois (RV College of Engineering), Ravish Aradhya H V (RV College of Engineering)
FACULTY COORDINATOR: Dr. Vidya C, Dept. of Chemical Engineering.				
DATE: 09.11.2024 SESSION 28 TRACK: Next Generation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM- 01:00 PM Venue: ISE 110 Chair: Dr. Sudhamani M J, Professor and Associate HOD, Dept. Of CSE, RNSIT, Bengaluru	1	778	Design and Verification of 1x3 Router using UVM	Vaibhavi R (RV College of Engineering), Ramavenkateswaran N Nagarajan (RV College of Engineering)
	2	779	Design and Testing of Low Power Cache Memory	Sudeep Kumar Shetty (RV College of Engineering)
	3	815	Privacy Preserving Wearable Data Publishing Using Inter Cloud Infrastructure	Veena Gadad
	4	818	An Enhanced Deadlock Detection Methodology using Tarjan's Algorithm	Kamalapuram Vigneswara Reddy (Amrita Vishwa Vidyapeetham, Bengaluru Campus), Adhi Neeraja (Amrita Vishwa Vidyapeetham, Bengaluru Campus), Chimakurthy Mounika Begum (Amrita Vishwa Vidyapeetham, Bengaluru Campus); Rebbavarapu Henry Koushal (Amrita Vishwa Vidyapeetham, Bengaluru Campus); Divya K V (Amrita Vishwa Vidyapeetham, Bengaluru Campus)
	5	900	Securing Supply Chains: Ethical Hacking in Logistics and Distribution	Dr Gurupriya M (Amrita School of Computing, Amrita Vishwa Vidyapeetham), Kumaran U (Amrita School of Computing)

Co-Chair: Dr. Kariyappa B S, Professor ECE Department RVCE	6	931	Software-Defined Radio with Integrated 4 x 4 Antenna Array for Wireless Communication	Manoj M Acharya (RV College of Engineering), Mahesh Appajappa (RV College of Engineering); Anju G Chavan (RV College of Engineering)	
FACULTY COORDINATOR: Dr.Sindhu D V, Dept.of CSE					
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME	
SESSION 29 TRACK: Digital Transformati on					
Time: 11:00AM- 01:00 PM	1	527	Integrating Digital Technology to Improve Quality in a Packaged Drinking Water Unit: A Case Study	BN Vaishnavi (RV College of Engineering , Tanushri Nettem (RV College of Engineering)	
	2	563	Real-Time Operating System for Smart Home Automation	Varsha S (RV College of Engineering), Manasa D N (RV College of Engineering, Bangalore); Manvitha H (RV College of Engineering)	
	3	569	Big Data Integration & Transformation: A Comparative Analysis of SnapLogic and AWS Glue	Sadath Hussain (RV College of Engineering), Mohan Aradhya (RV College of Engineering)	
	Venue: ISE SEMINAR HALL	4	606	Digitalization of Lean Tools and Techniques: Enhancing Efficiency and Quality in Modern Industries	Gohitha Maheshwari J (RV College of Engineering), Dr. Vivekanand S Gogi (RV College of Engineering), Inchara N Aradhya (RV College of Engineering), Shankaramma Shivanagutti (RV College of Engineering)
		5	628	Decoding Big Data: The Essential Elements Shaping	Darshan Chopra (Christ University), Shashank Shekhar (Christ University), Ancy Christopher (Christ University),

Chair: Prabhushankar G V, Professor, Dept of IEM, SIT, Tumkur			Business Intelligence	Vinay M (Christ University), Kavitha S (Christ University)
Co-Chair: Dr Rajeswara Rao KVS, Associate Professor, Dept of IEM, RVCE	6	637	Artificial Intelligence driven e-Commerce Platform for Handicraft Toy Industries	Meghasree V (RV College of Engineering), Dr C K Nagendra Guptha (RV College of Engineering), VijayaKumar M N (RV College of Engineering)
	7	704	EXPLORING ZERO TRUST ARCHITECTURE IN INTERVIEW BOTS: Mechanisms and Challenges	Dhruva B A (R.V. College of Engineering), Medha Mummigatti (RV College of Engineering), Dhanyashree Krishnamurthy (RV College of Engineering), Namratha H J (RV College of Engineering), APoorva U Chate (RV College of Engineering), Dr. P. Ramakanth Kumar (RVCE)
	8	947	Unraveling Customer Sentiment in Indian Fashion E-Commerce: A BERT-Based Approach	Oneeka Taneja (R. V. College of Engineering), Alpana Kuppili Raja Satya (R. V. College of Engineering), Deepa Rathod (RV College of Engineering); Anaum Fathima (RV College of Engineering); Vishalakshi H Prabhu (RV College of Engineering)
	9	959	Enhancing Operational Efficiency by Implementation of an ERP System in Engineering Institution - A Case Study	Subramanya K N (R.V College of Engineering), Cauvery N K (RV Information Centre); Ravi R B Varma (RV College of Engineering); I M Umesh (RV College of Engineering)
	10	961	Deep Learning model for Option Pricing - Review	Sangeetha Premsundar (RV College of Engineering)*; Vishalakshi H Prabhu (RV College of Engineering); VIKRAM N BAHADURDESAI (RV College of Engineering)
FACULTY COORDINATOR: Dr.Somesh Nandi, Dept.of AI and ML Contact: 9538781674				

DATE: 09.11.2024 SESSION 30 TRACK: Digital Transformation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM-01:00 PM Venue: ECE SEMINAR HALL Chair: Dr Shilpa, Associate Professor,	1	720	Digital Transformation in Various Sectors of the Indian Economy	Ashish S S (RV COLLEGE OF ENGINEERING)*; Ehsaas Rajpurohit (RV COLLEGE OF ENGINEERING); Sanjana Patwari (RV COLLEGE OF ENGINEERING); Aaditaa Vashisht (RV COLLEGE OF ENGINEERING); Dr. Vanishree K (RVCE)
	2	742	Tokenizing Real Estate in India Using Blockchain Technology	Rahul Roy (RVCE)*; Tanishq Gupta (RVCE); Hota Pranati (RVCE); Rajeswara Rao (RVCE)
	3	765	Hierarchical Data Storage Model Representation in MongoDB for a Resume Ranking Application	Mohit Rauniyar (Amrita Vishwa Vidyapeetham, Bengaluru)*; Ishwor Acharya (Amrita Vishwa Vidyapeetham, Bengaluru); Divya K V (Amrita Vishwa Vidyapeetham, Bengaluru Campus); Sahil Kumar Gupta (Amrita Vishwa Vidyapeetham, Bengaluru); Raushan Kumar Gupta (Amrita Vishwa Vidyapeetham, Bengaluru)
	4	777	Optimizing Customer Segmentation: A Comparative Analysis of Clustering Algorithms Using Evaluation Metrics	Noor Sakina (RV College Of Engineering)*; Ajith P Arun (RV College Of Engineering, Bangalore); Pavithra Ramesh (RV College Of Engineering); Vishalakshi Prabhu H (RV College Of Engineering); Praveen Kumar Gupta (RV College Of Engineering)
	5	789	Optimizing Judicial Efficiency- A Software solution for Case Listing with Customized Case Flow Management	Dr.Sangeetha V (M S Ramaiah Institute of Technology)*; Jay Jariwala (M S Ramaiah Institute of Technology)
	6	808	Advanced Techniques for Daily Gold Price Forecasting in India	Kauser Nissar TP (NMKRV College for Women)*; Shaziya Sultana (NMKRV College for Women)

Dept of IEM, MSRIT Co-Chair: Dr C K Nagendra Guptha, HoD, Dept of IEM, RVCE			through Statistical Analysis and Predictive Modeling	
	7	831	Product Authenticity Checker	Nevya Khandelwal (BMS College of Engineering)*
	8	988	A Study on Application of Explainable AI for Credit Risk Management of an Individual	Dr. Vinod Krishna U Makkimane (Dayananda Sagar University)*
	9	1034	A Comprehensive Stochastic Optimization Model for Mitigating Supply and Demand Uncertainties in Multi-Supplier Supply Chains	Siddhanth N Kaggatty (RV College of Engineering)*; Tulasi Ram K Naik K Naik (RV College of Engineering); INCHARA N ARADHYA (RV College of Engineering); NISHAANTH S (RV College of Engineering)
FACULTY COORDINATOR: Dr.Roopa T S, Dept.of Mech Engg.				
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 31 TRACK: Cyber Physical Systems				
Time: 11:00AM- 01:00 PM	1	574	Plagiarism Detection: Identifying AI- Generated and Paraphrased Content	Spoorthi V (RVCE)*
	2	611	Leveraging XGBoost Machine Learning Algorithm for Common Vulnerabilities and Exposures (CVE) Exploitability Classification	Meryn Babu (R.V. College of Engineering)*; Namruth Reddy S (NVIDIA); Minal Moharir (RV College of Engineering); Dr.Mohana . (RVCE)
	3	622	Static Timing Analysis Of Nonlinear-Feedback Shift Register	Hithesh S (RV College Of Engineering)*; Chandan N (RV college of Engineering); Uttam Chirukuri (RV College of Engineering); Yugashni S (RV College of

Venue: ISE 106B				Engineering); Shylashree N (RV College of Engineering)
	4	650	Enhancing Online Security Using U2F FIDO Security Keys: A Comprehensive Two-Factor Authentication Approach	Abhishek Sai Jayashankar (RVCE Bangalore); Kiran V (RVCE); Adarsh Gangaram Bhovi (RVCE)
	5	767	Integrating Brainwave Analysis and Facial Detection for Enhanced Security in Transactional Systems	Gnana Abhinay Vadlamudi (University at Buffalo)*; Smeeth Talasila (Plano West Senior High School); Anvitha Vadlamudi (Vellore Institute Of Technology)
	6	788	Architecture Comparison and Security Assessment Tool for Network Infrastructure	Manoj M (RV College of Engineering)*; K Akash (RV College of Engineering); Priyanshu Ranjan (RV College of Engineering); Prajwal N J (RV College of Engineering); Shreenidhi T L (RV College of Engineering); M S Sandeep Kamath (RV College of Engineering); Anala M R (RV College of Engineering)
	7	943	Temporal Analysis and CWE Code Prediction for Software Vulnerabilities using Machine Learning	Kishan S Karthik (RV College of Engineering)*; Suraj singh (RV College of Engineering); Jeevan S (RV College of Engineering); Namruth Reddy (NVIDIA); Minal Moharir (RV College of Engineering); Dr.Mohana . (RVCE)
Chair: Dr. R Rajkumar, Professor and Head, CSE(CY), RNS Institute of Technology				
Co-Chair: Dr. Ashok Kumar A R, Associate Professor, CSE, RVCE	8	950	Optimizing SaaS Metrics with Advanced Data Processing and Machine Learning Techniques	Maharshi Chetan Relia (RV College of Engineering)*; Mamatha G S (RV College of Engineering)
FACULTY COORDINATOR: Dr.Sandya S, Dept.of CSE				
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 32				
TRACK:				

Bio Medical Electronics				
	1	13	Smart IoT-Driven Monitoring and Control System for Enhancing Shrimp Aquaculture Health	J Jesy Janet Kumari (Amrita School of Computing), Thangam S (Amrita School of Computing)
Time: 11:00AM-01:00 PM	2	561	IoT BASED EPILEPSY MONITORING DEVICE FOR CHILDREN	Shwethaa AR (AMC Engineering College)*; Ashwini GV (AMC Engineering College)
Venue: MCA SEMINAR HALL	3	579	CRISPR-Cas9 Guide RNA Designer using Python	Narendra Kumar Sura (RV COLLEGE OF ENGINEERING); Arya Hariharan (RVCE); Abhisha BH (RVCE); Bhumika K (RVCE); Pragathi Basavaraj (RVCE)
Chair: Dr.Prasanna Kumar H, Professor,Dept .of Electrical Sciences, UVCE	4	589	A Systematic Review on Multi-Modal Federated Learning Techniques for Early Alzheimer's Disease Detection	Mohammed Afeef Hussain (RVCE)*; Srushti V Pawar (RV College of Engineering); Bindu Priya R (RVCE); SRIVIDYA M S (RVCE); Manonmani S (RV College of Engineering)
Co-Chair: Dr. Padmaja K V, Professor, Dept.of EIE, RVCE	5	654	Machine Learning - Based Food Edibility Prediction Using Neural Networks	Narendra Kumar Sura (RV COLLEGE OF ENGINEERING)*
	6	660	Comparative Study of Deep Learning Models to Classify Arrhythmia	Nitya N Kulkarni (RV College of Engineering)*; NAGARAJA G S (RV COLLEGE OF ENGINEERING); SUDARSHAN Budnur Gopalakrishna (R.V.College of Engineering); Prasanna Kumar S.C (RVCE); Venkatesh S (RV College of Engineering)
	7	663	A Two Stage Anomaly Filter Model for Continuous Stress Monitoring-based on PPG	Mayank Sharm (Titan Company Limited)*; Dileep Panjala (Titan Company Limited); Vishal Mishra (Titan Company Limited); Karthik Varun (Titan Company Limited)

	8	665	Transitioning from Halogen to LED: Neonatal Warmer Power Board Redesign	Harshitha H (B.M.S College of Engineering)*; LAKSHMINARAYANA C (BMSCE)
FACULTY COORDINATOR: Dr. Tabitha Janumala, Dept. of EIE				
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 33 TRACK: Online Track 4	1	187	Ensemble Deep Learning for Enhanced Human Microbiome-Based Disease Prediction: A Comprehensive Analysis on Public Datasets	Mahaveerakannan R (Saveetha School of Engineering)
Time: 11:00AM-01:00 PM	2	216	SwiftTap: RFID-Driven Automation for Instant Password Entry	PRABAL MANHAS (CHANDIGARH UNIVERSITY)*
Venue: ISE 304	3	327	Optimizing Data Extraction with UiPath: A Web Scraping Conclusion	Prashanth G K (Siddaganga Institute of Technology)*; Tejaswini G D (Siddaganga Institute of Technology); Sindhu P S (Siddaganga Institute of Technology)
	4	328	YOLO8 based Smart Detection of Contaminants in Hyacinth Bean Grains	ASHA GOWDA KAREGOWDA (SIDDAGANGA INSTITUTE OF TECHNOLOGY)*
	5	330	Coconut Disease Detection using Traditional ML Classifiers with GLCM and SIFT Features	ASHA GOWDA KAREGOWDA (SIDDAGANGA INSTITUTE OF TECHNOLOGY)*

Chair: Dr. K R Sudhindra , Professor BMS College of Engineering Co-Chair: Dr. Roja Reddy Associate Professor, ETE Department RVCE	6	458	Fruit Classification and Ripeness Estimation using Deep Learning Models	ASHA GOWDA KAREGOWDA (SIDDAGANGA INSTITUTE OF TECHNOLOGY)*
	7	491	Automatic Robot for Rail Crack Detection system	SAI MANIKANTA GARLAPATI (VELAGAPUDI RAMA KRISHNA SIDDHARTHA ENGINEERING COLLEGE)*; Dr Chava SS Anupama (V.R.Siddhartha Engineering College); SAJIDA SHAIK (VELAGAPUDI RAMA KRISHNA SIDDHARTHA ENGINEERING COLLEGE); MANI DURGA DEEPAK BALAGA (VELAGAPUDI RAMA KRISHNA SIDDHARTHA ENGINEERING COLLEGE); SRIVALLI CHENNAMSETTI (VELAGAPUDI RAMA KRISHNA SIDDHARTHA ENGINEERING COLLEGE)
	8	341	Detection of airports and runways from aerial imagery using deep learning	Abhishek Paul Valeti (Velagapudi Ramakrishna Siddhartha Engineering College)*; Abhilash Vadanala (Velagapudi Ramakrishna Siddhartha Engineering College); Gnaneswar Kotha (Velagapudi Ramakrishna Siddhartha Engineering College); Vasavi Movva (Velagapudi Ramakrishna Siddhartha Engineering College)
	9	324	Video Action Recognition in Noisy Environments using Deep Learning Techniques	Tharuni Dayara (B V RAJU INSTITUTE OF TECHNOLOGY)*; Mahesh Kumar Challa (B V RAJU INSTITUTE OF TECHNOLOGY)
	10	791	A Comparative Analysis Of Denoising Pcg Signals Using Adaptive Wiener-Kalman Filtering	Pandiaraj A (SRM institute of Science and Technology), Ramshankar N (RMD Engineering College)
FACULTY COORDINATOR: Dr.Sahana B, Dept.of ECE				

DATE: 09.11.2024 SESSION 34 TRACK: Online Track 5	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 11:00AM-01:00 PM	1	157	Weather monitoring for curating Cricket pitches using Machine Learning and Arduino	Dr Gurupriya M (Amrita School Of Computing,Amritavishwa Vidyapeetham)*; Thangam S (Amrita School Of Computing)
Venue: ISE WiC CoE Lab	2	183	A Sustainable Smart Irrigation and Crop Protection System for Bangladesh	Khandakar Rabbi Ahmed (Rajshahi University of Engineering and Technology)
Chair: Nirmala H, Professor, DEpt of ISE, Global Academy of Technology	3	347	Handwritten Text Recognition and Conversion System	S Dinesh Krishnan (B V Raju Institute of Technology)*
Co-Chair: Dr. Deepamala N, Associate Professor, Dept. of CSE, RVCE Contact: 9742002251	4	432	A Comparative Analysis of Machine Learning Algorithms for Crop Recommendation	Samitha Khaiyum (Dayananda Sagara College Of Engineering); Chandrika M (Dayananda Sagar College of Engineering); Vinay Krishna Bhat (Dayananda Sagar College Of Engineering)*
	5	559	The Intersection of AI and Additive Manufacturing: A Bibliometric Analysis of Research Trends	Deepak Kumar Singh (Chandigarh University)*; Ramandeep Sharma (Chandigarh University); Pradeep Kumar (Chandigarh University); Inkelab Alam (Chandigarh University); Karan Singh Notte (Chandigarh University); Pamil Arora (Chandigarh University)

	6	594	Optimized Incremental Conductance MPPT for Grid-Connected PV Systems with Battery and Supercapacitor Integration	Madhumathi Eti (RV College of Engineering), Dinesh M N (RV College of Engineering)
	7	887	Corner Key Point Extracted Deep Learning Framework based Birds Species Classification	Shyamala Devi M (Panimalar Engineering College), Jamal Mohammed R (Panimalar Engineering College), Hemanth S (Panimalar Engineering College), Harish Raj B (Panimalar Engineering College), Gajapathy R(Panimalar Engineering College), Kamalesh P (Panimalar Engineering College)
	8	355	Advancement in EEG Signal Feature Extraction for Enhanced Seizure Detection and Prediction	Sonam Khattar (Chandigarh University), Ravinder Kaur (Thapar University)
FACULTY COORDINATOR: Dr.Manjula Sarode, Dept.of Chemical Engg. Contact: 9739137813				

DATE: 09.11.2024 SESSION 35 ONLINE TRACK: 06	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
	1	117	Enhancing Blood Subtype Recognition through Convolutional Neural Networks: Binary and Multi-Class Approaches	Poonam Shourie (Chitkara University)*
Time: 11:00-1:00 PM	2	120	Generative X-Ray Synthesis for Enhanced Disease Prediction In Medical Imaging	Smitha Rai (Nmamit, Nitte)*
Venue: ISE VC CoC Lab	3	416	Signal Noise Reduction Algorithm for Object Localization and Tracking using a 2-Dimensional Ultrasonic Sensor Array	Sambhav Jain (Delhi Technological University)*; Kuldeep Singh (Defence Research And Development Organization)
Chair: Dr. Hemanth S, Professor, Dept. of CSE, RNSIT	4	537	MAESTRO: A robust Multi-head Attention Enhanced CNN architecture for Heat-induced Stress Recognition using EEG signals	Sagnik De (Institute Of Radio Physics And Electronics, University Of Calcutta)
Co-Chair: Dr. Hemavathy R, Associate Professor, Dept. of CSE, RVCE	5	856	A Research Survey On Intelligent Detection Surface Irregularities with Deep Learning	Prathamesh Sunil Takawale (Jspm Rajarshi Shahu College Of Engineering Tathawade Pune)*; Sonali Rangdale (Jspm Rajarshi Shahu College Of Engineering Tathawade Pune); Prathmesh Pathak (Jspm Rajarshi Shahu College Of Engineering Tathawade Pune); Prathamesh Potdar (Jspm Rajarshi Shahu College Of Engineering Tathawade Pune); Abhishek Unde (Jspm Rajarshi Shahu College Of Engineering Tathawade Pune)

6	862	Arbitrary Kernel Embossed Linear Edge Filtered Residual Network based Sports Ball Classification	Uma Nandhini., D (Vel Tech Rangarajan Dr.Sagunthala R & D Institute Of Science And Technology)*; Shyamala Devi M (Panimalar Engineering College, Chennai, India)	
7	890	Contour Edge Mask Filtered Residual Network based Egg Classification	Shyamala Devi M (Panimalar Engineering College, Chennai, India)*; Sangeetha V. (Panimalar Engineering College, Chennai, India); Reshma R (Panimalar Engineering College, Chennai, India); Saima Nooreen (Panimalar Engineering College); Rajeshwari C. (Panimalar Engineering College, Chennai, India); Sai Pranavi N (Panimalar Engineering College, Chennai, India)	
8	891	Canny Edge Filtered VGG Framework for Diamond Cut Classification	Shyamala Devi M (Panimalar Engineering College, Chennai, India)*; Sukesh Babu R (Panimalar Engineering College, Chennai, India); Suganthan K (Panimalar Engineering College, Chennai, India); Sarmila R. (Panimalar Engineering College, Chennai, India); Sai Sruthi N. (Panimalar Engineering College, Chennai, India); Sathiyapriya R (Panimalar Engineering College, Chennai, India)	
9	932	IoT-Weather Integration for Enhanced Cricket Tactics with Gradient Boosting Algorithm	Sujatha S (Saveetha School Of Engineering)*	
FACULTY COORDINATOR: Prof.Rasmi R, Dept.of ISE				

DATE: 09.11.2024 SESSION 36 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 2:00-3:45 PM	1	806	DermaDetect: Advanced Melanoma Skin Cancer Classification Using Convolutional Neural Networks	Kartik V Ambekar (Ms Ramaiah University Of Applied Sciences)*
	2	807	Recommendation System For Social Platform Using Deep Learning Techniques	Nishchal Narayan S (R V College Of Engineering)*
	3	819	Malicious Human Activity Detection	Neeta B Malvi (RV College Of Engineering)*; Sahana B (R V College Of Engineering); Mounith H (R V College Of Engineering)
	4	821	Silk Shield: Empowering Sericulture with AI-Driven Disease Detection	Maanasa M R (Ssit)*; Sriraksha Devaraj (Ssit); Vidya K V (Ssit); Nicy Siby (Ssit); Shivram R Suthar (Jssate); Revanna B R (Bmsce)
	5	822	Cross-Modal Ingredient Recognition and Recipe Suggestion Using Computer Vision and Predictive Modeling	Sanin Zulphi M (Christ University); Muzzammil Razin Pa (Christ University); Rahul Krishna K R (Christ University); Gobi Ramasamy (Christ University)*
	6	876	SentinelGuard: Advanced Techniques for Unveiling Malicious Mobile Applications	Prof. Pavithra H
	7	958	DOH Integrator tool	Chaitra Patil (RV College Of Engineering)*

FACULTY COORDINATOR: Prof.Vandana Jha, Dept.of EEE				
DATE: 09.11.2024 SESSION 37 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 2:00- 3:45 PM Venue: ISE 106A Chair: Dr.Satish Basapur, Associate Professor, Dr. AIT Co-Chair: Dr. Vinay V Hegde , Associate Professor, Dept. of CSE, RVCE	1	877	Predictive Analytics for Milk Quality using Random Forest(RF) Algorithm	Narendra Kumar Sura (R V College Of Engineering)*
	2	913	VIRTUAL COMPANION: A HUMAN FRIENDLY CHATBOT	Prithiviraj N (R.V College Of Engineering)*
	3	914	Enhancing Railway Safety through Human Activity Recognition	Narasimha Swamy S (RVCE)*; Kushaal S (RVCE); Shiva Kumar (RVCE); Ravikiran Aithal (RVCE)
	4	917	A Novel Approach for Phishing Website Detection using Deep Learning Models	Gokul Gopakumar (Amrita School Of Computing, Amrita Vishwa Vidyapeetham, Bengaluru, India)*; Chellu Vyshnavi (Amrita School Of Computing, Amrita Vishwa Vidyapeetham, Bengaluru, India); Chukka Mishal Raj (Amrita School Of Computing, Amrita Vishwa Vidyapeetham, Bengaluru, India); Guddeti Bindu Prasanna (Amrita School Of Computing, Amrita Vishwa Vidyapeetham, Bengaluru, India); Suja Palaniswamy (Amrita School Of Computing)
	5	973	DDOS detection using ML and Deep learning approaches	Sumukh S (RVCE)*; Sandhya S (R. V. College Of Engineering)

	6	1002	Custom Architecture for Effective Semantic App Search: A Systematic Approach	Hrithik Maddirala (RV College Of Engineering), Nehashri Poojar S V (RV College Of Engineering), Nisarga V (RVCE), Dr. B M Sagar (RV College Of Engineering), Merin Meleet (RV College Of Engineering), Ravi Sankar Guntur (Samsung R&D), Vanraj Vala (Samsung R&D)
FACULTY COORDINATOR: Dr.Sindhu D V, Dept.of CSE				
DATE: 09.11.2024	SESSION 38 TRACK: AI	SL NO.	PAPE R ID	PAPER TITLE
Time: 02:00-03:45 PM	1	394	Architecting Large-Scale Recommendation Systems with Apache Spark's Distributed Framework	Gaurav Hegade (RVCE)*; Hammish Raj Wadeyar (RVCE); Manthan S Shetty (RV College Of Engineering); Pratiba D (R V College Of Enginerring); Dr. P. Ramakanth Kumar (RVCE)
Venue: ISE 112B	2	938	Image-Based WBC Analysis: A Machine Learning Approach for Cancer Detection	Shivandappa - (R V College Of Engineering)*; Spoorti Anil Bandikatte (R V College Of Engineering); Shradha Anand Mulimani (R.V. College Of Engineering); Tanush Nilesh Gundawar (RVCE); Rao Deeksha Umesh (RV College Of Engineering); Divyashree Kori (Department Of Ai And Ml, Dr. Ambedkar Institute Of Technology)
	3	951	Smart Land Use Planning: Integrating Geographic Information Systems (GIS) with Graph Neural Networks (GNN) for Hazard Identification	Balaji S (RV University)*; Ranjani G (RVCE); Cvsn Reddy (RV University)
	4	964	Support Vector Regression based Traffic	Somesh Prof Nandi (RVCE)*; Ansh Srivastava (RV College Of

Chair: Dr. Sarasvathi V, Professor, Dept of CSE, PES University EC Campus			Prediction Machine Learning Model	Engineering); Mrigaannka S (RVCE)
	5	966	Image Quality Assessment	Sri Haripriya Rai N (RVCE)*
	6	980	Design and Optimization of Filters and Amplifiers using Machine Learning	Sukruth Gowda K P (R V College Of Engineering)*; Shanthi P (R V College Of Engineering)
	7	981	A novel approach to enhance the topic modeling using Graph with BERT embeddings	Renuka Rajendra (Amritha College Of Engineering)*; Santhanalakshmi S (Amrita Vishwa Vidyapeetham)
FACULTY COORDINATOR: Dr. Usha Padma, TCE				
DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 39 TRACK: Robotics & Green Electronics				
Time: 02:00-03:45 PM	1	203	Design Of Low-Power 10T Full Adder For Sustainable Computing	Vijayashri V Belgaonkar (Sir Mvit)*
	2	362	Design of a low power Static Random Access Memory (SRAM) with integration of clock gating technique in 22nm Technology	Tejas M P (Reva University)*; Prasenjit Deb (Reva University)
	3	800	Integrated Design of a Controller and Compliant Power Supply for USB Power Delivery	Anudeep N Rao (R.V. College Of Engineering)*
	4	939	Real Time Smart Forest Fire Detection and Monitoring System Using IoT and Machine Learning	Tejas Neswi (R V College Of Engineering)*; Khushal A (R V College Of Engineering); Kishore A (R V College Of Engineering); Dr.Mohana . (RVCE); Badarinath K B (R V College Of Engineering)
Venue: TCE SEMINAR HALL				

Chair: Dr. Nagamadhu, Professor, BMSIT, Mechanical Engineering	5	1015	Design and timing analysis of 32 bit floating point pipelined multiplier	Surabhi A S (R V College Of Engineering)*
Co-Chair: Dr. Usha Rani, Professor Dept. Of ECE, RVCE	6	1033	Pattern Generated Counter with Variable Step Size	Chaitrashree S (RV College Of Engineering)*; Gaurav C (RV College Of Engineering); Kiran Kumar (RV College Of Engineering); Prathap C (RV College Of Engineering); Shylashree N (RV College Of Engineering)
	7	1037	An Extensible and Modular Cloud-Enabled Vehicle Tracking System Using Raspberry Pi Zero 2 W	Arahanth M (RV College Of Engineering)*; Aakanksh N (RV College Of Engineering); Akash Tambake (RV College Of Engineering); Aryan Jha (RV College Of Engineering); Badarinath K (RV College Of Engineering)

FACULTY COORDINATOR: Dr.Roopa T S, Dept.of Mech Engg.

DATE: 09.11.2024 SESSION 40 TRACK: Robotics & Green Electronics	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
	1	24	Web-server controlled rover with robotic arm and object detection	S Prajwall Narayana (RVCE)*
Time: 02:00-03:45 PM	2	74	Bottom-up parsers: A Survey	B Venkat Vinod Kumar (Amrita Vishwa Vidyapeetham, India); Hari Narayana Appala (Amrita Vishwa Vidyapeetham); Bharadwaj Bejji (Amrita Vishwa Vidyapeetham); Meena Belwal (Amrita School Of Engineering)
Venue:	3	253	Intelligent Railway Track Crack Detection System	Pranav Shandilya (Jssstu)*; Sanjana J (Jssstu); Anitha S Prasad (Jss Science And Technology University); Dr. Gayathri S (Jss Science And Technology University)

CHEMICAL SEMINAR HALL Chair: Dr.Arun S B, Professor, SIT, Mechanical Engineering	4 5 6	401 515 544	Smart Cooling: Temperature-Controlled BLDC Motor with Advanced System Health Monitoring	Sahana R (RV College Of Engineering)*; S.G. Srivani (RVCE, Bangalore)
			Developing Real Time Inventory Status System Using LabVIEW	S Naveen Kumar (RVCE)*; K B Ramesh (RV College Of Engineering)
			Synergism of Medicine and Robotic Applications for the Future- A Review	Renu Madhavi C H (RV College Of Engineering)*; Dr.Vidya M J (RV University); Padmaja K V (RV College Of Engineering)

FACULTY COORDINATOR: Dr. Vinutha Moses, Dept.of Chemical Engg.

DATE: 09.11.2024 SESSION 41 TRACK: Robotics and Green Electronics	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-03:45 PM	1	596	Design of a Comprehensive Virtual reality Cricket Simulator for Immersive Skill Training	Gururaj B N (B.M.S. College Of Engineering)*; Kavitha Sooda (B.M. S. College Of Engineering)
	2	631	LoRa based IoT enabled Wearable Sensor Network for Safety and Health Monitoring in Sewage Environment	Alageswaran Ramaiah (Sastra Deemed To Be University)*; Pranav S (Sastra Deemed To Be University); Dhinesh K.S (Sastra Deemed To Be University); Saravanan K (Sastra Deemed To Be University); Janani K (Sastra Deemed To Be University)

Venue: PHYSICS SEMINAR HALL	Chair: Dr. Adarsha, Professor, Jain University, Mechanical Engineering	3	667	Development of SoC for Automation and Robotics in Fault Tolerant Applications	Padmapriya K (Indian Space Research Organization); Rahul Anilkumar (Indian Space Research Organization)*; Bksvl Varaprasad (Dayananda Sagar College Of Engineering); Sukrat Gupta (Indian Space Research Organization); Debjyoti Mallik (Semi-Conductor Laboratory); J Krishna Kishore (Indian Space Research Organization)
		4	749	Low Cost Motorcycle Crash Detection	Darshan Melkote (The Brigade School)*
		5	854	Topology Optimization and Generative Design for Weight Reduction in Palletizer Robots	Harisha S K (RV College Of Engineering)*
		6	994	Strategic DFT Implementation and Verification of Next – Gen Electronics using ATPG simulation	Bhavitha K R (RV College Of Engineering)*; Sowmya K B (RV College Of Engineering Bengaluru)
		7	1012	Design and Development of RV-IoT Board - Prototyping platform for designing IoT projects	Shreyas Shankar (R.V. College Of Engineering)*
FACULTY COORDINATOR: Dr. Nagesh S, Dept.of Mechanical Engg.					

DATE: 09.11.2024	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
SESSION 42 TRACK: Renewable Energy	1	498	Integration of Green Hydrogen in Rural	Jomole Joseph Peedikayil (Amrita Vishwa

Time: 02:00-03:45 PM Venue: MV SEMINAR HALL Chair: Dr. Roopa Nayak, Associate Professor & HoD, EEE, RNSIT, Email: roopanayakrao@gmail.com. Mobile number:9741175518 Co-Chair: Dr J N Hemalatha, Dept of EEE, RVCE			Regions of India for Reliable and Secure Supply through Decentralized Renewable solutions	Vidyapeetham); Soumya Sathyan (Amrita Vishwa Vidyapeetham Amritapuri Campus (Amrita University) Kollam); Ravikumar Pandi*; Marco Merlo (Politecnico Di Milano)
	2	578	Transforming Wastewater Management: The Evolution and Future of Compact STPs	Mihira Gayathri Nemani (R V College Of Engineering)*; Nidhi P (R V College Of Engineering); Swaroop K (R V College Of Engineering); Vijay Raghavan (R V College Of Engineering); Raviraj Kusanur (RV College Of Engineering); Jagadish Patil (R V College Of Engineering)
	3	599	Development of Mobile Application for Monitoring and Fault Diagnosis of Standalone Photovoltaic Systems	Sushmita Sarkar (R.V College Of Engineering)*
	4	644	Artificial Intelligence in Corporate Social Responsibility and Environment Sustainability	Nishchint Tiku (R.V. College Of Engineering)*; Saksham K Jindal (RV College Of Engineering); Lokeshwari Lokeshwari M (R V College Of Engineering Bengaluru)
	5	692	Blockchain-Powered Carbon Credit Management: Innovating Sustainability Tracking	Prapulla S B (R V College Of Engineering)*; Hamsaveni R (R V College Of Engineering); Himashree N R (R V College Of Engineering); Madhubala M (R V College Of Engineering); Lavanya M (R V College Of Engineering); Amit Sata (Mefgi); Swarna Patra (R V College Of Engineering)
	6	721	Design and Implementation of Closed-Loop Series Resonant Boost Converter	Madhuchandru B S (Bmsce Bengaluru); Chandasree Das (Bms College Of Engineering)
	FACULTY COORDINATOR: Dr. Shobha N S, Dept.of IEM			

DATE: 09.11.2024 SESSION 43 TRACK: Renewable Energy	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Venue: IEM SEMINAR HALL Chair: Dr K N Bhanuprakash, Professor & Head, Department of Electrical Engineering, AMC Engineering College	1	726	Electricity Harvester using Acoustic Energy	Parth Panigrahy (RVCE Bengalore)*; R. Chithra (RVCE, Bengaluru); Sahana Markande (RVCE, Bengaluru); Naren Karthik K (RVCE, Bengaluru); Kruthika N (RVCE, Bengaluru); Suma N Manjunath (RVCE, Bengaluru); Swarna Patra (R V College Of Engineering)
	2	783	Eco-power nexus: Eccentric EV charging paradigms through bilateral vehicle-grid (B-VG) dynamics	S.G. Srivani (RVCE, Bangalore); V Srinivasulu (RV College Of Engineering)*; Sahana R (RV College Of Engineering)
	3	845	Piezoelectric – Based Energy Harvesting Testbed for Sounding Rocket Platforms	Pratik B Matt (R.V. College Of Engineering)*
	4	897	INVESTIGATION ON PRISTINE AND DOPED PVDF-HFP ELECTROSPUN THIN FILMS	Shreesha G (RV College Of Engineering)*; Shreya Joshi (RV College Of Engineering)
	5	952	Influence of Clay and Moisture Content on characteristics of stabilized mud blocks made with sandy soil	Mohd Imran Ahmed
	6	953	INFLUENCE OF ROAD PAVEMENT ROUGHNESS ON CARBON EMISSIONS OF VEHICULAR TRAFFIC TRAVELLING AT VARYING SPEEDS	Kiran S Sarjakar (RV College Of Engineering); Archana M R (RV College Of Engineering); Anjaneyappa . (RV College Of Engineering); Chandra Kumar R (RV College Of Engineering)

Co-Chair: Dr Ujwal Shreenag Meda, Dept. of CH, RVCE				
	7	960	Automation of a water treatment plant based on PLC integrated systems	Dr. Ashok Kumar Kumawat (Manipal University Jaipur)*
FACULTY COORDINATOR: Dr.Sahana B, Dept.of ECE				
DATE: 09.11.2024	SL NO.	PAPER ID	PAPER TITLE	AUTHOR NAME
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Time: 02:00-03:45 PM	2	991	Investigation of Variable Viscosity Impact on Convection Dynamics in Viscoelastic Ferromagnetic Fluids	Jayalatha G (RV College Of Engineering)*; Sujatha P R (Sdc Degree College); Nivya Muchikel (RV College Of Engineering); Suma N Manjunath (RV College Of Engineering)
Venue: ECE SEMINAR HALL	3	996	Kinetic Analysis of Immobilized Carbonic Anhydrase for Effective Environmental CO ₂ Capture and Sequestration	Sumathra Manokaran (RVCE)*; Shraddha Anand Mulimani (R.V. College Of Engineering); Abhik Dutta (RV College Of Engineering); Anirban Roy (RV College Of Engineering); Manjunatha Ah Reddy (R.V. College Of Engineering)

Chair: Dr. Shankarlingappa C B, Professor, Dr AIT Co-Chair: Dr Vishnumurthy, Chemical Dept, RVCE	4	1004	Analytical review of Carbon Footprinting at R V College of Engineering	Manjunatha Ah Reddy (R.V. College Of Engineering)*; Kashyapa V Sharma (RV College Of Engineering); Rohan Basavaraja (RV College Of Engineering); Chirag Reddy (RV College Of Engineering); Rakshitha Br (RV College Of Engineering); Subramanya K N (R.V College Of Engineering); Sumathra Manokaran (RVCE)
	5	1007	An attempt to reduce carbon footprint by enhancing the synthesis of biofuels with Pichia pastoris	Sumathra Manokaran (RVCE)*; Manjunatha Ah Reddy (R.V. College Of Engineering); Rishika Mohan (RV College Of Engineering); Shweta Bathija (RV College Of Engineering); Shreya Lal (RV College Of Engineering); Nagashree B (RVCE)
	6	1011	Fungal assisted carbon capture: A comparative analysis of fungal strains in plastic degradation for carbon utilization	Sumathra Manokaran (RVCE)*; Harshitha Kn (RV College Of Engineering); Vijay R (RV College Of Engineering); Yogeesh As (RV College Of Engineering); Amith B (R V College Of Engineering); Manjunatha Ah Reddy (R.V. College Of Engineering)
	7	1023	Impact of Fine aggregate on Properties of Geopolymer Concrete	Sasalatti Vinod Maruti (Metro Rail Corporation Limited, Bengaluru); Radha Krishna (RV College Of Engineering)*; Sachin K C (RV College Of Engineering)
FACULTY COORDINATOR: Dr. Sandya S, Dept. of CSE				

DATE: 09.11.2024 SESSION 45 TRACK: Next Generation	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
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	2	946	FPGA based Multi-functional and Multi-dimensional Smart Network Routing Processor	Sumana Achar (Jss Academy Of Technical Education)*; Jayadevappa Devappa (Jssate)
	3	984	Design and Power Optimization of a 64-bit SIMD Processor with Efficient Carry-Bit Handling	Nithya G (RVCE)*; Ravishankar Holla (RVCE)
	4	1017	Design of Lens Based Circular Polarized Antenna Array for C Band Applications	Manjunath V (RV College Of Engineering)*; Shushrutha K.S. ("R.V. College Of Engineering, Bangalore")
	5	1039	Design and Performance Analysis of Slotted Vivaldi Antennae in X-Band	Kousthub Kaivar (RV College Of Engineering)*; Sunil Joshi (RV College Of Engineering); Aryan Namoodiri (RV College Of Engineering); Harshhitha P (RV College Of Engineering); Shushrutha K.S. ("R.V. College Of Engineering, Bangalore")
	6	1040	Design and Analysis of a 2x1 Circular Patch MIMO Antenna with Defected Ground Structure for WiMAX in UWB Applications	Amol C Bhosale (Trinity College Of Engineering And Research)*; Amol Bhosale (Bkit Bhalki)

DATE: 09.11.2024 SESSION 46 TRACK: Bio Medical Electronics	SL NO.	PAPE R ID	PAPER TITLE	AUTHOR NAME
Time: 02:00-03:45 PM	1	847	In Silico Docking Studies of Phytochemicals from Oxalis corniculata for anti-inflammatory effects targeting COX-4	Manjunatha Ah Reddy (R.V. College Of Engineering)*; Sindhu R (RV College Of Engineering); Sumathra Manokaran (RVCE); Shruthi Sd (Bioedge Solutions Bangalore)
	2	861	Targeted Drug Repurposing for Idiopathic Pulmonary Fibrosis	Shivandappa - (R V College Of Engineering)*; Sumathra Manokaran (RVCE); Madhumitha Dhanasekaran (RV College Of Engineering); Jyothika Reddy (RVCE); Medha R Rao (R.V. College Of Engineering); Manasi N S (R V College Of Engineering)
	3	875	Prevalence of life style factors on quality of life and mental well being	Manjunatha Ah Reddy (R.V. College Of Engineering)*; Sumathra Manokaran (RVCE); Subramanya K N (R.V College Of Engineering); Snigdha Tutika (RV College Of Engineering); Vineeth Kiran (RV College Of Engineering)
	4	886	Static Timing Analysis of Modified 8 bit Pipelined Multiplier with Carry Lookahead Adder Approach	Revanna J T (R V College Of Engineering Bengaluru)*; Gurudatt B M (R V College Of Engineering Bengaluru); G R Deepakkumar (R V College Of Engineering Bengaluru); Vedashree B S (R V College Of Engineering Bengaluru); Shylashree N (RV College Of Engineering)
	5	903	Targeting Friedreich Ataxia: A sustainable path to safer and smarter therapeutics through	Hima Bindu Attel (RVCE); Rakshaa P P (RVCE); Arya K (RV College Of Engineering); Brunda S (RVCE); Shivandappa - (R V College

Co-Chair: Dr.Anand Jatti, Associate Professor, Dept.of EIE, RVCE			integrated Docking and Toxicology	Of Engineering); Sumathra Manokaran (RVCE)*
	6	940	Machine Learning for Predictive Modeling and Personalized Treatment in Magnesium-based Biomedical Applications	Melyn Babu (R.V. College Of Engineering); Jnyanadeep Bandaru (RV College Of Engineering)*; S Sahana (RV College Of Engineering); Rohit Suresh (RV College Of Engineering); Roopa T S (RVCE); Gangadhar Angadi (RV College Of Engineering, Bengaluru)
	7	1010	Fluorescent Nucleic acid Biosensors: A Comparative Study of DNA and RNA Based Sensing Platforms	Sumathra Manokaran (RVCE)*; Niranjana S (RV College Of Engineering); Prerna Kriti (RV College Of Engineering); Anika . (RV College Of Engineering); Manjunatha Ah Reddy (R.V. College Of Engineering)

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TRACK: COMPUTATIONAL ANALYSIS OF STRUCTURAL AND FUNCTIONAL MATERIALS

Paper ID-128

Search Engine Optimization (SEO) Auditing Tool

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Abstract—The Search Engine Optimization (SEO) Auditing Tool is a feature-rich Java-based tool made with the power of Data Structures. It caters to help digital marketers and website managers optimize their online presence by performing in-depth SEO analysis. This tool performs category identification, backlink analysis, broken link detection, page load time analysis, and user interface analysis. Auditing evaluates for the best practices to be adopted in improving the ranking performance on search engines. SEO Auditing revolves within the analysis of Technical SEO, On-Page SEO, Off-Page SEO, User Interface (UX/UI) and Competitor Analysis. The tool explores all categories within Auditing to briefly estimate the quality of a website and inclusion of Competitor analysis to this tool would add best possible comparison and evaluation of websites.

Paper ID-247

SmartSort Visualizer: Interactive Tool for Optimal Data Sorting and Algorithm Recommendation

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Abstract — SmartSort Visualizer, integrating Data Structures and Algorithms with Java, offers a tool for sorting and algorithm analysis. Users can choose from various algorithms, including Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Radix Sort, Heap Sort, Shell Sort, and Quick Sort, to visualize the sorting process for integers, doubles, and strings. It operates in two modes: Sorting Visualization, which shows how algorithms sort data in ascending or descending order, and Optimal Sorting Method, which recommends the best algorithm based on performance metrics. This paper introduces a novel sorting recommendation

system that evaluates the efficiency of algorithms in real-time, offering the best option for both ascending and descending orders.

Paper ID-277

Deep Mole Skin Cancer Detection Using Convolutional Neural Network(CNN) Model

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Abstract— The creation and assessment of a Convolutional Neural Network (CNN) model for the early diagnosis of skin cancer is the main goal of this research project. With the help of the Skin Cancer MNIST HAM10000 dataset, the model attempts to achieve high classification accuracy for mole images. A customized CNN architecture with convolutional layers, max pooling, batch normalization, and dropout layers is created as part of the study. Photographs of moles can be uploaded and classified via an easy-to-use Flask and Python web interface. The system's performance is assessed using a range of criteria, indicating its potential for use in the real world in the early identification of skin cancer. In addition, the research tackles important issues such user interface design and model optimization, offering a complete solution for practical implementation.

Paper ID-317

Enhancing Chatter Resistance in Deep Hole Boring Through Modified Tool Design: A Study on impact of Length-to-Diameter (L/D) Ratio

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Abstract— Deep hole boring is a specialized machining process crucial for creating precise bores with high length-to diameter (L/D) ratios, particularly vital in aerospace, automotive, and oil and gas industries. The L/D ratio is pivotal for stability and performance. Chatter, a detrimental vibration phenomenon, is a significant concern in deep hole boring, influenced by the L/D ratio. Higher L/D ratios increase chatter, leading to poor surface finish and reduced tool life. Longer tool lengths in high L/D ratios reduce damping effects, increasing chatter and impacting machined surface quality. Strategies for mitigating chatter include tailoring tool geometries, implementing damping methods, and adjusting cutting parameters based on specific L/D ratios for optimization. The study employs a three-phase methodology to enhance the dynamic performance of a standard AISI 4340 steel boring tool, S25T SCLCR 09 T3, with a modified version featuring a damper. Modal and harmonic analyses, both

numerical and experimental, are conducted to evaluate the natural frequencies, mode shapes, damping ratios, and response to periodic loads. Boring operations are performed under constant conditions, and surface roughness measurements are taken for both the solid and modified tools. The results reveal that the modified tool consistently exhibits lower natural frequencies and higher damping ratios, indicating improved stability during machining. Surface roughness measurements demonstrate a significant percentage improvement for the modified tool, highlighting its effectiveness in enhancing machining precision and chatter resistance. The study contributes valuable insights into the impact of length-to-diameter (L/D) ratio on tool performance, offering practical implications for optimizing machining conditions.

Paper ID-624

NiS//MWCNT-based supercapacitor for efficient energy storage

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Abstract—The current study focuses on the synthesis of nickel sulfide (NiS) nanoparticles through hydrothermal treatment using CTAB as surfactant and characterized by XRD, SEM and BET analysis. NiS electrode material for supercapacitor is characterized by electrochemical impedance spectroscopy (EIS), cyclic voltammetry (CV), and galvanostatic charging and discharging (GCD)measurements in a 6 M aqueous KOH electrolyte. The NiS nanoparticles exhibited remarkable performance, achieving a specific capacitance of 850 Fg⁻¹ at a current density of 1 Ag⁻¹ and maintaining a cycling stability of 67% of the initial capacitance over 10,000 cycles, with a columbic efficiency of 98%. The NiS//MWCNT coin cell device demonstrated a capacitance of 50 Fg⁻¹, an energy density of 23.5 Whkg⁻¹ and a power density of 600 Wkg⁻¹. Additionally, in a practical application, four NiS//MWCNT coin cell devices powered an Arduino-driven touch sensor capable of accurately detecting distances and recording multiple touch signals. By integrating multiwall carbon nanotubes as the negative electrode material in asymmetric supercapacitors, this study presents a novel approach to enhancing energy density and cycle life in supercapacitors.

Paper ID-824

In Silico Target Tracking: Molecular docking and pharmacokinetic studies of naturally occurring flavonoid glycosides and their activity against COVID-19 viral proteins

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Abstract— The study investigated the potential of ten flavonoid glycosides (Rutin, Nicotiflorin, Naringin, Diosmin, Apigetrin, Spiraeoside, Kaempferol, Quercetin, Isoquercetin, and Astragalin) as SARS-CoV-2 protein (Spike, RdRp, Mpro, and PLpro) inhibitors using molecular docking and pharmacokinetic analysis. Despite extensive research on general antioxidants against SARS-CoV-2, flavonoid glycosides remain understudied. This research aims to bridge this gap by investigating the docking results, which indicate potential inhibitory activity of all tested compounds, with Naringin and Diosmin showing optimal binding to RdRp, Apigetrin to Mpro, Diosmin to Spike protein, and Naringin to PLpro. These findings warrant more in vivo and in vitro research to assess flavonoid glycosides' potential as a treatment for COVID-19.

Paper ID-871

Study of Heat Treatment Effects on Al6061

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Abstract—This paper presents an experimental study on the effect of heat treatment on the mechanical properties of Al6061 alloy. The heat treatment was conducted at temperatures ranging from 523 °C to 554 °C, with soaking times between 20 to 60 minutes, and quenching mediums of sand, water, and oil, following an L9 orthogonal array design. The results indicated improvements in compression strength, hardness, and wear resistance by 50.23%, 120.37%, and 93.39%, respectively, compared to the untreated Al6061 alloy. However, a decrease in tensile strength by 22.34% was observed. The optimal conditions were achieved at a heating temperature of 554°C, a soaking time of 60 minutes, and using water as the quenching medium.

Paper ID-872**Metal-Reinforced Thermoplastics: A New Frontier in Structural Materials**¹Neetha M V, ²Gangadhar Angadi, ³M Krishna, ⁴Roopa T S¹*Research Scholar, Department of Mechanical Engineering, RV College of Engineering, Bengaluru, India*^{2,3,4}*Department of Mechanical Engineering RV College of Engineering Bengaluru, India*¹neetamech19@gmail.com, ²gangadharangadi@rvce.edu.in, ³krishnam@rvce.edu.in,
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Abstract— Thermoplastic composites are cutting-edge materials that combine thermoplastic resins with reinforcing fibers that provide unique qualities and processing capabilities over traditional materials. A growing number of sectors like aerospace, consumer goods, medical, automotive and others are utilizing these composites increasingly. Aerospace industries employ thermoplastic composites extensively because of its excellent impact resistance, lightweight nature, and environmental sustainability. Metal-filled thermoplastic composites are upcoming advanced materials that combine thermoplastic resins with metal fillers to enhance specific properties such as thermal, electrical conductivity, damage tolerance, corrosion resistance, high fatigue and flame retardancy. The ultimate characteristics of Metal-filled thermoplastic composites are determined by multiple factors, including the metal particles shape, morphology, porosity, and dispersion. This review article renders some vital information about different kinds of metallic fillers and matrix material, applications, manufacturing process, mechanical, thermal, wear, and buckling properties, as well as the joining process of metallic filled polymer composites in various industries.

Paper ID-873**Smart phone for measurement of reflectivity of road pavement markings**¹V Anjaneyappa, ²Varuna M, ³Archana M R, ⁴Sunil S, ⁵Ravishankar Holla, ⁶Mahendra B M,
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Abstract -Thermoplastic road pavement markings guide, warn, and inform road users, contributing significantly to road safety. Pavement markings play an important role in enhancing road safety by providing visual guidance and information to drivers. Pavement markings help to improve lane discipline, delineate traffic flow and communicate important messages to road users. Portable reflectometers are used for measurement of reflectivity. Reflectivity measurements are generally carried out during the laying operations of pavement markings. The reflectometer is costly and often not available regularly with engineers of road authorities and contractors. Hence quality of reflectivity is assessed

through visual means during maintenance period. Smart phones which are handy and are with all, if made used for measuring quality of reflectivity during maintenance will be more useful for quick and relatively fair assessment of quality for any intervention required will be useful to all stake holders in enhancing the road safety. An attempt is made in the study to study the feasibility of using smart phone for measuring reflectivity. The study indicate use of smart phones for assessing the maintenance interventions of pavement marking.

Paper ID-919

Assessment of Distress in Concrete Pavement using Smartphone

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Abstract— The assessment of distress in pavement involves identifying and evaluating various forms of damage. Maintenance of pavements is a continuous activity for improving the safety and riding comfort. Traditional assessment techniques are labor intensive, time-consuming, and sometimes subjective, while other assessment techniques are destructive. This study aims to explore the use of smartphone and deep learning technique to assess concrete pavement distress. Images of distress are taken using smartphone at varying longitudinal and vertical distances from pavement surface and annotated using CVAT to acquire a dataset for model training using YOLOv5. An algorithm is developed to detect and determine the dimensions of distress. The results show that the mean percentage error is about 29% and 1% length and width respectively. The method may be employed for evaluation of pavement distress during prefeasibility and feasibility studies, assessing the maintenance requirements and budgeting.

Paper ID-924**Design and Verification of DDR5 Subsystem using UVM Methodology****¹Dr Uma B V, ²Kumar Muchalambi****¹Dean Student Affairs, dept.Electronics & Communication, R V College of Engineering,Bengaluru,590059****²dept.Electronics & Communication, R V College of Engineering,Bengaluru,590059****[1umabv@rvce.edu.in](mailto:umabv@rvce.edu.in), [2kumarmmm.lvs22@rvce.edu.in](mailto:kumarmmm.lvs22@rvce.edu.in)**

Abstract—This paper discusses the design and verification of a DDR5 subsystem using UVM methodology to achieve high data transfer rate. The current state of the electronics industry demonstrates a significant demand for improved DRAM performance, which is largely dependent on the performance of the DDR physical layer (PHY). The latest DDR5 JEDEC JESD79- 5A and DFI standards address these industry needs and outline the features of advanced DDR5 PHY. UVM, in combination with SystemVerilog Assertions (SVA), is chosen as an effective solution to create a robust and reusable testbench for the digital data path of the DDR5 PHY. In this work, we follow a verification flow that begins with extracting specifications from the standards, followed by developing a verification plan and finally constructing a UVM verification environment using SystemVerilog to obtain Functional and code coverage.

TRACK: GREEN ELECTRONICS: SUSTAINABLE PRACTICES**Paper ID – 203****Design of Low-Power 10T Full Adder for Sustainable Computing****¹Rajrajeswari ,² R Lavanya P ,³Thasmeen D ,⁴Varshikha K V ,⁵Vijayashri V. Belgaonkar ,
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Abstract— In the realm of digital circuit design, the quest for low-power solutions has garnered considerable attention because of the proliferation of battery-powered devices and the imperative to minimize energy consumption. This paper presents a novel approach for designing a low-power 10T full adder utilizing the Lector technique. The suggested design presents a comparison between 9T and 10T circuits, leverages the advantages of the Lector technique, which employs dynamic node isolation to reduce leakage current and dynamic power dissipation. By carefully optimizing transistor sizing and circuit topology, the proposed 10T full adder achieves a balance between power efficiency and performance. This research proposes a novel full adder design that reduces power consumption by 4% compared to conventional implementations. Simulation results confirm its effectiveness in achieving significant power savings while maintaining acceptable speed and area overhead. Our approach enhances energy efficiency in digital circuits, making it suitable for low-power applications.

Paper ID – 362

Design of a Low Power Static Random Access Memory (SRAM) with Integration of Clock Gating Technique using 22nm of CMOS Technology

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Abstract— This paper presents an evaluation of a 6T SRAM cell design utilizing a D flip-flop with an AND gatebased clock gating technique, demonstrating significant improvements in power efficiency compared to traditional designs. The proposed design achieves an average power consumption of just 352.92nW, a remarkable reduction compared to the 112.90 μ W consumed by traditional circuits. Additionally, the design using a D flip-flop with a NAND gatebased clock gating technique consumes 576.55 μ W. The AND gate-based clock gating technique reduces power consumption by approximately 99.687%, while the NAND gate-based version achieves a reduction of 99.489%, highlighting the substantial impact of these techniques on power efficiency. These results emphasize the potential of clock gating techniques in advancing low-power circuit designs.

Paper ID – 800

Integrated Design of a Controller and Compliant Power Supply for USB Power Delivery

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Abstract—This paper presents a design of an integrated controller and compliant power supply for USB Power Delivery (USB-PD). The design objectives focus on efficiency, costeffectiveness, and reliability, while adhering to the requirements of USB-PD. The design process employs an OA (OpenAccess) based flow in Cadence Virtuoso, which significantly enhances the integration and interoperability of the design within the Cadence environment. The design is validated up to 100W of delivered power By leveraging the integrated controller, designers can create USB power supplies that are not only efficient and safe, but also capable of meeting the growing power demands of modern devices. This work will provide valuable insights into the feasibility and potential benefits of this integrated approach. The findings of the present work will contribute to the ongoing discourse in this field and may pave the way for more efficient and compact USB PD solutions in the future.

Paper ID – 939

Real Time Smart Forest Fire Detection and Monitoring System Using IoT and Machine Learning

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Abstract- According to the National Interagency Fire Center (NIFC) forest fires pose a major threat to our planet, causing severe ecological, economic, and human loss, with an estimated 7 million acres of forest burned annually in the United States alone. To overcome this, in this paper proposed a cutting-edge solution that integrates Internet of Things (IoT), remote sensing, and machine learning technology. By deploying a network of sensors throughout

a certain forest area to monitor temperature, humidity, and smoke levels, we can collect real-time data on forest conditions. This data is transmitted to a centralized system with an accuracy rate of 92% in predicting potential fire outbreaks. This approach provides early detection of forest fires, allowing for rapid response and mitigation efforts. Proposed system ensures swift communication between the monitoring station, authorities, and firefighting teams, reducing response times. Rigorous testing, including over multiple simulations, has validated the system's effectiveness, positioning it as a major tool in forest fire management and potentially reducing fire damage by 30%.

Paper ID – 1015

Design and timing analysis of 32 bit floating point pipelined multiplier

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Abstract— The pipelined multiplier is designed to handle 32- bit floating-point operands and employs a pipelined architecture for improved performance. This paper examines the Verilog implementation and timing analysis of pipelined multipliers using Vivado Tool, specifically focusing on the assessment of timing slack. Through separate evaluations, it discusses instances where timing constraints are met and violated for multiplier design. The design employs LUTs primarily for logic operations, with 82 Slice Registers for state storage and pipelining. The total on chip power consumption is of 0.119 W. Positive slack of 2.546 ns is recorded and by analyzing timing slack, the paper provides valuable insights into the timing performance of both architectures, aiding in understanding their reliability and potential optimization avenues.

Paper ID – 1033**Pattern Generated Counter With Variable Step Size****¹Chaitrashree S, ²Gaurav C, ³Kiran Kumar J Purad, ⁴Prathap C, ⁵Shylashree N****¹²³⁴⁵ Dept. of Electronics and Communication Engineering RV College of Engineering Bangalore, India****¹chaitrashrees.lvs23@rvce.edu.in ²gauravc.lvs23@rvce.edu.in ³kirankumarjp.lvs23@rvce.edu.in ⁴prathapc.lvs23@rvce.edu.in ⁵shylashreen@rvce.edu.in**

Abstract—This paper presents the design and implementation of a pattern-generated counter with a variable step size, enhancing counting flexibility in digital systems. The counter increments by varying amounts based on a preloaded pattern, allowing for complex counting sequences tailored to specific applications. This capability is particularly beneficial in digital signal processing, event counting in communication systems, and adaptive control systems, where traditional fixed-step counters may be inadequate. Unlike fixed-step counters, which are constrained to a single, uniform increment, the proposed counter offers adaptability by adjusting the step size dynamically according to the pre-loaded pattern. This flexibility enables the design of more complex counting sequences, leading to improvements in operational efficiency. The architecture of the proposed counter is modular, accommodating various counting patterns and step sizes. Design constraints, particularly regarding timing and slack are analyzed to ensure efficient operation within specified parameters. Simulation results demonstrate the performance advantages of the patternbased approach, achieving higher throughput and reduced latency compared to conventional fixed-step methods. The findings indicate that the variable step size counter meets design constraints while offering significant improvements in operational efficiency and adaptability, thus representing a notable advancement over fixed-step counters. This work contributes valuable insights into flexible counting solutions applicable across diverse fields requiring dynamic counting capabilities. This design was implemented using Verilog HDL and simulated using Xilinx Vivado.

TRACK: ROBOTICS AND AUTOMATION

Paper ID-24

Web-server controlled rover with robotic arm and object detection

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Abstract- The paper and the work carried focused on developing a versatile rover equipped with a robotic arm, which can be remotely controlled through web servers and ESP32 microcontrollers. By utilizing ESP32, the system achieves seamless communication and control, enhancing its adaptability across various applications. Integration of YOLO 3, a Python based framework, enhances the rover's capabilities with object detection, enabling interaction with its environment. This flexibility makes the rover invaluable for tasks ranging from surveillance to automation. All ESP32 devices are connected to a central router within a LAN, optimizing connectivity and IP address management. This setup allows for collective rover control and individual device connections, enhancing system flexibility and utility. The paper delves into the technical details and implementation of this innovative project, emphasizing modularity to customize features for different tasks, thereby enhancing its versatility and usefulness.

Paper ID-40

AudioFacialMatrix: Dataset for Voice and Face AI

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Abstract—This paper introduces the “AudioFacialMatrix” dataset, which is an amalgam of audio and visual data to aid research on human voice and facial imaging through Artificial Intelligence (AI) techniques. The dataset comprises 10,000 pairs of facial images and corresponding voice clips, organized by the nationality of individuals from eight different countries. In addition to detailing the dataset, this paper describes the methodology used for data generation and expansion. Lastly, a clustering task and a liquid neural network implementation are elucidated with a concluding discussion on potential methods to leverage this dataset

Paper ID-74**Bottom-up parsers: A Survey**

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Abstract- This study offers a thorough analysis of bottom-up parsing techniques, necessary for the creation and execution of compilers. Parsers such as SLR (Simple LR), LR (Canonical LR), LR(k) and LALR (Look-Ahead LR) are bottom-up and known for their efficiency and robustness in constructing parse trees from root to leaves during syntax analysis. This paper follows the evolution throughout history, theoretical bases, and real-world uses of these parsers. We examine the formal characteristics, contrast different bottom-up parsing methods, and investigate advanced subjects like error handling and optimization techniques. Furthermore, there is a review of recent developments and upcoming research paths in bottom-up parsing to provide a comprehensive grasp of their significance in syntactic analysis.

Paper ID-216**SwiftTap: RFID-Driven Automation for Instant Password Entry**

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Abstract— SwiftTap is an innovative approach to user authentication by using RFID technology to replace conventional password-based methods. By employing everyday objects such as keychains and cards as secure substitutes, SwiftTap streamlines the authentication process. By merging progress in hardware and software, SwiftTap improves security and simplifies user access. This research delves into the intricacies of utilizing SwiftTap in different scenarios, such as in business settings and on personal devices. It also examines factors concerning user experience and their potential impacts. SwiftTap signifies a fresh era of effortless authentication, prompting users to embrace a smoother method of entry without the usual login difficulties. In addition to its seamless authentication capabilities, SwiftTap also addresses privacy concerns by employing encryption protocols that safeguard user data during transmission. Its versatility extends to integration with existing systems, promising compatibility across diverse platforms. With SwiftTap, the paradigm shifts towards effortless yet secure authentication is within reach, promising enhanced user.

Paper ID-253**Intelligent Railway Track Crack Detection System****¹ Anitha S Prasad, ² Sanjana J, ³ Pranav Shandilya, ⁴ Gayathri S****^{1,2,3,4}Dept. of ECE JSS Science and Technology University Mysuru, INDIA****[1anitha.sp@sjce.ac.in](mailto:anitha.sp@sjce.ac.in), [2sanjana9108@gmail.com](mailto:sanjana9108@gmail.com), [3shandilyapranav94@gmail.com](mailto:shandilyapranav94@gmail.com),****[4sgmurthy_65@gmail.com](mailto:sgmurthy_65@gmail.com)**

Abstract- Rail transport is widely utilized due to its costeffectiveness and speed for public travel. Accidents can occur due to small issues like track failures, obstacles, and inadequate maintenance. A reliable crack detection system is crucial for improved security and inspections. The primary objectives of this proposed research project are to create a system that can efficiently locate, inspect, and report any cracks or metallic damage to the relevant authorities. Included in the proposed robot are two infrared transmitters, an Arduino Mega 2560 model, a Global Positioning System, a Global System for Mobile Communication module, and ultrasonic equipment for track detection. The IR transmitter and receiver will be responsible for identifying any cracks present on the tracks. Signals from ultrasonic and IR sensors are received by the Arduino Mega, after which the GPS and GSM modules send out an alert message with the longitude coordinates of the area to the appropriate authority.

Paper ID-401**Smart Cooling: Temperature-Controlled BLDC Motor with Advanced System Health Monitoring****¹ S G Srivani, ² Sahana R****^{1,2}Dept. of Electrical and Electronics Engineering RV College of Engineering Bengaluru, India****[1srivanisg@rvce.edu.in](mailto:srivanisg@rvce.edu.in), [2sahanar.epe22@rvce.edu.in](mailto:sahanar.epe22@rvce.edu.in)**

Abstract- With the industrial reliability of the STM32 microcontroller and highly versatile temperature sensor to enhance the efficiency of BLDC motors in cooling applications. The system dynamically adjusts motor speed based on real-time temperature readings, ensuring optimal thermal management. Additionally, it employs a linear regression model to predict motor speed, that improve system performance and extend system lifespan of the cooling system. The integration of realtime monitoring and predictive analytics offers significant advancements in motor control technology, enhancing reliability and energy efficiency. The system's design, including hardware and software components, and presents experimental results demonstrating its effectiveness in maintaining desired temperature levels and responsiveness to thermal conditions. This smart cooling solution provides a reliable and efficient approach for managing BLDC motors in industrial applications, contributing to improved system health and energy savings.

Paper ID-491

Automatic Robot for Rail Crack Detection System

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Abstract- Railway infrastructure safety remains a critical concern in modern transportation systems. This paper presents a novel approach to enhancing rail way safety through the integration of robotic technology for crack detection and advanced object detection algorithms. And by deploying autonomous robotic platforms equipped with cutting-edge sensors, including high- resolution cameras, we enable efficient and accurate detection of rail defects. Through extensive experimentation and validation, we could demonstrate the effectiveness of our solution in enhancing railway safety and operational efficiency. Our work represents a significant step towards proactive crack detection, contributing to the advancement of railway infrastructure maintenance practices worldwide.

Paper ID-515

Developing Real-Time Inventory Status System Using LabVIEW

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Abstract- Managing inventory effectively is important for the smooth operation of large retail stores. Traditional methods, like manual counting, can be slow and prone to errors. This paper introduces a real-time inventory monitoring system using LabVIEW to improve accuracy and efficiency. The system automates the import and export of products. It uses bar-code scanning and smart data handling to update inventory in real-time. By instantly checking scanned items against a database, it ensures that product quantities are always up-to-date. This reduces the need for manual work and helps keep track of product quantities more accurately. With this system, retail stores can operate more efficiently and maintain better control over their inventory. Additionally, the system features alerts for low stock levels and simplifies bulk product updates using weight-based calculations, further enhancing its practicality and usefulness in a busy retail environment.

Paper ID-544

Synergism of Medicine and Robotic Applications for the Future- A Review

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Abstract-The nascent field of Medical Robotics has considerably altered the field of medicine, how we perceive it and how it is practiced. It has shown great promise in improved patient care and is slowly becoming synergistic with the medical field. Research in this field has shown that the future of medicine is in robotics, giving rise to concepts such as- The "Operating Room of the Future" [1]. This paper is a review on the advancements of robotics in the medical field, focused on creating a synergistic ecosystem in the Operating room (of the future).

Paper ID-596

Design of a Comprehensive Virtual Reality Cricket Simulator for Immersive Skill Training

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Abstract- —In this study, we developed a virtual reality cricket simulator designed to enhance players' batting skills through an immersive and realistic training environment with reduced system response delays. The optimized system offers faster and more accurate feedback, improving user engagement. Built in Unity, the simulator incorporates advanced algorithms for ball speed measurement and collision detection, simulating realistic bat-ball interactions that enhance training accuracy. Experimental results showed significant improvements in batting performance, with participants achieving a 61% success rate in backfoot shots and 76% in front foot shots, for an overall accuracy of 68.5%. These findings highlight the potential of virtual reality to complement traditional cricket training methods, offering a dynamic, data-driven approach to skill development. The system's reduced response time and advanced feedback mechanisms make it a valuable tool for modernizing cricket training programs.

Paper ID-631

LoRa based IoT enabled Wearable Sensor Network for Safety and Health Monitoring in Sewage Environment

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Abstract-Nowadays, sewage cleaning workers are often exposed to hazardous gases and environmental conditions that can negatively impact their health and safety. The current methods of detecting and monitoring gas levels and worker health frequently depend on manual inspections, a process which is time-consuming and susceptible to human error. Therefore, there is a need for an automated system using wearable devices that can continuously monitor gas levels and the health of sewage workers in real-time. For monitoring several environmental and physiological factors, the paper proposes an IoTbased wearable sensor. The approach employs three types of sensors namely MQ2, MQ135 and a pulse sensor. LoRa communication protocol is utilized for data transmission and communication. In the proposed approach two ESP32 microcontrollers are used, in which one ESP32 acts as central node and the other node act as a worker node. The environmental and physiological parameters are sensed and collected from the worker node. The sensed data is forwarded to the central node, using LoRa communication module. The harmful conditions of the sewage workers are detected and notified by the central node to the worker node, by means of buzzers and emails. This helps in taking crucial measures avoiding life-threatening incidents. The health condition of the sewage worker is also sent to nearby medical center, to take immediate action if there is any impact of harmful gases. The existing approaches are not effective as they are vulnerable to dangerous gas exposure. Overall, the proposed system has the potential to revolutionize safety and health monitoring in industrial environments. From the results obtained, it is understood that the proposed system will be suitable for real time risky environment like sewage systems to save the lives of the sewage workers.

Paper ID-667

Development of System-on-Chip for Automation and Robotics in Fault Tolerant Applications

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Abstract- Technology advances in electronics miniaturization has given a huge performance boost to fault tolerant applications like space crafts. Automation of activities and robotic capabilities are an upcoming major requirement in many such applications, allowing them to work economically while providing a versatile suite of reliable services. To provide the necessary computational complexity in a miniaturized scale, System-on-Chips (SoCs) are the most suitable solution. There are numerous challenges in economically developing SoCs for fault tolerant applications owing to their strict constraints and utmost focus on reliability. This paper brings out the challenges in developing an SoC for automation and robotics suitable for fault tolerant applications, and approaches adopted to overcome them towards successful realization of the device. The device is fabricated in SCL's 180nm CMOS technology and passed all functional and parametric tests.

Paper ID-749

Low Cost Motorcycle Crash Detection

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Abstract- —In developing countries, motorcycles are a vital mode of transport in remote areas and in challenging terrain due to their low cost and efficiency. However, they are also one of the most dangerous forms of transport. This paper proposes an easily implementable solution to motorcycle crash detection and reporting. This system uses a 3-axis accelerometer to detect rotational acceleration along the polar axis. Data is transmitted to a smartphone over BLE. This system is easily implementable due to its low cost

Paper ID-854

Topology Optimization and Generative Design for Weight Reduction in Palletizer Robots

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Abstract- — The palletizing robot has captured approximately 8.5% of the industrial robot market, valued at around USD 4.13 billion, and is swiftly replacing human labor in various industrial applications. However, the high self-weight of palletizer robots has led to increased energy consumption in industries. While numerous research efforts have focused on optimizing the upper arm of these robots, limited attention has been given to the lower arm, base, and other heavy components. This study aims to reduce the self-weight of the palletizer robot by applying topology optimization and generative design principles. The optimization process, initiated for the IRB460 palletizer robot, achieved a 10.89% reduction in the robot's self-weight, from 757.47 kg to 674.94 kg. The optimized design showed

improved stress distribution and maintained structural integrity, highlighting the potential for cost savings and enhanced performance in industrial applications.

Paper ID-994

Strategic DFT Implementation and Verification of Next-Gen Electronics using ATPG Simulation

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Abstract- — In modern nanometer (nm) technology, the significance of Design for Testability (DFT) has increased due to the growing complexity and miniaturization of integrated circuits (ICs). DFT methodologies enable the design and manufacturing of ICs with built-in test structures that facilitate easier and more accurate testing, thus ensuring higher yield, reliability, and performance. DFT techniques like scan chains, Built-in Self-Test (BIST), and boundary scan, are instrumental in detecting and diagnosing manufacturing defects and ensuring robust fault coverage. ATPG algorithms generate test vectors that are used to validate the structural testing of ICs under various conditions, including the worst-case delay scenarios. By simulating test vectors at zero delay and SDF corners ensures that the structural verification of the design. EDA tools are used for the pattern generation & simulations respectively. By using the effective DFT techniques and ATPG simulations it provides fault coverage of stuck-at & transition faults for the entire chip around 99.14% and 97.51%

Paper ID-1012

Design and Development of RV-IoT Board - Prototyping platform for designing IoT projects

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Abstract- — An All-In-One IoT board offers benefits such as a simplified and convenient development platform. It integrates various hardware components on a single board, reduces the physical footprint, accelerates prototyping, and ensures compatibility and reliability of integrated parts. These boards are power-efficient, cost-effective in the long run, and facilitate easier debugging and troubleshooting. They are made for rapid iterative development, making them ideal for educational purposes whilst catering to a diverse range of IoT project needs. Many industries such as Home Automation, Energy, Healthcare, Retail and Agriculture are extensively using embedded systems. Though different industries have different needs, most embedded system projects rely on using sensors to obtain inputs, the microcontroller for computations and actuators to provide outputs. With this in mind, a plethora of parts along with an ESP-32 microcontroller were used in the proposed board. As the primary purpose of the board is for education and prototyping, it is predicted that

certain parts will suffer frequent damage and will need replacing. Therefore, the part selection process placed emphasis on cost-effectiveness, robustness, and market availability of parts. The design process was focused on increasing the board's robustness and providing a plug-and-play system. In addition, opto-isolators were used to protect the board from high voltage inputs. With inputs from industry professionals, the proposed design features essential components such as SD card interface for storage, a TFT touchscreen display, Audio modules, keypad input, an array of sensors, and motor control interfaces. Using these, prototype projects such as cloud data loggers, remote-controlled audio players, vending machines, and automated irrigation systems were developed in laboratory environments.

Paper ID-1037

An Extensible and Modular Cloud-Enabled Vehicle Tracking System Using Raspberry Pi Zero 2 W

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Abstract- —Today, efficient fleet management and real-time visibility are crucial. They find applications in the fields of delivery and logistics and transportation, among others. This paper proposes a Vehicle Tracking System (VTS) using low-cost components and advanced software integrations to provide a complete solution. This system can be customized to allow for the usage of variable data formats, data storage providers, and parameters to be tracked. Each remote node, deployed on a fleet vehicle, is composed of an integrated system of a single-board computer, a GPS communications device, and a cellular network service communications provider. The proposed backend of the system uses Firebase for hosting and data storage and a web app with a frontend written in React.js for the user view. Data visualization, interaction, and ease of use are centric to the user view of the proposed system. The frontend displays key statistics like logged coordinates and speed information against each path detected by the remote monitoring node with appropriate visualization tools. The proposed system can be scaled to work on small, medium, and large-sized fleets of vehicles. Its customizability offers it the scope for future development of new features like geo-fencing applications and emergency alert systems

TRACK: PHOTONICS, OPTOELECTRONICS AND MECHATRONICS SYSTEM

Paper ID-205

Modified Duobinary RZ modulation OWC for Bengaluru Weather Conditions

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Abstract—In optical wireless communication (OWC), adverse weather conditions such as heavy rainfall in regions like Bengaluru can severely impact signal quality and transmission reliability. This paper proposes the design and evaluation of a Modified Duobinary RZ (Return-to-Zero) modulation scheme tailored specifically for mitigating these effects in Bengaluru's weather conditions. The study aims to enhance the robustness of OWC systems by leveraging the unique characteristics of Duobinary RZ modulation, which offers improved spectral efficiency and noise resilience compared to conventional modulation techniques. Through simulations and possibly experimental validations, the design will assess the performance of the proposed scheme under varying atmospheric conditions, considering factors like attenuation, Q factor, and bit error rate (BER). The outcomes are expected to contribute valuable insights into enhancing the reliability and performance of OWC systems operating in challenging weather conditions, particularly in urban environments like Bengaluru.

PAPER ID- 340

Performance Analysis of 3D-SIFT and ICP Algorithms for Pose Estimation

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Abstract— The performance of 3D Scale-Invariant Feature Transform (SIFT) and Iterative Closest Point (ICP) algorithms is crucial for pose estimation, particularly in applications such as satellite docking. Despite extensive research on individual algorithms, integrating these methods to enhance overall performance remains underexplored. This study develops and integrates both 3D SIFT and ICP algorithms to improve pose estimation accuracy. The 3D SIFT algorithm converts 2D RGB images to grayscale, performs edge detection, and reconstructs surfaces. The GrabCut method isolates foreground points for feature detection and matching. Depth maps then transform 3D data into 2D data for analysis. ICP algorithm processes source and target point cloud data, using Euclidean distance to compute minimum distances and evaluate error, accuracy, and robustness. Keypoints are detected in

the depth image and are matched with the scaled image. Using the continues alignment approach, the source and target are completely converged

PAPER ID-416

Signal Noise Reduction Algorithm for Object Localization and Tracking using a 2-Dimensional Ultrasonic Sensor Array

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Abstract— Ultrasonic sensors return time of flight (TOF) readings; by producing inaudible sound waves and calculating the time they take to return to the sensors. When arranged in an array (containing multiple sensors) they can have various applications, both independently and in conjunction with other transducers and cameras. One of the most common applications that has been developed in the last couple of decades has been object detection, localization and tracking. This research paper presents a novel algorithm that addresses one of the biggest challenges with using ultrasonic sensor arrays for object localization – signal noise. The proposed system also includes a laser module mounted on a pan-tilt motor mechanism to track objects, utilizing the signal noise reduction and angles calculation algorithm. The improvement in signal quality has been quantified with signal-to-noise ratio (SNR) and mean squared error (MSE). The presented algorithm will significantly improve the application of ultrasonic sensors, in autonomous vehicles, robotics and industrial automation

PAPER ID- 587

Design and Implementation of Smart Door Lock System using IoT

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Abstract— In the ever-evolving field of mechatronics control systems, smart door lock system presents a unique opportunity to explore the integration of various technologies for intelligent access control. The system employs cutting-edge technologies like automatic face detection within a closed-loop framework, while also offering a manual verification option through an open-loop. The system's core is an ESP32 (NodeMCU) microcontroller, which coordinates all operations. The ESP32 CAM is equipped with image processing capabilities, allowing it to directly analyze the camera feed and identify authorized faces. If a recognized

face is detected, the loop control program within the ESP32 automatically triggers the solenoid valveactuator, granting access. If any person is standing for a long time on the door, an alarm will ring and the owner will receive a Short Message Service (SMS) followed by a call. Thus, the proposed system is cost-effective (costing only 37% of the existing models with Raspberry Pi), reliable and energy efficient solution for the smart door lock system.

PAPER ID- 826

Efficient Ring Counter Design Using Pre-charged and Non-Pre-charged TSPC D-Flipflops

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Abstract—This paper presents a comparative analysis of nonprecharged and precharged True Single-Phase Clock (TSPC) D flip-flops for use in low-power, high-performance digital circuits. The study focuses on key performance parameters such as transistor count, setup time, hold time, clock-to-Qpropagation delay, average power consumption, and power delay product (PDP). The precharged TSPC D flip-flop demonstrates significant improvements, requiring only 11 transistors compared to 12 in the non-precharged design and 24 in the transmission gate-based reference. The precharged TSPC shows a 59% improvement in setup time and a 14% reduction in clock-to-Q delay compared to its non-precharged counterpart, while delivering a 54.6% lower clock-to-Q delay and 92% lower power consumption than the transmission gate-based flip-flop. The PDP also improved by 96.4% relative to the transmission gate-based flip-flop, highlighting the energy efficiency of the design. Further analysis conducted by implementing 4-bit ring counters using both the precharged and non-precharged TSPC D flip-flops showed that the precharged TSPC-based ring counter exhibited more consistent and lower clock-to-Q delays, achieving up to a 10.5% reduction in the maximum delay compared to the nonprecharged version. To assess performance under varying conditions, clock-Q delays and power consumption were evaluated across different voltage levels (0.8V, 1.0V, and 1.2V), confirming the precharged TSPC's superior efficiency, especially at lower voltage levels. These findings highlight the advantages of the pre-charged TSPC D flip-flop in achieving high-speed, low-power digital circuits, making it a compelling choice for modern sequential logic design.

TRACK: ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE WORLD

Paper ID-19

Leveraging Ensemble Deep Learning for Enhanced Brain Tumor Analysis: Integrating YOLOv8, Mask R-CNN, and U-Net

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Abstract: Brain tumors pose a significant health threat, and accurate detection and segmentation are crucial for treatment. This paper proposes a novel deep learning approach integrating U-Net for precise segmentation and YOLOv8 for efficient tumor detection in MRI scans. U-Net is optimized for accurate delineation, while YOLOv8, enhanced with attention and spatial pooling, facilitates efficient tumor localization. Image enhancement and data augmentation further boost performance. Furthermore, U-Net, an architecture known for its segmentation capabilities, will be explored in conjunction with fine-tuning for brain tumor segmentation. This integrated approach is expected to achieve competitive accuracy and efficiency, potentially improving clinical decision-making in brain tumor diagnosis and treatment.

Paper ID-32

Comprehensive Non-Intrusive Patient Monitoring System Using Advanced AI and ML

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Abstract: — Current Alzheimer's patient monitoring systems often rely on invasive wearable devices or constant in-person supervision, which can be uncomfortable for patients and may fail to provide continuous, accurate monitoring. These traditional approaches risk missing critical incidents such as falls or unauthorized intrusions, potentially compromising patient safety. In contrast, our advanced monitoring system utilizes non-intrusive, camera-based technologies like Local Binary Patterns Histograms (LBPH) for face recognition and neural networks for activity tracking and fall detection, providing continuous, reliable surveillance without discomfort. State-of-the-art text-to-speech technology for voice assistance further enhances the system's usability, ensuring effective and responsive care for Alzheimer's patients.

Paper ID-37

Empowering Young Adults: The Impact of Soft Skills Ventured through XGBoost and SHAP Analysis

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Abstract: The study, "Empowering Young Adults," investigates the role of soft skills in ensuring students' confidence to excel in personal and professional life using advanced machine learning models. Initially, a total of 10 Machine Learning models and 3 Deep Learning models were trained out of which Gradient Boosting showed a high training accuracy of 93.3% but a low-test accuracy of 52.2%, leading to a huge gap between the two. Naive Bayes has the highest test accuracy of 69.9% with a training accuracy of 74.2%. To address this disparity as well as to improve the accuracies, SMOTE was applied, and XGBoost emerged as the best performer with a training accuracy of 91.1% and a test accuracy of 81.2%. The application of SHAP (SHapley Additive exPlanations) for visualization of the best model procured further explains and enumerates upon the importance of different soft skills. This therefore highlights their significant impact on student confidence as well as the value of soft skills in educational outcomes, which demonstrates the efficacy of machine learning models in enhancing the assessment and development of these critical capacities.

Paper ID-59

AN OVERVIEW OF COMPUTER VISION TECHNIQUES FOR IMAGE RETRIEVAL

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Abstract: Finding comparable photos using a query is known as image retrieval, and it has proven essential to many applications. This review explores the development of computer vision methods that allow for the effective retrieval of visual content. We examine the groundwork established by feature-based methods such as SIFT, which completely changed the field of image retrieval. We explore methods such as hierarchical deep metric learning and contextual pooling, demonstrating how they might take use of spatial linkages to increase retrieval accuracy. The research also investigates the potential of Generative Adversarial Networks (GANs) for image retrieval tasks by allowing picture alteration for more sophisticated searches. We may learn a great deal about the state-of-the-art and set the path for future directions in computer vision and image retrieval research by looking at these developments.

Paper ID-61

From Pixels to Pain: The Silent Health Risk Associated with Electronic Device Use

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Abstract: - In the field of artificial intelligence (AI), machine learning is a subset that focuses on using data to learn and create prediction algorithms. Electronics controls the flow of electricity for processing, and health entails more than just being free from disease. On the other hand, overusing devices can increase health hazards. The inquiry consists of an empirical study that was carried out in Istanbul, Turkey, with 1147 students, as well as a systematic evaluation of ML applications in mental health within the human-computer interface (HCI) literature. The condition of emotional, psychological, and social well-being that affects a person's thoughts, feelings, and behaviour in day-to-day living is known as mental health. The study examines how teens' mental and physical health are affected by their excessive use of digital gadgets, especially cellphones. In this article, the integration of digital technologies and machine learning (ML) in relation to teenage wellbeing and mental health treatment is examined. The assessment also emphasises the necessity of humancentered and morally sound machine learning applications in mental health services. It also discusses how machine learning (ML) might improve mental health services by improving the identification, diagnosis, and treatment of mental health issues. The results show that teens' psychiatric problems, musculoskeletal discomfort, and sleep disruptions are linked to excessive digital device use. The study comes to the conclusion that while ML and digital technologies have a great deal of promise for enhancing mental health outcomes, there are also important socio-technical issues that require attention. These include worries about model bias, data privacy, and the generalisation of machine learning algorithms. Future studies should concentrate on creating rigorous assessment frameworks and transdisciplinary methods to guarantee the ethical and successful application of ML in mental health services.

Paper ID-62

Machine Learning Driven Routing Optimization for Named Data Networking in Mobile Adhoc Network

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Abstract: Named data networking (NDN) can enhance the efficiency of data acquisition for a Mobile Adhoc Network (MANET). In an NDN-based MANET, each data router monitors the Forward Information Base (FIB) and the Pending Interest Table (PIT). To start a data

connection, the consumer sends a name and a message expressing interest. If the data router receiving the interest has the FIB entries for the destination name, it employs constrained flooding to transmit interest via each FIB entry. Intermediary data routers begin to develop PIT entries in order to construct reverse pathways during transmission of interest. In order to acquire data effectively, it creates a reverse path. However, in order to make the optimal routing options, there is a cost. This cost is reduced when content discovery is optimized through the use of machine learning. Taking this challenge into account, we propose using machine learning enhance the efficiency of routing in NDN-based MANET. Our approach aims to optimize routing decision by leveraging reinforcement machine learning algorithm adapt to dynamic network conditions by incorporating machine learning can learn from past experience and make informed routing decisions based on current network status, improving overall network performance. In the proposal, we explored the Q-learning technique to achieve the best routing to acquire data with reduced latency, enhanced security, improved resource utilization and enhanced scalability in NDN based MANET. The experimental results show that the proposed strategy successfully improves the routing choice, increases the data fetching success rate, and reduces the costs and delays related to data retrieval.

Paper ID-76
Parser for TINY Language

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Abstract: This study provides a novel method to generate a compiler, which translates a program using TINY language. TINY language is a simple programming language which is designed to understand the basic concepts of compiler. A compiler is a type of program which is designed to convert the code written in high-level language into machine language that is understandable by the computer. The procedure for building a parser requires various sub-tasks, there are a list of operations that include parsing or splitting the code into tokens, checking's the code's syntax using grammar rules, understanding, interpreting and optimizing the provided code and generating the execution-ready code by the performance of last assembling. In order to face the challenges of compiler construction, which includes rulebased complex grammar, error handling, and fast tokenization, the python programming language is implemented for developing pyLexer(tokenization) and pyParsing (syntactic analysis) libraries. Lexer is used for matching regular expressions to return corresponding tokens(lexemes), while parser is supposed to check whether the given syntax is according to the grammar rules or not through recursion. Web application is created for this using Streamlit, which provides users with many useful features like text rendering capability, error highlighting and code suggestions.

Paper ID-78**Context Aware Recommendation System Using LLM****¹ Kagolanu Venkata Chandra Madhav, ² Asritha Veeramaneni, ³ Vinnakota Sai Vivek,****⁴ Meena Belwal, ⁵ Sangita Khare****^{1,2,3,4,5} Amrita School of computing, Bangalore, Amrita Vishwa Vidyapeetham, India****¹ bl.en.u4cse20065@bl.students.amrita.edu, ² bl.en.u4cse20196@bl.students.amrita.edu,****³ bl.en.u4cse20201@bl.students.amrita.edu,****⁴ b_meena@blr.amrita.edu, ⁵ k_sangita@blr.amrita.edu**

Abstract: This paper proposes a unique approach to emotion recognition and employs Vision Transformer (ViT) model for the sake of giving personalised suggestions of music selections and environments. ViT is able to determine the user emotion based on his facial expression detection technology. Those emotions will provide the critical inputs that will allow recommendations to be modified to context-aware standards the mood you're in the time of year, the specifics of the month. Proprietary technology creates music playlists suitable to the mood of the moment as it suggests the best locations for experiences based on an emotional context and other external factors such as the season and time of month. As we move deeper into the future, this merging of emotion detection technology and customized recommendations can deliver an unparalleled user experience by offering a user exactly what they would like in their location of the area they are engaged in. It just ensures that the location to suggest should not only be ideal to the user mood but must also be practical as well by taking into account the locations weather and local events. The whole concept of this is to create a more rounded and complete approach to curating a fitness routine tailored to the individual, taking into account their mental health as well as external issues.

Paper ID-79**Pseudocode to Python - A Compiler Approach****¹ Mokshit P, ² P Syam Prasad, ³ N Sumanth Reddy, ⁴ Meena Belwal****^{1,2,3,4} Amrita School of Computing, Bengaluru, Amrita Vishwa Vidyapeetham, India****¹ mokshithsreekar3@gmail.com, ² mokshithsreekar3@gmail.com,****³ mokshithsreekar3@gmail.com, ⁴ meena@blr.amrita.edu**

Abstract: The transformation of pseudocode to Python is vital as it enables students to concentrate on the algorithms while not being distracted by the syntax and also is the keystage in software development and computer science education. This research gives a good programmer-design tool for turning pseudocode into Python. The compiler supports basic data types, control structures, loops, and functions which are the main components of the introductory programming courses. It consists of three main components: lexical analysis, syntax analysis, and code generation are the major processes of an interpreter. The implementation seeks to offer a swift and dependable way of the transformation of pseudocode to Python, thereby accelerating software development processes and improving the educational experiences.

Paper ID-81

SpeakSmart: Empowering Public Speakers, Elevating Every Speech

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Abstract: Public speaking plays an important role in various domains and most of the people struggle with it due to lack of experience and fear. To address this issue, we propose to develop a comprehensive public speaking model that aimed to help users to improve their presentation skills. Leveraging with new technologies such as deep learning or NLP, our model will provide real-time recording and analysis of presentations, to give customized feedback on speech rate, emotional expressions, and delivered content. By integrating speech recognition and facial emotion recognition module, the model aims to offer whole idea to users to enhance their communication skills. With this model, we target to empower people to overcome their public speaking apprehensions and become confident and proficient in speaking.

Paper ID-83

Adding constructs to 'C' through Flex and Bison

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Abstract: Developing a unique language for coding if and for loops involves using creatively designed markers such as "ifff" and "4". Meeting the three acceptance criteria requires coding loops using these markers, where "ifff" signifies an if loop and "4" represents a for loop. Coding loops conventionally with "0" and "4" is considered unacceptable. Additionally, the language requires modifiers for loops and their respective lengths to be placed on one line. The language also encompasses formatting rules, such as combining multiple lowercase letters and ensuring that the letter "c" appears three times for successful compilation. Repeated occurrence of certain letters is allowed and accepted within the language. Furthermore, specific responses like "np" for "no problem," "sry" for "sorry," and "fq" for "thank you" have been formulated based on input.

Paper ID-86**Multi-Modal Emotion Detection Using Deep Learning Techniques****¹ Arundhati Sitharam, ² Rashmi KR, ³ Nishita Eeralli Prakash, ⁴ Dr Jayashree Rangareddy****^{1,2,3,4} PES University, Bangalore, India****¹ arundthisitharam@gmail.com, ² rashmiramesh1203@gmail.com,****³ ep.nishita@gmail.com, ⁴ jayashree@pes.edu**

Abstract: Accurately detecting emotions and analysing it, especially in real-time, plays a major role in bolstering human-computer interaction across a spectrum of applications like virtual assistants, call centers, and cyber-security. Highly precise emotion recognition can potentially transform user experience and provide some invaluable insights. In this paper, an attempt to explore multimodal emotion detection using audio signals in the form of .wav audio clips and images that have been grey-scaled by employing appropriate advanced deep-learning techniques and previously available machine learning classifiers. By the efficient and succinct usage of various Machine Learning Architectures and techniques, it must be noted that separate datasets have been used for both images and audio. An effective combination of both further strengthens the possibility of achieving superior performance.

Paper ID-97**Advancing Image Forgery Detection: A CNN-Based Approach****¹ Nalini N, ² Sai Rakshitha, ³ Nithyashree H V, ⁴ Rakshitha S L, ⁵ Motamarri Sai Shravan,****⁶ K Sai Uttej****^{1,2,3,4,5,6} Nitte Meenakshi Institute of Technology, Bengaluru, Karnataka India****¹ nalini.n@nmit.ac.in, ² 1nt20cs150.sai@nmit.ac.in,****³ 1nt20cs116.nithyashree@nmit.ac.in, ⁴ 1nt20cs140.rakshitha@nmit.ac.in,****⁵ 1nt21cs107.motamarri@nmit.ac.in, ⁶ 1nt21cs081.saiuttej@nmit.ac.in**

Abstract: In the digital age, image forgery is a significant concern due to advanced editing tools. This study addresses the need for reliable forgery detection, focusing on copy-move, splicing, and retouching techniques. Using Convolutional Neural Networks (CNNs) known for learning hierarchical image features, the research developed a robust detection system. The CNN model, trained on a diverse dataset which has over 10,000+ images and it is split into test and train data for better classification results, detected subtle inconsistencies indicative of manipulation, achieving a peak accuracy of 94% over 50 training epochs. Test cases showed the system effectively detected forged images and identified forgery types, though it had shortcomings with invalid inputs. The CNN architecture employed convolutional and maxpooling layers with specific hyperparameters to enhance feature extraction. This paper offers a valuable tool for digital forensics experts, law enforcement, and journalists to ensure the authenticity of visual content.

Paper ID-108

Elevating Text Summarization: Mastering Precision with the Fine-Tuned PEGASUS Model

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Abstract: This research paper focuses on the fine-tuning of Pegasus model, a text summarization transformer sequence to sequence model. Drawing from large-scale pre-training and then fine-tuning in the summarization domain, a substantial improvement of 10% increase in the accuracy compared to other existing models is observed in the model. The detailed strategy comprises model selection, pretraining, fine-tuning, and evaluation of the Google Samsung Dataset. The paper outlines the data acquisition, the training and network parameters, the performance measures, and the relation to prior methods and models. Evaluation findings reveal a higher level of accuracy of 0.75 of the fine-tuned Pegasus model than the existing models as Text rank, TS, and LSA in both extractive and abstractive summarization and across the benchmark datasets. The results show that fine-tuning is a very useful feature, the Pegasus model can be successfully scaled up, and it is universal in terms of the type of information and clarity it generates. From this study, it is evident that the PEGASUS model is exceptionally well-suited for text summarization. To further improve the model, steps such as fine-tuning with domain-specific datasets, incorporating more diverse training data, optimizing hyperparameters, and integrating reinforcement learning techniques could be considered.

Paper ID-117

Enhancing Blood Subtype Recognition through Convolutional Neural Networks: Binary and MultiClass Approaches

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Abstract: In order to help with disease and condition diagnosis, this research focuses on accurately classifying blood cell subtypes using Convolutional Neural Networks (CNNs). The principal aim is to develop a comprehensive and effective automated classification system for blood cell subtypes, which will aid medical practitioners in making prompt and precise diagnoses. The created CNN architecture links distinct features to particular blood cell subtypes by extracting them from visual data. By addressing both binary and multi-class classification scenarios, the study improves the CNN model's capacity to distinguish variations in blood cell properties. Based on metrics like accuracy, precision, recall, and F1-score, the proposed CNN architecture is reliable and has a great deal of potential for real-world medical applications.

Paper ID-120

Generative X-Ray Synthesis for Enhanced Disease Prediction in Medical Imaging

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Abstract: Medical imaging plays a pivotal role in disease diagnosis and prediction, where X-ray imaging stands out as a widely employed modality due to its accessibility and efficacy. However, the accuracy of disease prediction in X-ray images heavily relies on the expertise of radiologists and the quality of available data. In this study, we propose a novel approach leveraging generative adversarial networks (GANs) for synthesizing realistic X-ray images to enhance disease prediction capabilities. The proposed Generative X-ray Synthesis (GXS) framework employs GANs to generate synthetic X-ray images with diverse pathological manifestations. By training the GAN on a large dataset of annotated X-ray images, the model learns the complex distribution of anatomical structures and disease patterns. Through iterative training, the generator network progressively improves its ability to synthesize high-fidelity X-ray images that closely resemble real-world cases. Furthermore, we employ transfer learning techniques to fine-tune pre-trained deep learning architectures on the augmented dataset, achieving superior performance in disease prediction tasks compared to models trained solely on real X-ray images. Our experimental results showcase the potential of generative X-ray synthesis as a powerful tool for enhancing disease prediction in medical imaging, ultimately contributing to more accurate and efficient healthcare diagnostics.

Paper ID-121

Synergistic Integration of Q-Learning and Genetic Algorithm for Enhanced Gameplay Performance in the Snake Game

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Abstract: Reinforcement learning (RL) presents a powerful framework for training intelligent agents in dynamic environments, with applications ranging from robotics to gaming. This study explores the integration of two prominent techniques, Q learning and Genetic Algorithm (GA), in the context of training an agent to play the classic Snake game. The study investigates the individual performance of standalone Q-learning and GA methodologies, as well as their combined approach termed the "convergent approach." Through comparative analysis, including statistical assessments and tabular representations of gameplay performance, the study highlights the strengths and limitations of each approach. The convergent approach demonstrates an average performance gain of approximately 28.70% over Q-Learning and 34.95% over the Genetic Algorithm in terms of the time taken to achieve score milestones in the Snake game.

Paper ID-122

Synergistic Approaches to Credit Scoring: Enhancing Predictive Performance with Attention Mechanisms and Ensemble Learning

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Abstract: Accurate evaluation of credit risk is essential while making financial decisions. This paper presents an ensemble strategy that combines the predictive capability of random forests with the complex features of attention-enhanced neural networks and gradient boosting to increase credit scoring accuracy. The model uses a synergistic approach to credit scoring by utilizing the unique strengths of each model, highlighting their collaborative contributions, and offering insights into the interpretability of complex ensemble methods—an important consideration when making credit decisions with substantial ramifications—this approach offers promising potential to outperform individual models.

Paper ID-138

Intelligent Conversational AI for Microsoft Teams with Actionable Insights

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Abstract: The proposed work presents the development process of a personalized AI assistant, leveraging advanced technologies like Azure OpenAI Services. The project entails significant development effort, adaptable from large to XL scales based on data intricacies and project scope. It offers versatile integration options, deploying seamlessly within or outside the Microsoft tenant ecosystem, catering to diverse environments and workflows. Utilizing natural language command interpretation, the AI assistant provides intuitive interfaces across various domains. Emphasis is placed on ethical considerations, including user privacy, algorithmic transparency, and bias mitigation. Additionally, the project incorporates prompt engineering in AI to optimize prompt selection for more effective generative AI outcomes. This holistic approach aims to revolutionize user experiences and operational efficiency across industries, marking a significant advancement in AI-driven technologies. Incorporating prompt engineering into AI involves designing and optimizing prompts to guide the model towards generating desired outputs effectively. This approach aims to enhance user experiences and operational efficiency by tailoring AI responses to specific objectives and contexts. By fine-tuning prompts, developers can improve the relevance and quality of generated outputs, leading to significant advancements in AI-driven technologies across industries.

Paper ID-143

An Automated Alert System for Financial Fraud Detection with Learning Based Models

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Abstract: The rapid digitization has undoubtedly brought immense benefits particularly for the younger generation of the 21st century who often find themselves at utilizing digital technologies with ease. However, the elderly who often struggle to adapt to these technological advancements particularly when it comes to tasks such as mobile based transactions. The research in this paper focuses on combinations of various techniques involving the identification of unusual patterns or behaviors in financial transactions such as anomaly detection and continuous learning based models to analyze user behavior and transaction patterns to detect suspicious activities. The paper discusses the capabilities of learning based models, their ability to continuously learn and adapt, and how they can significantly improve the detection rate of fraudulent activities. The potential of the proposed approach lies in offering a real-time, intelligent, and automated solution in order to revolutionize fraud detection by doing outlier analysis. Results analysis shows that the proposed model can effectively identify fraudulent patterns in real time, adapt to evolving tactics, and minimize disruptions caused by false positives.

Paper ID-154

Optimizing Automatic Speaker Recognition with Feature Fusion and Machine

Learning Models: Insights and Performance Metrics

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Abstract: In the contemporary landscape where security is paramount, biometric systems, particularly speaker recognition, have gained significant prominence. This paper explores the advancements in automatic speaker recognition systems, focusing on text-independent approaches using a variety of utterance datasets. Speaker recognition utilizes unique vocal characteristics such as pronunciation patterns, rhythm, and accent to identify individuals. The paper details methodologies for feature extraction by utilizing MFCC (Mel-frequency Cepstral Coefficients) and LPC (Linear Predictive Coding), alongside machine learning models such as GMM (Gaussian Mixture Models) and SVM (Support Vector Machines). The research demonstrates the effectiveness of these techniques in clean environments and addresses challenges such as voice variability and environmental noise. Notably, the fusion of MFCC and LPC features achieves superior results, with SVM achieving 98.0% accuracy and GMM achieving 99.4% for single-word utterances. For sentence utterances, SVM and GMM reach 93.2% and 96.8% accuracy, respectively. The study also highlights the limitations of the dataset size and the potential for future work involving larger, noisier datasets and multi-user scenarios. The findings underscore the benefits of feature fusion and the promise of advanced machine learning techniques in enhancing speaker recognition accuracy.

Paper ID-157

Weather Monitoring for Curating Cricket Pitches using Machine Learning and Arduino

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Abstract: This paper introduces an innovative weather monitoring system developed for effective cricket pitch maintenance using machine learning algorithms and Arduino microcontrollers. The system is developed to tackle the challenge of unpredictable weather conditions, which can really affect the quality of pitches and the safety of the players. Using a number of sensors monitoring environmental parameters such as temperature, humidity, soil moisture, and rainfall, it will give real-time information to the curator of the pitch for a healthy and pitch-conditioning regimen. The tailoring of such data analysis techniques through machine learning offers precise and actionable recommendations for effective pitch keeping by a groundsman. Interventions at appropriate times that suggest the time, along with the ability of the system to predict weather, would be a huge improvement to look after the sporting environment, and in return, it assures the safety and quality of the play. This current study will show the potential of upgraded technology in making cricket pitch maintenance more efficient and effective for both the players and the audience and for the curators.

Paper ID-160**Personal Finance Management and Prediction using ML Algorithms**

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Abstract— Effective personal finance management is essential for achieving financial stability and long-term financial health. This paper presents a comprehensive approach to summarizing, analyzing, and showing monthly expenses using machine learning models. By collecting user inputs such as age, place of stay, number of dependents, monthly expenses on transport, education, subscriptions, savings, medical expenses, and more, the system uses linear regression, decision trees and random forest algorithms to predict financial values. The system provides detailed information of expenses, savings, and overall financial health, along with personal health analysis based on dietary habits. Users have access to a wide range of financial and lifestyle information, allowing the system to provide personalized recommendations to increase financial security and achieve financial goals. The model also evaluates the impact of recurring expenses and notable investments, helping users understand their spending patterns and make informed financial decisions. The results demonstrate the system's capability to deliver accurate predictions and actionable advice, enabling users to better manage their finances. This approach has led to significant advances in personal financial management by integrating machine learning techniques to provide insight into people's financial health.

Paper ID-187**Ensemble Deep Learning for Enhanced Human Microbiome-Based Disease Prediction: A Comprehensive Analysis on Public Datasets**

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Abstract: The importance of the human microbiome in determining one's health and its possible role in illness prediction have drawn more attention in recent years. However, the inherent challenges in microbiome data, which are characterized by small sample sizes and high dimensional characteristics, present significant obstacles to the effective use of machine learning techniques. This work presents a unique framework for ensemble deep learning-based disease prediction that combines supervised and unsupervised learning methods. To begin with, the samples are processed using unsupervised deep learning techniques to extract meaningful representations. Based on these deep representations, a disease score system is then developed, which functions as an informative feature for ensemble analysis. A score selection system is built with performance-boosting characteristics combined with the original samples to improve the ensemble. A gradient-boosting classifier is then trained on the resultant composite features to determine the patient's health state. For a thorough case study, the suggested ensemble deep learning

approach is used on six publicly available datasets obtained from human microbiome profiling. The results show that our approach is effective in disease prediction using microbiome data, outperforming other algorithms in the process. This research contributes to the evolving landscape of predictive analytics in microbiome studies and offers a robust methodology for improving disease prediction accuracy.

Paper ID-190

Migration of GPU Applications from CUDA to SYCL Programming Model

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Abstract: Due to new enhancements in the field of computer architecture and the proliferation of heterogeneous computing devices, there is an increasing demand for portable and efficient programming applications. These applications are essential for harnessing the capabilities of diverse hardware devices found on heterogeneous platforms, which include CPUs, GPUs, NPUs, and FPGAs from different hardware vendors like Intel, Nvidia, and AMD. CUDA-based applications are designed exclusively for execution on Nvidia GPUs, whereas the SYCL standard, combining modern C++ features, allows single-source code to operate on heterogeneous computing devices. This study compares the SYCL and CUDA programming interfaces and provides concepts and guidance on migrating CUDA-based applications to the SYCL interface covering aspects like memory management, kernel launch, execution hierarchy, synchronization, debugging etc. across both programming models. Study also underscores the potential of the SYCL programming interface as a practical solution for attaining both portability and performance in the modern computing systems, particularly across heterogeneous devices, with case-study covering migration of CUDA modelbased vector addition code to the SYCL model.

Paper ID-221

An Assessment of Neural Network Efficacy in Hospital Readmission Prediction for Diabetic Patients

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Abstract: Predicting hospital readmission among diabetic patients is an important aspect of improving the conditions of the patients and ensuring healthcare resources are optimally used. This paper seeks to find how effective neural networks in predicting hospital readmissions are by increasing the accuracy. The UCI Machine Learning Repository dataset was preprocessed for missing values, outliers, and categorical encoding. Class imbalance was also handled using the SMOTE technique. The final developed neural network with Adam optimizer and binary cross-entropy loss function found an accuracy of 93% from a balanced test set and 91% for the original imbalanced dataset. Class 0 (no readmission) found precision of 0.91; class 1 (readmission) found precision of 0.70. Recall for class 0 was 1.00, and for class 1, it was 0.01. The AUC-ROC for the imbalanced dataset was 0.65. Such findings highlight the potential of the model in recognizing patients at high risk and underline its utility, at the same time as it shows the model's boundaries. The developed research fosters knowledge on how neural networks can find application in this field and will support healthcare workers in developing preventive interventions, while also revealing areas for possible further refinement.

Paper ID-224

Active Learning Methods for Training Datasets

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Abstract: Active learning is a specific instance of supervised machine learning. The underlying principle of active learning is that, an ML algorithm might potentially attain a higher degree of accuracy with a reduced number of training labels, if it could choose which data it wanted to learn from. Using a modest amount of data with labels, the model is trained repeatedly for predicting labels of data that isn't labeled. Next, the data points selected for categorization are those about which the algorithm is least certain. This iterative method is carried out till the required degree of precision is attained. By actively selecting the important data points, this method reduces the size of the dataset used for training while creating a high-performance classifier. Moreover, it also reduces the cost and time of dataset labeling while also being able to attain a high degree of precision. This paper examines the application of active learning using the Fashion MNIST, EuroSAT, and CIFAR10 datasets. The output of different active learning algorithms, such as Mar_gin Sampling, Entropy Sampling, and Least Confidence are compared. Furthermore, the model's performance over random sampling is also demonstrated. It is seen that the accuracy obtained by using Active learning is much higher as compared to random sampling.

Paper ID-227

AI Sentries: Evaluating Machine Learning Models for Superior Phishing Email Detection

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Abstract: Email Phishing Detection focuses on studying how to process emails and spot threats using machine learning and advanced natural language processing. It aims to shield people and businesses from real email misuse. This study tries to fix some problems that earlier research had faced. It does this by making better machine learning detectors to spot fake emails. These detectors use different data sets and look at how to pull out key info. They also try to adapt to new tricks scammers use. The solutions put forward use new methods. These include tweaking features, combining different learning models, and using deep learning to boost accuracy while checking emails in real-time. The study also looks at how to use natural language processing (NLP) to understand what emails mean. This helps catch more fake emails. By looking at both how emails are written and what they mean, the system can spot scams more. This cuts down on false alarms and makes the system more reliable. This well-rounded approach not pushes the boundaries of spotting fake emails but also creates a strong system that can change as cyber threats do. This ensures protection that lasts and can bounce back from attacks.

Paper ID-238

Breast Cancer Classification using Logistic Regression: An Efficient and Scalable Approach

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Abstract: Cancer is the foremost cause of non-accidental deaths worldwide. Among various types of Cancer, Breast cancer is the most frequent cause of cancer-related mortality. Breast cancer is a common and serious disease affecting women globally, ranking fourth among all cancers. Early detection and treatment of breast cancer can significantly improve prognosis and survival rates. Machine learning technology have become increasingly important in processing and analyzing massive amounts of medical data as healthcare technology has advanced. The study considered four classifiers such as Linear Support Vector Classifier (Linear SVC), Logistic Regression, Stochastic Gradient Descent Classifier (SGD Classifier) and Random Forest Classifier to determine the most effective model for predicting the presence of breast cancer based on accuracy score. The 400X Dataset from Wisconsin Breast Cancer dataset is used for study purpose. And the same dataset served as a training set for evaluating and comparing the effectiveness and efficiency of each algorithm based on

classification accuracy. The results showed that the Logistic Regression classification algorithms gives highest accuracy of 97.3% when compared to other algorithms.

Paper ID-251

Advanced Time Series Models for Predictive Modeling and Early Detection of SFP Failures

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Abstract: Predicting failures in network components, such as Small Form-factor Pluggable (SFP) ports in Brocade switches within Storage Area Networks (SANs), is crucial for maintaining network reliability and optimizing performance. A key parameter for assessing SFP health is transmit power (tx-power); when tx-power falls below a threshold of 250 mV, it indicates an impending failure. This paper explores the use of Machine Learning and Deep Learning techniques to forecast the lifespan of SFPs, enabling proactive maintenance and enhancing network reliability. Traditional methods often struggle to capture complex, long-term dependencies within failure data. To address this, we investigate advanced time series models, including Seasonal Autoregressive Integrated Moving Average (SARIMA), Long Short-Term Memory (LSTM) networks, Gated Recurrent Units (GRU), and Support Vector Regression (SVR), for their effectiveness in capturing temporal dependencies and seasonality. Operational data, including logs and performance metrics from Brocade switches, were collected periodically and analyzed to identify significant patterns and correlations. This was followed by preprocessing steps such as cleaning, normalization, and feature engineering. Visualization techniques were also used to gain insights into data patterns and behaviours. Each model was used to make port-wise predictions, with Mean Squared Error (MSE) and Root Mean Squared Error (RMSE) as evaluation metrics. The results of this study will contribute to a deeper understanding of SAN data and its effective use, leading to more resilient and reliable network performance.

Paper ID-266

Hate Speech Detection using Deep Learning models

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Abstract: This research addresses the critical problem of hate speech proliferation on social media platforms, which can lead to real-world harm, including violence and marginalization of vulnerable communities. The goal of this study is to evaluate the effectiveness of advanced machine learning models—BERT, RoBERTa, and LSTM—in detecting hate speech from social media data. Two datasets with different characteristics were used to build the model. They were put through few preprocessing steps which includes tokenization, lemmatization, and TF-IDF feature extraction. Transformer based models outperform the traditional RNN based model - LSTM with RoBERTa achieving the highest accuracy of 93%. Our results demonstrate that these advanced models are capable of recognizing hate speech with much certainty, thus offering hope for automated content moderation.

Paper ID-280

Advancing Vascular Dementia Diagnosis Through Salp Swarm Optimized Convolutional Neural Network

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Abstract: Vascular Dementia (VD) is a form of cognitive impairment seen in individuals, restricting from problems with blood vessels supplying the brain. These issues lead to strokes or reduced blood flow and gradually lead to the development of vascular dementia. Since it tends to progress slowly, diagnosis often comes after significant brain damage making prevention is crucial. Early identification of risk factors are vital to mitigate the risk of irreversible cognitive decline associated with vascular dementia. Accordingly, this research proposes an optimized neural network model for predicting vascular dementia at its earlier to improve the quality of life. The initial stage in this research involves preprocessing, where the input data is cleaned and normalized. These steps ensure that the vascular dementia dataset is cleaned of inconsistencies and prepared with normalized features for accurate analysis and modeling. Following preprocessing, relevant data features are selected using the chi-square approach, making the classification task easier. Finally, classification is performed utilizing a Convolutional Neural Network (CNN) and for fine-tuning of CNN parameters Salp Swarm Optimization (SSO) Algorithm is implemented. The execution of proposed work is processed using Python software and the outcome reveals superior performance in terms of accuracy and precision. Thereby the proposed method provides better performance with an accuracy of 94.5%, contrasted to existing methods in predicting VD.

Paper ID-292

Multi-Modal Sentiment Analysis for Product Reviews Incorporating Text and Image Data

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Abstract: The sentiment analysis of product reviews is of absolutely critical importance to get to the core of consumers' opinions and improve insightful business decisions. Conventional sentiment classification agents mostly focus on words that may disregard the relevance of visual data in the images being displayed. The existing models like languages based on text-only LSTM networks or image-one-based visualization models like CNNs, have only limited capacities in grasping the complete context of reviews. Hence, many of those models find it challenging to deal with figurative language and lack the perception of the visual context, which in some cases can be a critical part that defines the attitude. In this paper, a novel multi-modal sentiment analysis model will be proposed that fuses both text and image data to raise the accuracy of emotion prediction. In this model, LSTM networks are used to process the text and derive contextual attributes, and the ResNet50 network of features for images of high levels is introduced as a pre-trained one. Subsequently, this kind of architecture results in a fully connected layer which is a driver for learning complex interactions and producing playback sentences. A quantitative analysis of the model is proposed to show the level of its performance as well as the accuracy of 92%, that is, by 92%. Which is surprisingly high at 85 in contrast to 15 can be counted as the money of the poor. With the text-only approach, the accuracy is 4% lower than the one with the hybrid model (80%). with accuracy of the image-only model at 1/50th. The precision, recall, and F1-score metrics are also significantly high which is another potent evidence of a proper and precise sentiment analysis. The proposed multi-modal approach takes care of the failing points of existing models which due to consideration of both textual and visual contexts results in more precise sentimental analysis. Besides that, the proposed approach also shows better assimilation to the new inputs, which is demonstrated by lower training and validation losses in comparison with the baseline models. Confusion matrices, precision-recall curves and ROC curves moreover confirm how useful the approach developed by us is since— aside from the fact that it correctly distinguishes between positive, neutral and negative comments— it accurately makes this distinction.

Paper ID-304

Breast Cancer Survival Prediction Using Gene Sequence Data-Machine Learning Methods

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Abstract: Globally, breast cancer is the most prevalent and complex condition affecting people, particularly women. Because of the variability of the disease, prognosis prediction remains a difficult challenge in patients with breast cancer (BRCA), even with increasing early diagnosis and effective therapy. Precise survival forecasting for BRCA patients is crucial for customized care. The Cancer Genome Atlas (TCGA) and the Molecular Taxonomy of BRCA International Consortium (METABRIC) databases were used to compile the gene expression and clinical information of BRCA patients, which are examined in this conference. 1094 samples of BRCA-affected patients make up the dataset. Utilizing this information, researchers can examine the gene expression patterns of BRCA patients, potentially leading to the development of prognostic and survival rate prediction techniques. In order to create a prognostic model from this data and forecast survival for BRCA patients, this work employs a machine learning method. The work has reached a 0.999 percent accuracy rate in all situations, which ultimately directs the choice of treatment.

Paper ID-314

Developing a Virtual Diagnosis and Health Assistant Chatbot Leveraging LLaMA3

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Abstract: This paper presents the development of a Virtual Diagnosis and Health Assistant Chatbot using the LLaMA3 language model. The chatbot is designed to provide accurate health information and preliminary diagnoses. It leverages a finetuned LLaMA3 model, enhanced with the MedPalm dataset, to handle medical queries effectively. Fine-tuning techniques ensure that the responses generated are both relevant and reliable. The system includes API endpoints that connect to a user-friendly interface built with HTML and JavaScript. This interface allows users to interact with the chatbot by submitting text queries or uploading images for analysis. Comprehensive API documentation and testing were carried out using Swagger. The chatbot achieves an accuracy of 88% in medical diagnosis tasks, offering significant improvements over existing models. Future work will focus on expanding the chatbot's capabilities, including multilingual support and audio input features.

This implementation demonstrates the potential of advanced language models in improving healthcare access and efficiency.

Paper ID-315

Neural Network Prediction of Stress Concentration Factors for r/d Ratios for various Cavity dimensions on Round Sleeve Automotive Terminals

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Abstract: Round sleeve automotive terminals are used in automotive connectors in safety and infotainment systems. During terminal assembly in connector, the plastic cavity is subjected to stress concentration at the sharp edges. To overcome this, edge blends were considered to be included. Stress Concentration Factor curves and associated data corresponding to double and single edge blend design of cavity at the terminal interface were considered for the training and testing of a feed-forward Neural Network with backpropagation developed using TensorFlow open source library. Predictions for the Stress Concentration Factor (K_r) were done and the results were tabulated for values within and beyond the dataset. A study of variation of Mean Absolute Error against number Epochs demonstrated a decreasing correlation and the percentage error showed an overall decreasing trend. The maximum stress values from the Curve generated, finite element analysis and neural network predictions were found to be in close agreement with each other, thereby validating the process. The neural network can thus be used to predict the stress concentration factor for any size and edge blend to cavity diameter ratio with as well as beyond the dataset for the configuration under consideration with deviation of mere 0.14%, which is the novelty.

Paper ID-321

Exploring Compiler Optimization: A Survey of ML, DL and RL Techniques

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Abstract: The past few years, traditional compiler optimization methods have been found to be further enhanced by machine learning (ML), deep learning (DL) and reinforcement learning (RL). These differ from classical techniques that often use rule of thumb based decision making. Rather, ML/DL/RL based approaches provide a means for learning from data thus improving performance in different dimensions such as code generation, resource allocation and runtime. In this paper we give an overview of current research and methodologies utilizing ML, DL and RL for compiler optimization purposes. We analyze the major models in terms of their employed learning strategies and desired optimizations within a compiler framework. Moreover, we highlight some of the difficulties faced when these compilers are embedded with these learning models such as adaptability, generalization and overhead trade-offs. Additionally, our survey presents case studies demonstrating Quantitative improvements on well-known benchmarks mainly focusing on models' adaptability to different architectures and their role in supporting the decision-making process of compilers. We conclude outlining open research questions as well as possible future directions for further investigations into this emerging interdisciplinary field.

Paper ID-324

Video Action Recognition in Noisy Environments using Deep Learning Techniques

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Abstract: Accurately identifying actions in noisy environments is challenging due to video degradation and interference. Factors such as visual noise, background clutter, motion artifacts, and low-light conditions can degrade video quality, impacting the accuracy of traditional recognition systems. This project aims to tackle these challenges using advanced techniques and technologies. We leverage the Mediapipe framework, known for its robustness in multimedia processing, and integrate the highperforming video classification model MoViNet. Our focus is on integrating advanced noise reduction and robust action recognition methods, including spatial and temporal filtering, adaptive algorithms, deep learning, and feature extraction. By combining these techniques, we propose a comprehensive solution to enhancevideo action recognition in noisy environments, achieving higher accuracy of around 94 percent and reliability across realworld scenarios. This work contributes to advancing video action recognition systems, bene- fitting applications in surveillance, healthcare, interactive systems, and beyond. Index Terms—

Mediapipe framework, MoViNet (video classification model), Human-computer interaction (HCI), Advanced video processing techniques.

Paper ID-328

YOLO8 based Smart Detection of Contaminants in Hyacinth Bean Grains

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Abstract: Precise quality assessment of good grains is crucial for effective crop management and improving yield. Traditional methods often face issues like subjectivity and inconsistency, which can be overcome with automation. This study explores using the YOLOv8 object detection algorithm to automate the grading process for hyacinth beans grains. Work was carried out on our dataset images labelled for various bean qualities including high-quality beans, defective ones (Weevilled), and contaminants like husks, stick, other mixed grain, stone, and insects. The YOLOv8 model was trained to identify and classify these beans and contaminants accurately. The automated system significantly reduces manual labor and minimizes errors, offering a reliable and efficient solution for quality assessment. By automating the quality assessment of hyacinth beans, this research supports precision agriculture, leading to more sustainable food production and economic benefits.

Paper ID-329

Fake Instagram Profile Detection

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Abstract: The rise of social media has brought challenges like fake accounts, hate speech, and fraud, with over 1.7 billion fraudulent profiles reported globally. On Instagram, the need for efficient fake account detection grows as its user base expands. Manual methods are inefficient, prompting the use of machine learning for automated detection. Our approach integrates supervised learning to analyze behavioral patterns and computer vision to examine profile images for inconsistencies. This multi-modal system combines both text and image data, enhancing the speed and accuracy of detecting fake accounts, ensuring better platform integrity.

Paper ID-330

Coconut Disease Detection using Traditional ML Classifiers with GLCM and SIFT Features

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Abstract: Coconut crops are very valuable, with both edible and non-edible parts used in many industries. These crops can suffer from diseases like bud root dropping, bud rot, grey leaf spot, yellowing of leaves, CCI caterpillars, and stem bleeding. In this paper, traditional ML models are adopted using GLCM and SIFT and combination of both. Using a custom dataset from Kaggle, we tested four ML models: RF, LR, SVM, and KNN. By blending SIFT alone and GLCM+SIFT the RF achieved perfect accuracy of 100%. LR and KNN both achieved 100% accuracy using SIFT alone, while SVM reached 92.8%. The SIFT features proved to better compared to GLCM features. This solution assist in the quick detection and classification of coconut diseases, benefiting farmers, policymakers, and agricultural stakeholders by supporting better disease management and reducing crop losses.

Paper ID-336

Military Aircraft Detection from Optical Satellite Images using Convolutional Neural Networks

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Abstract: Aircraft detection using optical images plays a vital role in various military operations contributing to security, safety, efficiency, and environmental sustainability in the aviation sector. Recent works such as CGC-net, YOLOv5, DenseNet have showed remarkable outcomes in military aircraft detection. Although the models demonstrate significant results, they often exhibit low speed and unreliable accuracy in detecting aircrafts from foggy optical images. To address these issues, we plan on developing a deep learning model that detects military aircrafts with high speed and accuracy particularly in challenging weather conditions. This paper proposes an enhanced CNN model that has been well trained with MAR20 dataset, with various pre-processing techniques applied. The trained model has consistently shown reliable results when tested with unseen data. This model was validated and it yielded an accuracy of 92.35% and over all false positive rate is 0.41%, indicating that it performs well in a variety of landscapes and circumstances, with an additional advantage of improved border surveillance.

Paper ID-341

Detection of airports and runways from aerial imagery using deep learning

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Abstract: Disaster management calls for as quick a detection of critical infrastructure-like airports and runways. Most of the traditional object detection models, which include CNNs, RCNNs, SSDs, and earlier versions of YOLO, have high computational costs and low accuracy, particularly for smaller objects within aerial and satellite imagery. It presents the YOLOv9 object detection model with very significant improvements in feature extraction, bounding box prediction, and several modern techniques involving attention mechanisms and multi-scale feature fusion. For the purpose of improving model robustness, extensive data augmentation was adopted in training. The proposed model was tested and validated on the diverse dataset of aerial and satellite images, attaining an accuracy as high as 91.3% with a low false alarm rate of just 7.08%. These further improvements will make YOLOv9 highly scalable to support disaster management with faster infrastructure assessments, improvement in border surveillance, among others.

Paper ID-347

Handwritten Text Recognition and Conversion System

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Abstract: Even with differences in handwriting styles and quality, handwritten text can be recognized and converted using platforms offered by handwritten text recognition and conversion systems. For offline handwritten word recognition, Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM), and Connectionist Temporal Classification (CTC) are used. The system's goals are to increase productivity and accuracy in a number of areas, including address identification, signature verification, and application interpretation. It uses OpenCV and TensorFlow image processing algorithms for training and recognition, generating digital outputs in the process. The research also discusses the more general problem of Automated Handwritten Text Recognition (AHTR) and highlights how difficult it is to classify a variety of handwritten characters, such as numbers, symbols, and scripts written in several languages. The suggested approach makes use of CNNs to efficiently recognize handwriting in a variety of formats. Grammar mistakes are eliminated, and meaningful statements are produced. It also has other capabilities including the ability to transform text from any language to a user-specified language, which would significantly improve the system's accessibility and usefulness. Index Terms—Handwritten Text Recognition (HTR), Neural Networks, Convolutional Neural Networks (CNN), Recurrent

Neural Networks (RNN), OpenCV, TensorFlow, preprocessing, Optical Character recognition (OCR).

Paper ID-351

Impact of Human-in-the-loop paradigm in AI labeling and Annotation

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Abstract: Incorporating human expertise directly into artificial intelligence workflows, a concept known as the Human-inthe-Loop (HITL) paradigm, has proven to be a crucial approach in improving the processes of AI data labeling and annotation. This survey paper delves into the impact of the HITL paradigm on the quality and efficiency of data annotation in AI systems, emphasizing the synergistic benefits of combining human insights with automated techniques. This paper reviews a variety of recent methodologies that integrate human evaluative input with automated systems, showcasing the enhancement of data accuracy and system reliability across several applications, including healthcare, autonomous vehicles, and language processing. It classifies various HITL techniques, evaluates the applicability of each and offers potential solutions.

Paper ID-354

A Next-Gen Approach to Streamlined Canteen Management Systems using Mesa Framework

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Abstract: A next-generation canteen management system is proposed that employs intelligent software agents to streamline various tasks, such as order processing and customer service, within canteens. The system automates verification through ID card scanning and OTP authentication, ensuring secure and efficient operations. By integrating agents to manage orders and provide real-time updates, the system enhances the dining experience by reducing manual effort and improving service speed. This smart solution, designed to cater to institutional needs, provides seamless control over canteen processes while enhancing user satisfaction through a modern, technology-driven approach.

Paper ID-359

Prediction of Liver Cirrhosis and Analysis

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Abstract: - Liver cirrhosis, caused by diseases like hepatitis and chronic alcoholism, results in scarring that impairs liver function. Each injury forms scar tissue, leading to a nodular, uneven liver surface. We propose an AI-driven prediction model which makes use of Ensemble Techniques to detect liver cirrhosis early. The Ensemble includes Gradient Boost, XGBoost and Random Forest models. Our system allows patients to upload medical reports or enter data manually through a user-friendly platform. The model analyses this data, predicts cirrhosis risk, and provides visualizations for monitoring. This approach aims to improve early detection and timely intervention, reducing healthcare costs and enhancing patient outcomes by preventing disease progression.

Paper ID-368

EXPLORATION OF EXPLAINABLE AI WITH DEEP LEARNING MODEL FOR EARLY DETECTION OF ALZHEIMER'S DISEASE

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Abstract: Detecting of Alzheimer's disease (AD) at early stage is crucial for timely intervention and management. This study explores the application of an Explainable AI with deep learning models for detecting Alzheimer's disease (AD) at early stage using medical imaging data. We developed a Convolutional Neural Network (CNN) to classify brain scans into four distinct stages of Alzheimer's progression and superior spatial hierarchical relationships modeled by Capsule neural network (CapsNet). To enhance interpretability, we employed explainable AI (XAI) techniques, LIME and SHAP, to explain the predictions of a pretrained InceptionV3 model for image classification which allow clinicians to visualize the regions of the brain that model considers most indicative of Alzheimer's. These visualizations provide valuable insights into the decision-making process, fostering trust and facilitating clinical validation. Our results demonstrate that explainable deep learning models not only achieve best performance but also offer critical transparency, making viable tools for aiding in the diagnosis and understanding of Alzheimer's disease. The model achieves best F1 score, precision, recall and accuracy with 96% and 97% for CNN and CapsNet respectively indicating its robustness in detecting subtle differences in brain images.

Paper ID-371

AI Legal Assistant for IPC

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Abstract: The legal framework is a critical component of societal structure, yet its complexity often leaves individuals struggling to understand their rights and obligations. This paper introduces an advanced NLP-based chatbot designed to enhance legal accessibility and comprehension, focusing on the Indian Penal Code (IPC). The proposed system integrates Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) techniques to provide precise and contextually relevant legal information. The chatbot utilizes NLP algorithms for interpreting legal texts and generating userfriendly responses, thus facilitating a better understanding of legal articles and statutes. Streamlit is employed to create an interactive user interface, ensuring a seamless experience for users seeking legal advice. The implementation of this system aims to bridge the gap between complex legal language and public understanding, improve the efficiency of accessing legal information, and support individuals and small businesses in navigating legal challenges. This approach is anticipated to significantly enhance legal awareness and accessibility, contributing to a more informed and legally savvy society.

Paper ID-374

PROMPT PALATE: A Prompt-Based Restaurant Recommendation System With Scheduling and Chatbot Integration

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Abstract: In today's fast-paced world, individuals often find themselves craving a culinary adventure but struggle to decide on the perfect restaurant to satisfy their desires. Traditional restaurant search platforms typically offer rigid filters such as location, cuisine, and price range, limiting users' ability to explore options tailored to their specific cravings or preferences. We introduce Prompt Palate, a novel prompt-based restaurant recommendation system that uses natural language processing (NLP) techniques to address this challenge. Prompt Palate allows users to input their culinary desires via human-like prompts whose details and preferences are extracted through NLP algorithms. Moreover, the integration of a chatbot interface enhances user engagement and provides additional information about recommended restaurants. Users can engage in interactive conversations with the chatbot to learn more about menu offerings, ambiance, and special features of preferred restaurants. Additionally, the chatbot facilitates food ordering directly from the recommended restaurants, streamlining the dining or home delivery experience. To ensure a seamless and uncrowded dining experience, we incorporate intelligent scheduling

algorithms for efficient table management, staff allocation, and delivery coordination. These algorithms optimize resource allocation, minimize wait times, and prevent overcrowding, thereby enhancing customer satisfaction.

Paper ID-380

Machine learning algorithms for improved script evaluation

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Abstract: Evaluating subjective answers in educational assessments presents a complex challenge due to the need for contextual and semantic understanding. Traditional keywordbased approaches often fall short in capturing the subtleties of students' responses. This paper investigates the use of three different methods: BERT (Bidirectional Encoder Representations from Transformers), Cosine Similarity, and Fuzzy Logic to enhance the accuracy and context sensitivity in evaluating subjective answers. The experimental analysis demonstrates that these methods can improve the evaluation process by offering more precise and contextually aware grading. A comprehensive comparison was conducted using metrics such as accuracy, precision, recall, which resulted in improvements, particularly with BERT. The implications of incorporating these methods in educational settings are profound, offering potential advancements in automated grading systems. Overall, key findings suggest that integrating these methods can lead to more reliable and efficient subjective answer evaluation, contributing to the advancement of automated educational technologies.

Paper ID-385

Intelligent Food Storage: Enhancing Freshness and Reducing Waste with Smart Containers

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Abstract: Smart food container is a high-tech container aiming to create completely autonomous system based on sensor technology. Internet of Things (IoT) and sensor technology is the core area of the smart food container. Enabling to track and monitor each food container has numerous advantages. In a country like India majority of the people depends on the rice, pluses and grocery for their daily food needs. In this busy lifestyle the young generation needs to track the food consumption other than manual monitoring. Even the smart food containers play a very important role in the mass food production like in temples/ hotels/ restaurants. Here is a system that measures the level of the container automatically by providing complete information with excellent tracking system.

Paper ID-394

An Advanced Movie Recommendation System Leveraging Alternating Least Squares and Apache Spark for Scalable Data Processing

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Abstract: Nowadays, recommendation systems have revolutionized how we discover interests, employing an information filtering approach to predict user preferences. Typical application areas encompass books, news, music, videos, and movies. This paper introduces a movie recommendation system designed using the Alternating Least Squares (ALS) algorithm, a widely adopted collaborative filtering technique implemented in the PySpark ML library. The system is specifically tailored to handle large-scale datasets, making it well-suited for realworld applications. The core functionality of the system involves processing a dataset containing user ratings for movies. By applying the ALS algorithm, latent factors are learned for both users and movies. These latent factors acquire the essential likings of users with the intrinsic characteristics of movies. Leveraging these latent factors, the system predicts ratings, with an accuracy of 72.91%, that users would assign to unrated movies, thereby generating personalized movie recommendations.

Paper ID-396

An approach for Face Detection and Face Recognition using OpenCV and Face Recognition Libraries in Python using GPU

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Abstract: Lots of Face recognition technology has seen significant advancements in these years. It offers many applications such as in security systems, surveillance, and biometric authentication. With all these deep learning techniques spreading around, the performance of face recognition algorithms has got better. But the computational demands still back from getting all the way there. Processing large datasets or real-time video streams can be a real challenge sometimes. Anyhow, this project brings right off a new way to face recognition by using GPU support besides Python libraries like OpenCV and face_recognition. By stepping into the world of parallel processing power provided by GPUs, our system just speeds up the process of face recognition by miles compared to the old-fashioned CPU-based setups. The real deal is that GPU support can do parallel computation of some complex neural network operations, speeding up the inference times vastly. This is a huge plus for the applications that crave real-time or like-real-time performance, like surveillance systems and video analytics.

Paper ID-397**Dimensionality Reduction via Graph-based Feature Selection**¹ Hrishik Sai Bojnal, ² Parnika Singh, ³ Dr. Anitha J,^{1,2,3} RV Institute of Technology and Management Bengaluru, India[1 hrishiksai@outlook.com](mailto:hrishiksai@outlook.com), [2 parnikasingh171203@gmail.com](mailto:parnikasingh171203@gmail.com), [3 anithaj.rvitm@rvei.edu.in](mailto:anithaj.rvitm@rvei.edu.in)

Abstract: Given the rapid influx of data, organizing and managing its features poses a significant challenge. Many features are deemed redundant, impeding efficient storage and training of models. We introduce a method to address this challenge by defining an algorithm that successfully achieves dimensionality reduction. By establishing a threshold, we identify pairs of features with significant linear correlations which are modelled as vertices and edges on a graph. Using graph theory principles, we can pinpoint non-essential features. By strategically removing these points, our method proceeds to streamline data management processes and enhances computational efficiency while outperforming Principal Component Analysis (PCA).

Paper ID-412**Detection of Manhole and Sewage Overflow Using Computer Vision**¹Manika Kesharwani, ²Shivabasamma Beli, ³Dr. Azra Nasreen, ⁴Dr. Ramakanth Kumar P,⁵Dr. K. Sreelakshmi, ⁶Shri. T Shankar^{1, 2, 3, 4, 5, 6}RV College of Engineering®, Bengaluru, Karnataka

Abstract: Maintenance and management of urban sewage systems are critical for public health and environmental sustainability. Manholes play a crucial role in these systems, providing access points for inspection, maintenance, and environmental protection. Neglected or improperly closed manholes pose significant risks, including accidents, property damage, and environmental pollution. Sewage overflow adds further complications, leading to health hazards and infrastructure damage. This paper presents a deep learning based model for manhole and sewage overflow detection. Utilizing OpenCV for image processing and DarkNet for model integration, proposed system accurately identifies open/closed manholes, and sewage overflows with high precision rates of 97%, 99.87%, and 96.27%, respectively. By automating the maintenance, these solutions contribute to the building of smart cities that enhances safety, reduces operational costs, and safeguards the environment.

Paper ID-414**Machine Learning based Classification and Recognition of Melakarta Ragas using Melakarta Chakra Analysis**

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Abstract: This study dives into the complex realm of Indian classical music, where the basic melodic compositions known as ragas—made up of musical notes—hold enormous pride and significance. The research especially focuses on the Carnatic tradition and uses machine learning approaches, such as Support Vector Classifier (SVC) and Random Forest model (RF), to accomplish accuracies of 89.65% and 99.72%. The high accuracy of the RF model underscores its effectiveness in classification and identification of ragas. To have a large data set and for the raga identification of 72 melakarta ragas overfitting method is used. By using 80/20 model training and testing of data is used to get the highest accuracy. In order to bridge the gap between tradition and technology in the world of Carnatic classical music, the study's accurate results utilizing both SVC and RF model classifiers pave the way for a deeper knowledge of ragas and their classification.

Paper ID-422

Prediction of Customer Purchasing Patterns for Retail Optimization using Market Basket Techniques

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Abstract: This paper addresses the critical task of assessing customer purchasing behaviour in retail, which directly impacts marketing strategies and inventory management. The paper presents a data processing and analysis pipeline specifically designed for market basket analysis and association rule mining. Utilizing the Apriori algorithm, our system identifies frequent item sets and association rules, revealing key insights into purchasing patterns. The pipeline employs AWS S3 for data storage, Apache Airflow for ETL processes, and SQLite3 for data analysis, with visualizations provided through Power BI dashboards. The proposed model effectively identifies complex product relationships and predicts customer behaviour, outperforming traditional methods. The integration of a Large Language Model (LLM) like GPT 3.5-Turbo for customer feedback processing enhances the insights derived. This study enhances marketing strategies, inventory management, and customer satisfaction by offering actionable recommendations for product bundling and cross-selling. The findings highlight the significant potential of advanced data processing and machine learning algorithms to transform retail analytics, providing businesses with reliable tools for informed decision making. Notably, the strongest association rule identified was between Wine and Frozen Meals, as well as Canned Vegetables and Beer, with a Support score of 3.6%, Confidence of 50.7%, and Lift value of 3.04. Furthermore, it was observed that the accuracy of Customer Feedback Analysis using GPT 3.5-Turbo was 92% while the traditional method of using in-built python libraries(Naive Bayes Classifier) gave an accuracy of only 84%.

Paper ID-432

A Comparative Analysis of Machine Learning Algorithms for Crop Recommendation

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Abstract— This paper looks at how crop recommendation and yield prediction analysis, with the help of sophisticated machine learning, help enhance farming productivity. The choices of crops and the best time for applying fertilizers are determined by using LightGBM, decision trees, SVM, logistic regression, and random forest algorithms based on soil and climate data. Upon comparing these algorithms, LightGBM and Random Forest are identified as the best algorithms. Intelligent decision support systems are imperative to agriculture's importance in India's economy. These systems use machine learning to give the best results in terms of yields, resources used, and vulnerability to market and climatic changes. In addition, taking into account the forecasts of an increase in the world population to 9.7 billion by 2050, the pressure to generate more food in a sustainable manner is inevitable. This has underlined the need and importance of adopting such intelligent technologies in improving agriculture to feed the increasing population with regard to food and conservation of the environment.

Paper ID-440

Supervised Learning for Log-Based Anomaly Detection

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Abstract: Log-based anomaly detection is crucial in today's world for security, operational efficiency, compliance, and optimizing application performance. A log of a system describes its state during execution and sequentially records events in the system. Anomaly detection in log data involves identifying abnormal behavior or patterns within system runtime information recorded in logs. The current understanding of log based anomaly detection heavily focuses on advanced algorithms, deep learning techniques, log parsing, and system behavior analysis. Despite the availability of unsupervised models for anomaly detection in system logs, their blind spots and complexity make supervised learning the preferred, more accurate, and transparent option. The BGL log dataset was selected for developing anomaly detection model due to its comprehensive coverage of system logs and its suitability for identifying patterns associated with anomalies in large-scale systems and preprocessing the data by eliminating noise. Log parsing is done to extract information from logs and convert it

into fields using data frames and dropping unwanted data. For feature extraction, the frequency of specific keywords within log messages was tracked, and these keywords were grouped using Block IDs as the primary key for model input. While traditional approaches have primarily relied on unsupervised methods for log-based anomaly detection since log data is complex, recent progress has highlighted the effectiveness of supervised learning techniques in improving accuracy. Random Forest Ensemble learning, known for reducing variance and overfitting, is a preferred choice for model training. The training and testing data are split as 75% and 25% respectively. The machine learning model shows excellent performance with an accuracy of 99%. It attains elevated precision, recall, and F1-scores for each class, demonstrating strong results for class '0' at 1.00 for precision and 0.99 for recall and F1-score.

Paper ID-444

LUNGCANARY- PIONEERING EARLY LUNG CANCER DETECTION USING MACHINE LEARNING ALGORITHMS

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Abstract: Lung cancer, a malignant tumour originating in the lung cells, is notoriously challenging to detect early through conventional clinical procedures, which often require invasive techniques. This study introduces LungCanary, an innovative approach leveraging machine learning algorithms to address the global health challenge of early lung cancer detection. By employing advanced computational methods and utilizing transfer learning principles, LungCanary effectively extracts meaningful features from medical imaging data. The model incorporates multiple decision-making components to capture diverse data patterns, significantly enhancing diagnostic precision. Through rigorous experimentation, LungCanary demonstrated superior performance with an accuracy of 98.36%, a precision of 96%, and an error rate of just 1.64%. These findings highlight LungCanary's potential to outperform existing models, marking a breakthrough in the accuracy and reliability of lung cancer diagnostics. The significance of this research lies in its potential to revolutionize early detection methodologies, ultimately improving patient outcomes.

Paper ID-451

Detecting Fake News: A Comparative Evaluation of Machine Learning Techniques

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Abstract: Fake news is a significant and well-acknowledged problem in contemporary society due to its rapid spread via social media and various online networking platforms, thereby making it difficult to determine the validity of information. In this study, we examine literature for this issue, prevalent datasets like LIAR, Politifact, and COVID-19, as well as classical machine learning and deep learning models such as SVM, BiLSTM, and CNN_BiGRU for fake news detection, and analyze their effectiveness and scope of application for fake news detection.

Paper ID-453

Machine Learning Based Health Hub (Health Diary)

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Abstract—Modern lifestyles, characterized by sedentary behaviour and dietary imbalances, have led to an alarming rise in lifestyle-related diseases, posing significant health challenges globally. Addressing these issues requires innovative and comprehensive health management solutions. Health Hub is a state-of-the-art platform designed to combat these challenges by leveraging cutting-edge technologies. It integrates seamlessly with APIs like Spoonacular and Edamam to provide a holistic health management experience. The Health Hub platform is meticulously structured into four main sections: the Diet Library, Food Library, Exercise section, and Disease Prediction tool. The Diet Library offers users in-depth insights into various diet types, such as keto, vegetarian, and gluten-free options, along with effective calorie management strategies. The Food Library complements this by providing a rich repository of nutritious recipes and personalized diet plans, tailored to individual dietary preferences and nutritional needs. Health Hub's responsive interface and robust security measures ensure a seamless and secure user experience, safeguarding sensitive health data. By amalgamating advanced technologies with personalized guidance and real-time health insights, Health Hub redefines proactive healthcare management. It empowers individuals to make informed health decisions, access tailored insights, and maintain optimal well-being with the support of advanced tools and technologies. This innovative approach not only facilitates comprehensive health management but also fosters a proactive and informed approach to personal health, ultimately contributing to improved health outcomes and enhanced quality of life.

Paper ID-456**ADVANCING SEPSIS DETECTION: LEVERAGING SVM AND CNN INTEGRATION FOR NEXT-GEN
EMERGENCY DIAGNOSTICS**

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Abstract: In recent times, early detection of diseases is critical for preventing them from negatively impacting our lives. Sepsis, a severe response to an underlying infection, often develops before hospitalization. Early prediction and diagnosis can lead to better outcomes, but predicting sepsis at an early stage remains a challenging issue. In this paper, we propose a hybrid approach that integrates Support Vector Machine (SVM) and Convolutional Neural Network (CNN) to more precisely predict the prevalence of sepsis in endemic populations. The SVM algorithm is employed for precise image scaling, ensuring optimal resolution and quality for subsequent analysis, while CNN is used for image classification to detect subtle patterns indicative of sepsis in medical images, potentially reducing sepsis-associated morbidity and mortality. Additionally, the model leverages time_series data from patients' vital signs and laboratory results to analyze temporal patterns that often precede the onset of sepsis. The hybrid model incorporates recurrent layers within the CNN to capture these sequential changes over time, enhancing its predictive power. This is crucial, as early symptoms of sepsis may evolve gradually, and detecting these changes can significantly improve early diagnosis. The proposed model was trained and tested on a dataset of 1397 medical images to ensure diversity in patient demographics. The dataset included patients of varying ages, genders, and co morbidities to assess the model's generalizability across diverse populations. Our integrated model achieved an impressive 96% accuracy in identifying sepsis cases, outperforming existing systems. These results indicate the model's potential for early intervention, especially in high-risk populations.

Paper ID-458**Fruit Classification and Ripeness Estimation using Deep learning Models**

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Abstract: Fruits play an important function in our diet by providing essential fibers, vitamins, and minerals. Accurate detection of fruit ripeness can enhance quality control and reduce food waste. This study focuses on using CNNs to grade fruits based on their ripeness levels

into three groups: unripe, ripe, and overripe. The dataset comprises images of grapes, papaya, pomegranate, and strawberry, sourced from the Fruits 360 dataset on Kaggle, RoboFlow, and other websites. Various CNN models were employed, including DenseNet201, MobileNetV2, InceptionV3, and VGG16. DenseNet201 obtained the best accuracy of 92%, followed by MobileNetV2 at 88%, InceptionV3 at 74%, and VGG16 at 68%. The proposed work demonstrates the potential of CNNs in automating the practice of detecting fruit ripeness, contributing to advancements in agricultural technology and improving supply chain management.

Paper ID-459

Parkinsons Disease Detection System

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Abstract: Parkinson's disease presents substantial diagnostic challenges due to its diverse range of motor and nonmotor symptoms, often leading to misdiagnosis or delayed diagnosis. Early detection is crucial for effective intervention and better management. This project aims to enhance PD diagnosis accuracy and timeliness using advanced artificial intelligence and machine learning techniques. By leveraging complex patient data, including clinical assessments and neuroimaging, various anomaly detection methods such as Isolation Forest, Z-Score, and One-Class SVM are employed to identify early symptoms and differentiate PD from other movement disorders. Data preprocessing steps, including normalization and handling of missing values, ensure the model's reliability and accuracy. Visualization tools like box plots and scatter plots aid in identifying outliers and anomalies. The expected outcome is a highly sensitive and specific diagnostic tool for PD, which combines clinical, imaging, and computational methods to improve early detection rates, enabling timely medical interventions and potentially slowing disease progression. The findings will also provide valuable insights into integrated diagnostic approaches, paving the way for future research in neurodegenerative disease diagnosis.

Paper ID-461

Utilizing Artificial Neural Networks and Mel_Frequency Cepstral Coefficients for Gender Identification from Voice Data

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Abstract: Gender recognition from voice has drawn a lot of interest because of its wide-ranging many uses in areas including speech processing computer-human exchange, and voice-based personalization. Gender recognition through voice analysis is a critical aspect of speech processing, finding applications in security systems, voice assistants, and user profiling. This study explores the implementation of Artificial Neural Networks (ANN) for precise voice-based determination of gender features. The characteristics that were taken out include Mel Frequency Cepstral Coefficients (MFCCs), pitch, formants, and other relevant acoustic parameters. The dataset utilized is sourced from the common Voice library that the Mozilla Speech Database gives accessibility. The research employs the Common Voice dataset from the Mozilla Speech Database. The MFCC helps to convert the voice data into 26 numerical features. The accumulation of data comprises of 193,933 voices in the training set and 50,000 voices within the testing group. The analysis involves training an ANN model with 100 epochs on MFCCextracted features from real voices. The achieved training accuracy stands at 87.0%, and the testing accuracy of 80.95% indicates the efficacy of the model in discerning gender from voice samples. This research contributes to the advancement of voice-based gender recognition technology across various applications. However, further exploration is needed to enhance the model's generalization capabilities and address potential limitations, particularly in accommodating diverse speech patterns and environmental variations.

Paper ID-462

Fake Indian Paper Currency Detection Using Deep Learning Techniques

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Abstract: Banknote authentication is maintaining the integrity of financial systems worldwide. As counterfeit currency continues to pose a threat, the integration of deep learning algorithms offers a promising solution for effective and efficient banknote verification. This research paper presents a deep learning model for authenticating Indian currency. Gradient-weighted Class Activation Mapping was used in convolutional neural network for finding region of interest. Publicly available datasets are used for genuine and counterfeit banknote images. The performance of the model was evaluated on the basis of accuracy, precision, and recall. Our findings showcase the strengths and limitations of proposed model, shedding light on their effectiveness in different scenarios. The study also addresses challenges encountered, proposes potential improvements, and outlines future directions for enhancing banknote authentication through advanced deep learning methodologies and use of GAN. The proposed model contributes to the ongoing efforts to fortify financial systems against counterfeit threats and underscores the pivotal role of deep learning in authentication of Indian paper currency.

Paper ID-480

Detecting Gene Sequence of Recurrence Cervical Cancer Interpolating Biomedical Sensors

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Abstract: Cervical Cancer (CC) can be detected earlier in women with the proper diagnosis. Despite Recurrence CC is one of the major adversity increasing mortality at a significant rate. Earliest detection is one of the major challenges in diagnosing recurrence cervical cancer. The main objective of the paper accomplishes with the detecting recurrence cervical cancer in the gene sequence. Gene sequence-based biosensor is manipulated to detain the cancer antigen and supports in screening cervical cancer patients. In the proposed work, electrochemical based DNA biosensors, optical sensors, piezoelectric biosensors are designed to detect the target gene sequences. Bio perception components such as the antigen, antibodies, protein RNA and DNA are interpolated with biosensors. And electrical signals generated from the transducers are used to estimate the performance of the biosensor. Cervical cancer biomarkers are identified by biosensor platforms and target analyses are determined. The chemical reaction is observed on the biosensor platform and the performance of these biosensors are generated by three voltammetry techniques. The paper also explores the influential methods for evaluating the biosensors.

Paper ID-486

Tool wear prediction using GRNN in Sustainable machining of AISI H13 steel

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Abstract: Cutting fluids are often used to reduce friction and temperature at the cutting zone. However, excessive use of cutting fluids leads to environmental impacts, increased machining costs, health risks for operators, and challenges in fluid disposal due to stringent environmental regulations. This has driven a shift towards sustainable machining practices to achieve both environmental and economic benefits. Consequently, researchers are focused on dry machining and textured tool machining, which are integral to sustainable machining practices. Integration of artificial intelligence practice in the sustainable manufacturing is essential and it requires proper decision making in the process and heuristic approach. Heuristic approaches are further employed to optimize machining parameters, improving productivity and reducing manufacturing costs. These approaches are used to prioritize efficiency and practicality over strict optimality. In the final phase, Generalized Regression Neural Networks (GRNN) are used to develop predictive models for machining performance responses. The GRNN model is trained using 70% of the experimental data and is tested and

validated with the remaining 30%. The developed GRNN model can predict all machining performance responses with a $\pm 3\%$ error, effectively establishing the relationship between machining parameters and performance responses.

Paper ID-501

Optimizing Multilayer Perceptron Classifiers for Predictive Heart Disease Diagnosis: A Hyperparameter Tuning Approach

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Abstract: Heart diseases, collectively known as cardiovascular diseases (CVDs), remain one of the foremost health challenges across the globe, taking millions of lives each year. This study evaluates the effectiveness of Multilayer Perceptron (MLP) classifiers in predicting CVDs using the Heart Disease Dataset from Kaggle. We implemented a structured approach using data pre-processing, model training with baseline MLP classifiers, and hyperparameter optimization utilizing Random and Grid Search techniques. The optimized models, particularly the MLP Classifier trained with Grid Search, outperformed the baseline, achieving up to 98.54% accuracy and 100% precision. However, analysis of learning curves indicated the need for further model refinement to enhance generalization on unseen data. This study underscores the importance of hyperparameter tuning in developing effective MLP classifiers for CVDs prediction and suggests directions for future research, including exploring advanced optimization methods and regularization techniques.

Paper ID-529

Sustainable Education: A Design Thinking Approach For Quality Education

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Abstract: Education plays an important part in everybody life. As per the study, 92% of college students believe that colleges and universities should incorporate sustainability education into their curriculum. 82% of college students believe that sustainability is a critical issue facing society. This paper emphasizes on application of design thinking

principles to create a sustainable education curriculum, focusing on teaching arrays in computer science. By addressing the needs of students and educators, the study aimed to make learning engaging and impactful. The process included primary research, SWOT (Strength, Weakness, Opportunities and Threats) analysis, and empathy mapping to identify key challenges, such as difficulty in differentiating sorting techniques. A Virtual Reality (VR) prototype is developed to offer an interactive, immersive learning experience, simplifying complex concepts and enhancing understanding. User feedback helped refine the VR tool, ensuring it was educational and accessible. The study demonstrates design thinking's potential to improve educational outcomes and make complex subjects more approachable.

Paper ID-532

Adaptive Multi-Fidelity Hyperparameter Optimization in Large Language Models

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Abstract: Fine-tuning of any machine learning models especially large language models is a difficult task because of the large hyper parameter space and high training cost. This paper tries to overcome this by proposing a technique called Adaptive Multi-Fidelity Hyper parameter Optimization (AMF-HPO) which combines multiple advanced techniques like multifidelity evaluations, reinforcement learning, Bayesian optimization, and transfer learning. This technique first uses low-fidelity evaluations to eliminate unnecessary hyper parameter space. It then uses a RL agent to identify the next configuration. It then uses Bayesian optimization and Transfer learning to select the optimal hyper parameter configuration.

Paper ID-535

Rural Retail Revolution AIML driven Voice-Based Billing System in Kannada

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Abstract: The aim of the voice-based billing system in Kannada is traditional billing by leveraging speech recognition. This project focuses on creating an efficient system for generating bills and transactions using spoken Kannada. Gaps in current systems include language barriers, limited accessibility, and time consuming processes. The methodology involves data collection for training the voice recognition model, developing robust speech recognition using machine learning, implementing NLP for command understanding, designing a userfriendly interface, recommendations of items based on previous orders of the customer and integrating with the billing system. Expected outcomes include enhanced accessibility for Kannada speakers, improved efficiency, user satisfaction, cultural inclusivity, and streamlined transactions. By addressing these gaps and leveraging technology, this proposed system aims to transform the billing domain with inclusivity and innovation.

Paper ID-537

MAESTRO: A robust Multi-head Attention Enhanced CNN architecture for Heat-induced Stress Recognition using EEG signals

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Abstract: Heat-induced stress impacts various physiological parameters in the body. Elevated temperature can cause tachycardia (an increase in heart rate), as the body attempts to dissipate heat through vasodilation, leading to dehydration and electrolyte imbalances. In addition, the hypothalamus triggers sweating in order to regulate body temperature; that can culminate in fluid and electrolyte loss, which could impact metabolic processes and blood pressure. A prolonged exposure to high temperatures can cause heat stroke, heat exhaustion, and other ailments including organ damage and systemic dysfunction. Existing electroencephalography (EEG)-based heat-induced stress detection often considers the entire EEG frequency range (delta to gamma), concealing redundant and lossy information and increasing the likelihood of false detection rates. To address the limitations of conventional handcrafted feature engineering approaches in heat stress detection, this paper introduces MAESTRO, a novel model comprising two blocks: Convolutional and Multi-head Attention. The Convolutional block extracts precise information from individual EEG frequency bands, while the Multi-head Attention block enhances feature representation through attention mechanism. Finally, two dense layers are employed to classify heat stress into three classes: Acute, Chronic, and Control. The proposed framework undergoes validation using EEG data obtained from 40 rodents in a simulated laboratory environment. The outcomes illustrate the viability of the method in classifying heat-induced stress, yielding remarkable results for overall accuracy, precision, recall, and F1 score of 98.88%, 98.54%, 98.67%, and 98.60%, respectively.

Paper ID-540

Sustainable Water Management: A Regression-Based Approach to Predicting Demand and Distribution for an Indian Geography

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Abstract: —Urban water management in developing nations has provided substantial challenges in achieving the sustainable goals required to meet the needs of the ever-growing population. Effective water management is critical for urban sustainability, particularly in developing Indian cities facing severe water shortages. Using data from Telangana's water management system for 2022, this research makes use of two widely practiced regression models to check the feasibility for certain Indian geographies. Evaluation of the performance of these models aims to identify the more suitable approach of the two, given that the dataset is characterized by variability in geography and consumption patterns. This study aims to provide data for water management facilities by predicting key metrics that can be expected based on historic datasets. The findings highlight the potential of advanced machine learning techniques in developing geographies for sustainable water management solutions. Furthermore, the paper draws attention to the challenges that can be posed by the fluctuating water data variability of Indian cities and advocates for integrating predictive analysis into water management practices

Paper ID-543

Optimising Small-Scale Agricultural Land Using IoT and Machine Learning for Sustainable Resource Utilisation

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Abstract: The investigation reviews how agricultural irrigation efficiency and crop production can be enhanced with the help of IoT and predictive analysis. It talks about things such as soil moisture sensors, automatic watering systems as well as drip irrigation and precision watering which are water conservation techniques. The research also points out indicators for soil quality, nutrient management, optimal soil sampling methods as well as climate-based crop selection in line with market demand.

Paper ID-546

Self-Heal: Conversational Therapy Bot with AI Enhanced Features for Mental Health

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Abstract: Self-Heal stands as an innovative initiative dedicated to delivering accessible mental health support through a cutting-edge application. In response to the escalating challenges in mental health, the work centers around an Alenhanced conversational therapy bot, uniquely empowered with voice-enabled capabilities. Leveraging advanced NLP and machine learning algorithms, this therapeutic companion engages users in empathetic and personalized conversations, transcending the boundaries of traditional text-based interactions. The integration of sentiment analysis further enriches the application by offering deep insights into users' emotional states. Self-Heal envisions contributing significantly to the well-being of individuals by providing a stigma-free, technologically advanced platform for those seeking emotional support and guidance.

Paper ID-559

The Intersection of AI and Additive

Manufacturing: A Bibliometric Analysis of Research Trends

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Abstract: This paper employs bibliometric analysis to investigate the changing research landscape at the intersection of artificial intelligence (AI) and additive manufacturing (AM). Our objective is to offer a thorough analysis of this interdisciplinary topic by analysing data from well-known academics, their affiliations, countries, and related literature. The analysis identifies significant contributions, including Mikołajewski D, Rojek I, and Kazimierz Wielki University, which demonstrates the wide range of skills and institutional participation in AI-driven additive manufacturing research. Moreover, countries such as the United Kingdom, Belgium, and Switzerland are prominent centres of research activity, highlighting the worldwide importance and influence of this intersection. By analysing existing literature, we have identified important areas of research, methodology, and technical breakthroughs. Specifically, we have focused on the use of artificial intelligence techniques, such as machine learning, neural networks, and computer vision, to improve additive manufacturing processes. Our analysis also clarifies emerging patterns, difficulties, and possibilities for future investigation and advancement, encompassing process enhancement and material examination, as well as design enhancement and product personalisation. This study enhances our comprehension of the ever-changing field of AI-enabled additive manufacturing and its ability to bring about significant changes in many industries. This analysis is to provide significant insights to researchers, industry experts, and policymakers. Its goal is to inform future efforts in using AI approaches to enhance additive manufacturing technology and applications.

Paper ID-586

Predictive Analytics in Cardiovascular and Diabetes Risk: An Integrated Machine Learning Approach

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Abstract: Traditionally, diagnosing cardiovascular disease and diabetes relied on methods that might miss hidden risk factors. This machine learning model tackles that by analyzing vast datasets of patient health information. It considers features like blood pressure, cholesterol, and family history to uncover how they affect disease risk. This empowers both doctors and patients. Healthcare professionals can leverage this information to pinpoint individuals at higher risk and implement strategies for prevention. Patients can gain essential insights into their personal risk profiles and adopt proactive measures for a healthier lifestyle. Unlike basic methods, this model employs machine learning algorithms to manage complex interactions among various health factors affecting disease progression. It also processes data much more quickly compared to traditional risk assessment methods. Central to this model is a neural network, a computational approach that learns how factors such as blood pressure impact disease risk and the intensity of these relationships. The model's integration into a user-friendly web interface allows doctors to easily input patient data and receive clear risk assessment reports. By leveraging this machine learning approach, healthcare professionals can make data-driven decisions for improved patient care and disease prevention.

Paper ID-597

Real-Time Text Extraction and Video Interpreter System

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Abstract: —Video interpretation systems are widely used for assisting people with visual impairments. The main goal of a video interpreter system is to help people with visual impairments. By leveraging technologies such as Text-to-Speech, text extraction and Optical Character Recognition, the description of the surrounding environment can be converted to audio and textual data present on images and documents can be extracted and read out. The Real-Time Text Extraction and Video Interpreter System extracts text from images, such as posters and documents, and provides real time descriptions of video feeds through a camera. The generated text is read as speech to aid the visually impaired person. Such a model can be used to navigate outdoor environments, guiding the users about their surroundings.

Paper ID-614

An Empirical Study of ResNet50 Hyperparameter Tuning for Plant Disease Classification

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Abstract: Deep learning techniques have gained popularity in identifying plant diseases owing to their potential for early and accurate identification of diseases. This study presents an empirical investigation into optimizing the hyperparameters of the ResNet50 architecture for plant disease classification. The work conceived explores the optimal configuration in model depth, dense layer configurations, learning rates and the inclusion of batch normalization to discern their impact on classification accuracy. A systematic empirical analysis reveals insights into the interaction of hyperparameters and model performance. The study highlights the configurations that enhance ResNet50's ability to classify plant diseases accurately. This paper provides detailed insights into improving ResNet50 for plant disease classification by exploring hyperparameter tuning without directly comparing several models. The results provide useful recommendations to practitioners for improving the efficiency of deep learning models in diagnosing agricultural diseases.

Paper ID-618

Develop an On - Device LLM Android Application

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Abstract: This paper presents the development and implementation of an Android application utilizing a Large Language Model (LLM) that operates directly on the user's device. This approach aims to address the privacy and latency concerns often associated with cloud-based LLM solutions. The application leverages a smaller, optimized LLM,

GEMMA 2B, which is capable of running efficiently on mobile hardware. It incorporates a hybrid approach, utilizing on-device processing for specific queries and resorting to cloud-based LLMs for more complex tasks that require extensive knowledge bases. This paper details the system architecture, implementation details, and discusses the performance and challenges encountered during the development process.

Paper ID-620

Parameterized Complexity for Query Subset Optimization

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Abstract: This paper introduces an application of parameterized complexity to the query subset selection problem. The main focus is to present a solution for query subset selection using dynamic programming taking into consideration a parameter. This approach provides an algorithm that is Fixed Parameter Tractable (FPT) in nature. Experimental results validate the efficiency of this method, proving the practical applications in optimizing query performance. This paper aims to introduce a parameterized complexity approach to the domain of Information Retrieval.

Paper ID-621

Generative AI Explored: Bridging Theory and Practice with Insights from DocQA Implementation

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Abstract: Generative AI, a field encompassing models that generate text, images, and various other forms of media, is explored in this work, with a focus on its practical applications through DocQA solutions. This technology has a significant transformation on various industries by offering innovative methods to tackle complex challenges. The discussion provides a detailed overview of Gen AI, including its mechanisms, capabilities, and limitations. It then delves into a case study of DocQA, which is designed to enhance document processing and question answering tasks. By examining real-world applications and outcomes, this work reveals the practical benefits, challenges, and best practices for using Gen AI in document centric workflows. The insights aim to guide practitioners and researchers in effectively integrating Gen AI into their processes, enhancing efficiency and accuracy in managing information.

Paper ID-632**Leveraging LLM and RAG for Automated Answer Script Evaluation**

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Abstract: In the realm of education, examinations play a very significant role. If writing an exam is considered tedious, the process of evaluating hundreds of answer scripts can be even more daunting. It usually takes weeks to evaluate all the answer scripts, and there is always a factor of bias in human corrections. Hence, to eliminate all these problems, this study uses a large language model to automate this task and eliminate human bias. The study leverages a fine-tuned LLM to assess answer scripts related to the subject of operating systems using a specific dataset. Along with the LLM, it incorporates Retrieval-Augmented Generation (RAG) to get the context of a given question from a prescribed textbook. The proposed platform also has the capability of analyzing handwriting from an actual answer script, and then this is passed onto the model as input along with context from RAG. Finally, the entire system is integrated into an interactive web platform, deployed using AWS SageMaker. By combining all the technology mentioned, this study has made a sincere attempt to solve the burden of correcting manuscripts.

Paper ID-657**Harvest Smart: An Ergonomic Fruit Harvester For Increased Productivity And Worker Well-Being**

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Abstract: Agriculture, often hailed as the backbone of human civilization, plays a pivotal role in providing sustenance, driving economic prosperity, and shaping cultural identities. Mango, the most ancient among tropical fruits, has found its roots in the Indo-Burma region. India, as the major mango producing country globally. Due to the labor crisis such with the seasonal nature of work and the labor shortages and the current mechanical and robot harvesters being priced high is not feasible for the farmer. The Smart Harvester a mechanical device aims to integrate ergonomics and image processing technology that helps harvesters procure the mangoes in an efficient and productive manner. Additionally, the risk of Musco-Skeletal disorders in fruit harvesters are high, so the mechanical device tackles this problem with an ergonomic design and to minimize disorders. Integration of smart technology will help farmers accurately decide the viability of the fruit to be harvested which will make the process of harvesting more productive.

Paper ID-675**AI on the Edge: A Novel Approach to Detect Waste on Water Bodies****¹ Ishan Shekhar Prasad, ² Medha Sanketh, ³ Dr. Chandra Kumar R****^{1,2,3} R.V College of Engineering, Bengaluru, India****¹ ishanshekhar.pai23@rvce.edu.in, ² medhasanketh.ai23@rvce.edu.in,****³ chandrakumarr@rvce.edu.in,**

Abstract: Marine environments are increasingly burdened by waste from heavy industries and the large-scale disposal of electronics and plastics into waterways that flow into the oceans. Recent advancements in technologies like real-time image processing, machine learning and edge computing has made it feasible to develop commercially viable solutions for automated identification of garbage on water bodies. This paper explores image processing as a targeted approach for the on-field identification of water pollutants. A unique aspect of this approach was to demonstrate the effectiveness of its implementation on standalone edge devices viz. ones that could be used in remote locations with limited computing capabilities and no wireless connectivity. The study demonstrates this usecase with TensorFlow as an AI framework and Raspberry Pi 4B as an edge device. The model achieved a mean Average Precision (mAP) of 51.20%, validating its performance in identifying water pollutants.

Paper ID-685**Improving Students' Understanding of Education using Generative Adversarial Networks: Bridging Text and Visuals****¹ Ganeshayya I Shidhaganti, ² Kavyashree K N, ³ Vishwachetan D****^{1,2,3} Ramaiah Institute of Technology, Bangalore, India****¹ ganeshayyashidaganti@msrit.edu, ² kavshre@gmail.com, ³ vishwachetan@msrit.edu**

Abstract: Utilizing technology in the classroom is essential in today's environment to enhance students' learning. The background problem revolves around the necessity to adapt traditional educational methods to meet the evolving needs of students in today's digital age. With rapid technological advancements, classrooms face the challenge of effectively integrating technology to enhance learning experiences and outcomes. This includes addressing issues such as access to technology, digital literacy among students and educators, and the effective utilization of technology to facilitate interactive and engaging learning environments. The need to employ Generative Model to link school students descriptive 'Poem' statements with relevant visual imagery, accommodating diverse learning preferences. Through pre-trained VQGAN and CLIP models, this research work seamlessly integrates textual description with visually captivating images, employing iterative optimization methods to align image representations with textual descriptions. By incorporating advanced technique such as cutout augmentation the project ensures the quality and variety of generated images, catering to the diverse learning needs of school

students. The outcome is successfully produced and an image is generated matching the 'Poem' description, where the average approximate percentage of accuracy is approximately 77.80% and the average approximate percentage of loss is approximately 22.89%. Additionally, a video documenting the iterative image synthesis process was created, providing insights into the image's evolution and highlighting the effective integration of technology to enhance educational experiences.

Paper ID-706

Limitations of Large Language Models

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Abstract: Large Language Models (LLMs) have become a cornerstone of modern natural language processing, exhibiting remarkable capabilities in diverse applications. However, these models are not flawless. This paper provides a comprehensive analysis of the loopholes inherent in LLMs, focusing on adversarial attacks, biases, hallucinations and outdatedness. One of the main problems is hallucinations, where models generate plausible but inaccurate or unreal information. Biases introduced into training data can lead to outcomes that reflect and amplify societal prejudices leading to discriminatory behavior. Adversarial attacks exploit vulnerabilities in machine learning models by introducing subtle perturbations to input data, causing the model to make incorrect predictions with high confidence. Additionally, LLMs considerably struggle when it comes to domain-specific queries as they lack specialized knowledge and have a generalized training, thus highlighting the need for domain-specific customization. By inspecting these vulnerabilities, we aim to highlight the critical areas that require attention to ensure the safe and effective deployment of LLMs.

Paper ID-733

Predicting PM2.5 Concentrations in Bengaluru Using Ensemble Machine Learning Models and Explainable AI Techniques

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Abstract: Particulate matter PM2.5, originating from various anthropogenic and natural sources such as vehicular emissions, industrial activities, and biomass burning, is a major

component of air pollution. They are extremely dangerous for health and can easily penetrate the lungs, consequently impairing lung functions. The adverse effect of PM2.5 can lead to adverse lung infections. This study aims to predict the PM2.5 concentrations using Bangalore's air quality monitoring station using diverse machine learning models. Data from the monitoring station is utilised to train and compare various algorithms like KNN, Decision Trees, Random Forest, SVM, XGBoost, etc. Factors like meteorological data, traffic density, and past pollution levels are considered as features for prediction. Performance metrics like MSE, RMSE, MAE and R-squared are used to evaluate model efficiency and accuracy. The best-performing models are chosen for an ensemble approach. Moreover, various hyperparameter tuning techniques are assessed for the Random Forest Regressor, and Explainable AI methods like LIME and SHAP are used to interpret the results. The study yields optimal parameters and impressive findings with ensemble models. These findings highlight the significance of ensemble models and hyperparameter tuning in machine learning.

Paper ID-760

**State-of-the-Art Deep Learning Strategies for Multi-Label Classification of
Chest X-Ray
Thoracic Disorders**

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Abstract: This study tackles the challenge of multi-label classification of chest X-rays from the NIH dataset, focusing on diagnosing 14 thoracic pathologies. It employs advanced deep learning models and ensemble techniques to enhance diagnostic accuracy. Three key CNN architectures are used: MobileNet, EfficientNet, and Extreme Learning Machine (ELM). MobileNet is efficient for resource-limited environments, EfficientNet balances accuracy and computational efficiency, while ELM offers fast learning for large datasets. Ensemble methods like average, weighted average, and max vote combine these models to boost robustness and reliability. The performance is evaluated using metrics such as AUC, F1 score, and Hamming loss, with EfficientNet emerging as the top performer. The weighted average ensemble achieves the best results with an AUC of 0.8721, an F1 score of 0.8245, and a Hamming loss of 0.0987. This research demonstrates the potential of CNNs and ensemble methods in medical image analysis, advancing diagnostic tools for better clinical outcomes and improved healthcare.

Paper ID-766

DROPEX: Disaster Rescue Operations and Probing using EXpert drones

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Abstract—Disasters, both natural and man-made, pose significant risks to human life and infrastructure, necessitating swift and efficient search and rescue (SAR) operations. Traditional SAR methods often struggle to access hazardous areas, resulting in delayed responses and increased risk to rescuers. These methods are unable to run automated simultaneous rescues which lead the operations to face challenges such as difficulty in quickly assessing damage, locating survivors, and delivering aid. This paper address the problem by proposing a autonomous swarm of drones framework which improves the response time as well as increases accessibility zone of the rescue operation. The proposed framework DROPEX, is an autonomous UAV (Unmanned Aerial Vehicle) which employs a dual-dome architecture with surveillance drones to detect individuals in distress and payload drones to deliver aid. This framework ensures rapid deployment, accurate navigation, and efficient data transmission in disaster-stricken areas while minimizing the need for manual intervention. The drones are able to recognise the victims in need using object detection models such as YOLO and Detection Transformer (DETR) with thermal vision. By using Long Range Wide Area Network (LoRaWAN) and object detection models, the drones are able to reduce the response time and increase accessibility. The main focus is on creating a robust, scalable, and economical system to enhance the speed, efficiency, and effectiveness of disaster rescue operations.

Paper ID-768

ANN Technique for the Prediction of Solar Power Generation

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Abstract: For effective energy management and the integration of renewable energy sources into the power system, accurate solar power projection is essential. This research provides a novel method for forecasting solar power generation using Artificial Neural Networks (ANN). To improve prediction accuracy, the suggested approach makes use of past solar power data, weather forecasts, and environmental factors. The ANN model is trained on a large dataset using a multi-layer perceptron (MLP) architecture, which enables it to recognize intricate non-linear correlations between input characteristics and solar power production. In comparison to other machine learning approaches and conventional statistical methods, the study assesses the performance of the ANN model. The results show that in terms of mean absolute error (MAE) and root mean squared error (RMSE), the ANN-based model performs noticeably better than existing approaches.

Paper ID-770

Real-Time Identification of Fake Currency Notes Using YOLOv9 and GELAN

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Abstract: In the past many years, counterfeit currency has been proliferating on a large scale in India, which is not just increasing black money but also destroying the value and reputation of Indian currency in the global market. The actual circulation of counterfeit notes across India remains unknown, posing a significant threat to the financial security of ordinary citizen. Hence, this research proposes utilizing YOLOv9 technology, a real time advanced object detection model, to develop a machine-learning system for detecting counterfeit Indian currency. Here we are focusing on the Rs 500 note, and using its images, we are creating a robust model to detect fake currency by training the model with both real and fake denominations of Rs 500. In this, we are using the latest version of YOLO, which is v9, and its latest technology, GELAN, which improves the accuracy and efficiency of the model to detect the fake currency notes from the real one using image processing Techniques.

Paper ID-775

Analyzing Climate Trends and Predictive Modeling in Major Indian Cities-A Big Data Approach

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Abstract: Climate change poses significant challenges worldwide, with urban areas particularly susceptible to its impacts. Understanding local climate trends is essential for informed decision-making and proactive measures towards climate resilience. This paper presents a pioneering study that investigates climate dynamics in major cities of India using advanced big data technologies, namely Hadoop and Spark. Spanning from 1995 to 2020, the dataset comprises temperature records of key cities, enabling a comprehensive analysis of long-term climate trends. Leveraging MapReduce for data preprocessing and Spark for analysis and visualization, the research explores temperature variations across regions and cities, with a focus on seasonal patterns and anomalies. Specifically, the study delves into the climate trends of Delhi, offering insights into its seasonal fluctuations. Furthermore, predictive modeling techniques such as Autoregressive Moving Average (ARMA) and Autoregressive (AR) models are employed to forecast future temperature trends, aiding in proactive climate adaptation strategies. The findings contribute to a deeper understanding of climate dynamics in urban India and provide valuable insights for policymakers, urban planners, and environmentalists in devising effective climate resilience and sustainable development strategies.

Paper ID-776

Tucker Decomposition based Lossless Image Compression for 3D Medical

Image

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Abstract: The successful operation of a telecommunication system depends on the maintaining and transferring of high compression three-dimension medical images that produce reconstructions of excellent quality after decompression. To address this issue, we presented a Tucker Decomposition based lossless image compression for three-dimension medical image. Tucker decomposition, the extended form of Singular Value Decomposition (SVD), can handle high dimensional information; SVD is limited to two dimensions. Use the Selective Bounding volume (SBV) to find and retrieve the Volume of Interest (VOI). Tucker decomposition is used to break down the extracted volume of interest (VOI) into its component major tensor, coefficient matrices, and distinct parameters. subsequently, an Adaptive Binary Range Coder (ABRC) is utilized for compress these values. By inverting the compression procedure and integrating the uncompressed VOI with the surrounding area employing the bound volume coordinates connected to the compressed three-dimensional image, the final uncompressed VOI is produced. utilizing a range of 3D medical images obtained through different forms of imaging, the proposed approach's performance was assessed using analytical evaluation metrics like the Compression Ratio (CR), Peak Signal-to-Noise Ratio (PSNR), and Structural Similarity Index Measure (SSIM). The proposed compression methodology produces consistently high-quality image compressions and produces larger-scale results, as shown by the method's outcome.

Paper ID-791

A Comparative Analysis of Denoising PCG Signals Using Adaptive Wiener-Kalman Filtering

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Abstract: Cardiovascular disease (CVD) is the group of disorder occurs on heart and blood vessel, and they are coronary heart disease, cerebrovascular disease, rheumatic heart disease, etc. Particularly people under the age of 70 are mostly affected by this disease. Earlier cardiologist analyse phonocardiography (PCG) signals to know the condition of heart. Because of the undesirable noise present in PCG signal makes complication in diagnosis by experts. This study analyse and denoising heart sound using five different techniques namely Short-Time Fourier Transform (STFT), Empirical Mode Decomposition (EMD), Recurrent Neural Network (RNN), weiner filter (WF), adaptive Wiener-Kalman filtering (AWKF). There are Lot of noise removal techniques available as discussed in the literature, failed to achieve higher performance in denoising audio signal. The developed denoising techniques were applied on various pathological heart sounds and on heart sound recorded in a noisy environment. The AWKF filtering has great impact on removing distortion and interference present on the signal. This method reserves the major characteristics of heart beat sound. The experimental results showed that AWKF acquired higher SNR, PSNR, lower RMSE and

great denoising effect.

Paper ID-796

"Application of AIML and IOT for reliable Microgrid installed at Billenahoshalli and Lakshmanapura by NIE-CREST "

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Abstract: Decentralized energy solutions, particularly microgrids, have proven transformative in ensuring reliable, equitable, and sustainable access to energy in remote regions of India. This paper presents the integration of Artificial Intelligence (AI) and Machine Learning (ML) in a microgrid project implemented in the Billenahosalli and Lakshmanapura Tribal Hamlets, Mysore District, India, led by NIE-CREST. The AI-ML-driven system enhances the microgrid's decision-making processes, optimizing energy generation, consumption, and resource allocation in real-time, even under adverse weather conditions. Key AI-ML techniques such as ARIMA and LSTM models have been used to forecast weather conditions, enabling proactive energy management and resource switching between solar and biodiesel-based systems. By implementing reinforcement learning (RL), the system autonomously switches between energy sources based on predicted weather patterns, ensuring continuous electricity supply. IoT components integrated into the system provide real-time data on energy production and consumption, allowing for data-driven decisions and efficient energy use. Results demonstrate that the AI-ML-empowered microgrid consistently meets the hamlets' energy demands, generating 11,680 units of electricity annually. This energy production replaces an equivalent amount of energy from coal, resulting in a reduction of 11,680 kg of CO₂ emissions and saving 46 tons of coal per year. The inclusion of energy storage, through hydrogen generation via electrolysis, ensures that surplus energy is effectively utilized. By incorporating advanced AI protocols, the microgrid improves the quality of life for residents by providing a sustainable, reliable energy supply, particularly during peak energy consumption periods and festivals.

Paper ID-799

Meta-Learning Enhancements in Waste Classification: Leveraging ResNet-50 and MAML for Efficient Few-Shot Learning

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Abstract: The escalating global waste crisis necessitates innovative solutions for efficient, sustainable, and adaptive waste management practices. Traditional deep learning-based waste detection systems require a large number of annotated samples for training, which is both labor-intensive and time consuming. Meta-learning, a field of machine learning, offers a promising avenue to address these challenges by equipping models to learn from minimal data and rapidly adapt to new tasks. This study presents an approach for image classification using ResNet-50 in conjunction with Model-Agnostic Meta-Learning (MAML). The methodology leverages the ResNet-50 Convolutional Neural Network (CNN) for feature extraction and integrates MAML for image classification. The meta learning paradigm offered by MAML facilitates the acquisition of a well-optimized initialization, which can be rapidly refined, thus enhancing the efficiency of few-shot learning tasks. By initializing the parameters through MAML training on the Mini-ImageNet dataset, the proposed model demonstrates improved accuracy with minimal training iterations on the TrashNet dataset, which serves as the benchmark for evaluating the efficacy of this approach. The results indicate a notable improvement in generalization accuracy, highlighting the potential of combining ResNet-50 and MAML for efficient and effective waste classification with limited annotated samples

Paper ID-804

A Tool For Analyzing And Detecting Anomalies In Unstructured Log Data

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Abstract: The increasing complexity and volume of log data created by modern IT infrastructure presents numerous substantial problems for enterprises seeking to extract meaningful insights from this data. Traditional log analysis is time-consuming and prone to human error, making it difficult for enterprises to proactively discover and address possible security risks or system faults. To solve this issue, present an anomaly detection method for an unstructured log-data. The program analyzes log data automatically using advanced ML (machine learning) algorithms such as unsupervised outlier identification models (one-class SVM), isolation forest, and local outlier filter (LOF) for anomaly detection to discover aberrant behaviors or strange patterns that may signal potential security threats or system faults. When abnormalities are found, it sends real-time alerts and detailed information, allowing enterprises to identify and react to possible dangers or concerns before they become severe. The anomaly detection tool is adaptable and customizable, allowing enterprises to tailor it to their individual needs and integrate it with their existing IT infrastructure. Overall, the anomaly detection tool for unstructured log data gives good performance tested against different log patterns. It provides a strong solution for enterprises to improve their overall level of security and operational performance by proactively recognizing and responding to any attacks or vulnerabilities in their IT infrastructure.

Paper ID-806

DermaDetect: Advanced Melanoma Skin Cancer Classification Using Convolutional Neural Networks

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Abstract: —Skin cancer has become a major concern in the recent times and a significant health risk. It can be effectively treated if early diagnosis is done. This paper focuses of the detection of skin cancer by the use a sub domain of Machine Learning - Deep Learning. In this paper we have implemented and evaluated a Deep learning algorithm - Convolutional Neural Networks (CNN). The implemented model in this study has given an accuracy of 96%. This Research focuses on the utilization of these advanced technologies in the combat of melanoma and also discusses the impact they can have in enhancing the overall patient outcome.

Paper ID-807

Recommendation System For Social Platform Using Deep Learning Techniques

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Abstract: —This paper explores advanced techniques in developing a Friends Recommendation System on social media platforms, specifically Facebook. By leveraging user behavior data such as the number of followers, followings, and mutual friends, the system aims to provide accurate friend suggestions. This recommendation methodology can be applied across various domains, including search engine recommendations (Google, Explorer, Microsoft Edge), music recommendations (Wynk), video recommendations (YouTube), movie recommendations (Amazon Prime), and product recommendations (Flipkart, Amazon). The study employs similarity coefficient calculations like Jaccard Distance and Cosine Similarity, alongside ranking measures such as PageRank. Furthermore, the system's performance is evaluated using advanced deep learning techniques, including Graph Neural Networks (GNN), Convolutional Neural Networks(CNN), and Recurrent Neural Networks (RNN). Comprehensive experimentation involves measuring the F1-Score and comparing the accuracy of various machine learning and deep learning algorithms to identify the most effective methods for friend recommendations.

Paper ID-819

Malicious Human Activity Detection

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Abstract: Malicious Human Activity Detection (HAD) is crucial for applications such as security monitoring, abnormal behavior detection, and intelligent surveillance systems. This study leverages high-tech wearable devices to develop and test a machine learning model

that can accurately detect malicious activities, such as indulging in fights and unauthorized use of mobile phones on college premises. Deep Learning, a specialized branch of Machine Learning utilizing Complex Artificial Neural Networks (ANNs), is frequently employed to achieve high accuracy in identifying human activities from smartphone data. In this paper, we propose a model that combines Convolutional Long Short-Term Memory (ConvLSTM) networks and Longterm Recurrent Convolutional Networks (LRCN) to detect human activities. ConvLSTM networks are adept at handling spatiotemporal data, making them suitable for video-based activity recognition, while LRCNs integrate convolutional layers for spatial feature extraction with recurrent layers for temporal sequence learning. This hybrid approach allows the model to capture both the spatial and temporal dynamics of activities more effectively. The model is trained and validated using a substantial collection of videos from the publicly available UCF50 and HMDB51 datasets. These datasets are renowned for their extensive variety of activity attributes, encompassing diverse human actions captured in different contexts and environments. This robust statistical model showcases the potential of combining wearable technology and advanced machine learning techniques to bolster security measures and improve abnormal behavior detection in various applications.

Paper ID-821

Silk Shield: Empowering Sericulture with AI Driven Disease Detection

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Abstract: This study conducts a thorough exploration of the automated identification and categorization of diseases in silkworms, focusing particularly on four prevalent conditions: flacheria, grasseria, mascardine, and pebrin, alongside a group representing unaffected specimens. Employing the EfficientNet algorithm, an innovative methodology is crafted to precisely detect and classify silkworm diseases based on image data. This approach involves systematically collecting silkworm images displaying symptoms associated with each disease, followed by meticulous preprocessing and extraction of features. Through the utilization of transfer learning with the EfficientNet architecture, the model parameters are fine-tuned to optimize its performance in disease classification. The efficacy of this method is assessed using rigorous experimental procedures and standard metrics, showcasing its effectiveness in distinguishing between diseased and healthy silkworms with remarkable accuracy and reliability. These findings offer significant insights into the field of sericulture by presenting a robust approach for disease identification and management within silkworm populations, potentially enhancing productivity and sustainability in sericulture industries globally.

Paper ID-822

Cross-Modal Ingredient Recognition and Recipe Suggestion Using Computer Vision and Predictive Modeling

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Abstract: This paper is focused on the development of a novel system known as "IngredEye." It involves various approaches that can be grouped into categories, such as computer vision, including YOLOv8, a KNN prediction model, and a Flutter framework that hosts all of them in a mobile application environment. Previous studies have analyzed the application of computer vision and OpenCV recognition in cooking and proved that such approaches could enhance the level of convenience in the culinary field. This paper addresses issues like changes in lighting, occlusions, and other factors that have to be solved by the algorithms envisaged for real applications. The objective of this paper solely relies on integrating the OpenCV object detection method with comprehensive machine learning techniques specialized for the culinary field. Presenting the end-user with recipe recommendations based on the visual input they have given.

Paper ID-836

A Comparative Study of Ensemble Learning Models for Accurate Solar Irradiance Forecasting

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Abstract: Accurate estimation of solar radiation is very important in energy planning and the integration of renewable energy infrastructures into power grids for most places where the data may be sparse. This paper investigates advanced machine learning technologies specifically, ensemble methods such as XGBoost, LightGBM, CatBoost, NGBoost, AdaBoost, Gradient Boosting, Random Forest, and SGD Boost—to improve the prediction of solar radiation. It shows the performance of the above-mentioned models to forecast solar irradiance from meteorological factors using data from the Hawaii Space Exploration Analog and Simulation (HI-SEAS) weather station. It has been shown that ensemble learning boosts the forecast accuracy considerably, especially for ensemble learners optimized for categorical data and probabilistic predictions. This shows how machine learning can be potential and support the global shift to sustainable energy with reliable forecasts of solar

radiation in data-scarce regions and offering valuable insights for optimizing renewable energy deployment.

Paper ID-856

A Research Survey On Intelligent Detection Surface Irregularities with Deep Learning

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Abstract: Steel part surface detection is a task in multiple industries, such as agriculture, manufacturing, construction, aerospace, mining, etc. Intelligent Detection of Surface Irregularities includes visual recognition of various steel surface defects on steel parts that are present at inaccessible locations. This study works on the recognition of two major irregularities, which are corrosion and cracking. Corrosion and cracking of metal components cost around 4% of GDP for every nation each year, making it a major problem. Corrosion and cracks must be detected within time to perform maintenance, which assures the reliability of the structure. This study includes solutions to direct irregularity detection method that works on the visual aspects of irregularities. Deep learning methods are used to extract attributes and features from images. Our approach to classification based on irregular and normal surfaces is initiated by collecting various datasets of images containing irregularities of steel surfaces. Pre- processing using OpenCV includes things such as resizing images to the normal standard size, normalization, and edge detection. Feature extraction using sci-kit-image, OpenCV, CNN models with image segmentation techniques are trained to segment regions of an image with specific colors. TensorFlow is used to build and train convolutional neural networks (CNNs) and pre-trained models such as VGG and Resnet are used for transfer learning. Performance is tested using metrics such as precision, recall, F1, and accuracy. Results show that the proposed system achieves a high level of accuracy and precision.

Paper ID-862

Arbitrary Kernel Embossed Linear Edge Filtered Residual Network based Sports Ball Classification

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Abstract: Sports ball categorization serves a number of vital purposes across several kinds of business sectors that includes sports analytics, education, recreational activities, and inventory management. These objectives are successfully met by automating and improving categorization processes using cutting-edge technologies like deep learning and computer vision. This promotes creativity and efficiency in a variety of applications. With this motivation, this paper proposes Kernel Embossed Edge Filtered ResNet (KEF-ResNet) that categorizes six classes of sports ball type more effectively. The Sports Ball Dataset that includes 2400 ball images that was used for implementation. Initially, the KEF-ResNet model divides ball images into six groups: football, rugby ball, baseball, cricket ball, bowling ball, and shuttlecock. During pre-processing, image labeling is done to the segregated images. Following the augmentation of data on the labelled ball images, ended with 50,400 ball images. To create Kernel Embossed Edge filtered (KEF) ball images, augmented ball images were subjected to the Kernel Embossed Edge with linear filter technique. The KEF ball images are used with both the proposed KEF-ResNet model and the current CNN techniques to assess the performance. With a high accuracy of 99.7%, the implementation shows that the suggested KEF-ResNet model performs well in the sports ball type classification task.

Paper ID-876

Self-Heal: Conversational Therapy Bot with AI Enhanced Features for Mental Health

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Abstract: Self-Heal stands as an innovative initiative dedicated to delivering accessible mental health support through a cutting-edge application. In response to the escalating challenges in mental health, the work centers around an AI-enhanced conversational therapy bot, uniquely empowered with voiceenabled capabilities. Leveraging advanced NLP and machine learning algorithms, this therapeutic companion engages users in empathetic and personalized conversations, transcending the boundaries of traditional text-based interactions. The integration of sentiment analysis further enriches the application by offering deep insights into users' emotional states. Self-Heal envisions contributing significantly to the well-being of individuals by providing a stigma-free, technologically advanced platform for those seeking emotional support and guidance.

Paper ID-877

Predictive Analytics for Milk Quality using Random Forest (RF) Algorithm.

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Abstract: This paper introduces a machine learning-based framework for assessing milk quality, utilizing a Random Forest (RF) algorithm to analyze six key parameters: pH value, temperature, color, taste, odor, and turbidity. These parameters are used to categorize milk into three quality grades—low, medium, and high—within a user-friendly web application that facilitates real-time predictions. The proposed system demonstrates high accuracy and offers a rapid, cost-effective alternative to traditional laboratory methods, making it a valuable tool for dairy producers and quality control professionals. By democratizing access to sophisticated quality assessments, the system ensures that only high-quality milk reaches consumers. Future work will explore dataset expansion, advanced machine learning techniques, and IoT integration for continuous real-time monitoring, highlighting the potential of machine learning to transform dairy industry practices.

Paper ID-887

Corner Key Point Extracted Deep Learning Framework based Birds Species Classification

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Abstract: Climate change and habitat destruction have caused the extinction of many bird species. Classifying bird species is a crucial aspect of ornithology, as it aids in the comprehension of species distribution, habitat needs, and environmental changes that impact bird populations. Ornithologists can use variations in bird species distributions to measure the health of a particular environment. Expert ornithologists have relied heavily on visual inspection, which can be tedious, time-consuming, and unreliable when classifying bird species. The development of technology can be used to categorize the bird species. This paper proposes Corner Key Filtered VGG16 (CKP-VGG16) that categorizes eight bird species with high accuracy. The execution was carried out using the 4000 bird images from the KAGGLE Birds species Dataset. First, the CKP-VGG16 model separates the images of birds, and then it labels each image. After data augmentation on the labeled images, 84,000 bird images are produced. The augmented images are transformed into grayscale versions, which are then used in filtering techniques to produce Corner Key Point Filtered (CKP) bird image. The performance is analyzed by applying the CKP filtered bird images to the current CNN

models. The application demonstrates that the suggested CKP-VGG16 model performs significantly well in classifying bird species, with a high accuracy of 99.7%.

Paper ID-890

Contour Edge Mask Filtered Residual Network based Egg Classification

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Abstract: In agricultural and food safety, classifying eggs is a crucial activity that requires great precision in distinguishing various kinds of egg. Traditional approaches can be expensive and error-prone since they frequently rely on manual examination or simple image processing techniques. In order to improve classification performance, this research proposes Contour Edge Mask Filtered ResNet (CEM-ResNet), which combines advanced deep learning techniques with edgedetection methods. The Egg Dataset containing 2000 egg images that was used for implementation. The suggested CEM-ResNet model uses contour edge masking to eliminate extraneous background noise and highlights key structural information while utilizing ResNet architecture to capture essential details of eggs. The suggested CEM-ResNet model uses contour edge masking to eliminate extraneous background noise and highlights key structural information while utilizing ResNet architecture to capture essential details of eggs. Initially, the CEM-ResNet model organizes the egg into two groups as Chicken egg and Duck egg. The organized eggs are performed with labeling and then subjected to data augmentation to end up with 42,000 images. The augmented egg images are converted to grayscale images. The grayscale images are processed with edge detection model to finalize the contour filtered egg images and ResNet model. The contour filtered egg images are refined to create the edges and then the mask was created to generate Contour Edge Mask Filtered (CEM) egg images. The ResNet model was refined to process the CEM egg images. With a high accuracy of 99.64%, the implementation reveals that the proposed CEM-ResNet model outperforms towards the classification task.

Paper ID-899

VisualDiet: Revolutionizing Dietary Tracking with Cutting-Edge Computer Vision

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Abstract: "VisualDiet" leverages cutting-edge computer vision to address the escalating global obesity crisis by enhancing dietary assessment. Traditional self-reported dietary intake methods are susceptible to inaccuracies. "VisualDiet" offers a solution through automated food item and nutrient content recognition from user-captured images. Employing a Convolutional Neural Network (CNN) architecture, specifically the Inception-v3 model, the system achieves high precision in food recognition and portion size estimation. Designed for user-friendliness, VisualDiet seamlessly integrates into daily routines, promoting objectivity, efficiency, and reliability in dietary monitoring. This innovative approach has the potential to significantly improve individual health outcomes and inform public health nutrition research and policy formation.

Paper ID-913

VIRTUAL COMPANION: A HUMAN FRIENDLY CHATBOT

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Abstract: This research introduces a novel virtual companion chatbot designed to provide emotional support and foster social interaction. The chatbot employs a dual-stage process to predict user emotions: it first analyzes textual input to assess emotional state, followed by an analysis of audio files to capture vocal cues. These outputs are combined into a cohesive emotional profile, which is then processed by a Large Language Model (LLM) within a predefined template. This ensures the chatbot's responses are emotionally aware, supportive, and non-harmful. The multi-modal emotion recognition system enhances the chatbot's ability to engage empathetically, demonstrating the potential for AI-driven companions to offer nuanced emotional interactions.

Paper ID-914

Enhancing Railway Safety through Human Activity Recognition

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Abstract: Intelligent Transportation System (ITS) is one of the evolving domains where Artificial Intelligence (AI) is creating endless opportunities. In recent days, for transit both passengers and freight prefer railway as the transportation medium. For this reason, the railway should provide the safety and uninterrupted services. These safety measures reduce the fatalities. In this paper, we present an Object Detection (OD) and Activity Recognition (AR) model for railway lines with the goal of reducing accidents, fatalities and improving safety. The proposed work uses the advantage of You Only Look Once Version 8 (YOLO-V8) to detect the objects and recognize the activities. This paper provides a detailed performance analysis of YOLO-V8 on training and validation sets. Also, this paper highlights the other performance indices such as classification accuracy and mean average precision with respect to the epoch number.

Paper ID-916

Analyzing and Visualizing Causes of Poverty in India: A Data-Driven Approach Using HPCC Systems

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Abstract: Poverty in India is a complex issue with multiple causes. This paper mainly focuses on three of the main causes for poverty: Education, Unemployment and Consumer Price Index. This study makes use of data received from the National Informatics Center (NIC) of India to predict poverty across the various states of India. Through applying preprocessing techniques and employing the HPCC Systems Visualization bundle, the research shows that Bihar is facing a higher level of poverty, whereas Mizoram exhibits converse trend. Subsequently, the HPCC ML_Core bundle is applied to conduct linear regression analysis for predicting poverty scores. This predictive model demonstrated an accuracy of 97%. Lastly, the difference between a single-node and 8-node cluster is presented for runtime performance which clearly shows that the 8-node cluster has an advantage for similar computational tasks and thus makes it suitable.

Paper ID-917

A Novel Approach for Phishing Website Detection using Deep Learning Models

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Abstract: Phishing website detection is a major task in cybersecurity, aimed at saving users from sites that steal personal information. The traditional approaches can hardly minimize false positives and cope with the dynamic strategies of phishing. In this work, a novel approach has been proposed to detect phishing websites using deep learning models, such as CNN, RNN, RNN with attention layers, CRNN, LSTM, and GRU, to enhance accuracy in detection. This work has addressed one vital domain challenge, which includes very rapid changes of techniques and phishing activities, and the real-time detection feature that conventional models generally may not have. The proposed approach will leverage these advanced models for automatic feature extraction and adaptability to new strategies for significant improvement of detection accuracy and reduction of false positives. The proposed method gives a robust and real-time solution for the task of phishing website detection and improving cybersecurity in general, after its evaluation on a comprehensive dataset.

Paper ID-932

IoT-Weather Integration for Enhanced Cricket Tactics with Gradient Boosting Algorithm

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Abstract: From a strategic perspective, the pitch's state and the wind's direction are the most important factors in cricket. In this paper, an innovative method that uses the IoT to report the state of the pitch and the weather in real time is presented. The system gives updates on the state of the field and the weather continuously. The device can gather data on the pitch's hardness and humidity using sensors strategically placed around the field. It may also record information about the weather, including temperature, humidity, wind speed, and cloud cover. Cricket teams and players can have a deep understanding of the present playing conditions based on the real-time transmission and analysis. Teams may improve their results by making data-driven adjustments to their strategies and lineups. Teams may also be able to make more educated decisions on their approaches to batting,

bowling, and fielding. The technology has the potential to alter the game's dynamics while also increasing audience participation by shedding light on cricket's many nuanced aspects.

Paper ID-933

Enhancing Postal Convenience and Security IoTEnabled Smart Postboxes and Delivery Lockers using Cloud Computing

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Abstract: This paper presents an efficient approach to integrate Internet of Things (IoT) technology into traditional postboxes and delivery lockers to secure them. By equipping conventional postboxes with IoT capabilities, receivers are provided with real-time notifications upon the delivery of mail or deliveries. The belongings will remain safe as it requires secure access procedures fortified by the electronic locks and identification verification. Monitoring temperature ensures the safety of perishable commodities, while anti-tampering sensors strengthen the protection provided by the system. Integration with delivery schedules and routes simplifies operations while improving the efficiency of postal employees' commutes. Providing a channel for feedback from recipients helps increase engagement. The paper investigates the possible advantages, disadvantages, and effects of integrating IoT technology into postal infrastructure, aiming to reinvent how the postal ecosystem interacts with and provides services to its customers.

Paper ID-938

Image-Based WBC Analysis: A Machine Learning Approach for Cancer Detection

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Abstract: Distinguishing between the two states of white blood cells (WBCs, normal and malignant) is important as they are key in the biomedical scenario for the diagnostic treatment of diseases like leukemia made to diagnose ruptures or dysfunctions. In the last decade, with advancement of deep learning and image processing this process has gone through a metamorphosis from being manual (dependent on pathologist expertise) to automated. This paper further investigates the application of convolutional neural networks (CNNs) to automatically classify WBCs, which has gained a lot of importance for early disease detection in developed personalized treatment plans, aging population and increasing laboratory efficiency. Effective clinical application of these systems could yield a very important impact on patients with blood disorders.

Paper ID-951

Smart Land Use Planning: Integrating Geographic Information Systems (GIS) with Graph Neural Networks (GNN) for Hazard Identification

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Abstract: This paper presents a novel approach to smart land use planning by integrating Geographic Information Systems (GIS) with Graph Neural Networks (GNN). The primary objectives are to conduct satellite imagery analysis for land use patterns, determine suitable zones for commercial and residential development, analyze vulnerability to natural hazards, develop a web-based platform for land use planning, and evaluate the methodology's performance on Indian cities. By leveraging the spatial analysis capabilities of GIS and the predictive power of GNN, we aim to enhance the efficiency and accuracy of urban planning processes.

Paper ID-964

Support Vector Regression based Traffic Prediction Machine Learning Model*

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Abstract: To combat the rising issue of urban traffic congestion, optimization of traffic light timings at intersections is crucial. Traditional methods show stagnancy in managing traffic flow dynamically. This study introduces Support Vector Regression (SVR) as an unconventional solution for traffic signal optimization. The model predicts the traffic conditions and alters the green light to turn on and off accordingly. Utilization of a comprehensive dataset consisting of vehicle distributions and critical flow ratios have been implemented to training a machine learning model. The statistics and performance is checked by usage of Mean Squared Error, R Squared, Mean Absolute Error demonstrating that SVR can effectively enhance traffic signal control. This approach pledges significant improvements in reduction in congestion and streamlined traffic flow. Our findings majorly highlight the capability of the SVR Machine Learning model in improving urban traffic management systems and call for further enhancement and collaboration with experts to address dynamic traffic issues.

Paper ID-966

Image Quality Assessment

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Abstract: In an age where visual intelligence products are omnipresent, images hold a significant position in digital communication. Image-based applications are ubiquitous in our daily lives. The implementation in this paper enhances the distorted image with the help of a reference image using the DISTs and ADISTS algorithms, evaluating IQA metrics, and comparing the performance of both models in image enhancement tasks. The results indicate that DISTs is particularly effective at improving traditional pixel-based metrics like PSNR which is 13.15% higher than ADISTS algorithm and aids in lowering the MSE by 17.86% more compared to ADISTS, making it ideal for tasks that demand high pixel-level accuracy. On the other hand, ADISTS shines in enhancing perceptual quality metrics such as SSIM, MS-SSIM, and VIFP, by 2.46%, 0.52% and 16.7% respectively compared to DISTs algorithm indicating that it is more effectively captures structural details and enhances visual quality, for the sea anemone image which was executed for 2000 iterations for the both DISTs and ADISTS algorithms.

Paper ID-980

Design and Optimization of Filters and Amplifiers using Machine Learning

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Abstract: The paper discusses the Optimization of RF and microwave circuits, specifically filters and amplifiers, using advanced machine learning algorithms like Deep Q-Networks (DQN) and Random Forest. By refining key circuit parameters, the work aims to enhance performance metrics such as Reflection coefficient (S11) and Transmission coefficients (S21). Through detailed simulation and validation using Advanced Design System (ADS) software, the work demonstrates how theoretical benefits from these algorithms can lead to tangible performance improvements in real-world applications.

Paper ID-981

A novel approach to enhance the topic modeling using Graph with BERT embeddings

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Abstract: This paper introduces a novel topic modeling framework that integrates graph-based representations with BERT embeddings to enhance semantic understanding and structural analysis of document collections. Traditional methods often struggle to capture the interplay between document relationships and semantic context. We address this by constructing a document graph based on co-citation, co-reference, or semantic similarity, and augment it with BERT embeddings. Through fusion techniques, we combine these representations, resulting in improved topic coherence and interpretability. Extensive tests across various datasets show our method effectively identifies hidden topics and improves tasks like summarizing text and finding information. Our approach uses BERT and a graph-based topic mode.

Paper ID-1002

Custom Architecture for Effective Semantic App Search: A Systematic Approach

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Abstract: —Semantic App Search revolutionizes the effectiveness and precision of app search queries by leveraging semantic technologies and natural language processing techniques. Unlike traditional approaches that rely on exact matches between the words of the user query with the app name and description, this solution incorporates semantic comprehension of the text, overcoming the limitations of conventional methods. To capture the underlying semantic linkages and contextual understanding, a custom architecture is employed that extracts useful information from app descriptions and user queries. Multiple sentence transformers along with keyword extraction algorithms have been utilized to improve the app-to-query mapping. An ablation analysis of the proposed architecture has been done using the NDCG parameter, with the architecture getting a score of 0.9152 out of 1. Through our implementation of semantic app search, users can discover and find apps with higher satisfaction and efficiency. By harnessing semantic technologies and natural language understanding, we aim to bridge the gap between user intent and app descriptions, facilitating more accurate and relevant recommendations.

TRACK: RENEWABLE ENERGY AND ENVIRONMENTAL ENGINEERING

Paper ID-158

Li-ion Battery State of Charge estimation and cell balancing using Extended Kalman Filter

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Abstract: The infrastructure for charging Li-on batteries is becoming increasingly important since countries like India have experienced a decline in the number of charging infrastructures. To extend the life of the battery, it is also essential to construct a charger. Estimating the charging of the battery is made possible with the use of Kalman filters, which are also useful for determining the battery's current state of charge. With this estimation, it will be easier to determine how long the battery will last in the future. The battery cell model is utilised in this paper, along with the physical characteristics, which include temperature, and it is evaluated using a passive cell balancing circuit with each parameter. While the implementation is being carried out, MATLAB Simulink/stateflow is being utilised.

Paper ID-179

Interior Permanent Magnet Synchronous Motor For EV Applications

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Abstract: The paper presents a new model of a permanent magnet synchronous motor (PMSM) in a rotor reference frame that rotates with the rotor. This model uses Clarke and Park transformations to simplify the representation of the PMSM, which facilitates the understanding of its mechanical and electromagnetic behavior. The model is affected by the movement of the rotor, the stator windings and the effect of permanent magnets on the system. It captures the key dynamics and creates a set of differential equations that explain how the engine works in the rotating frame. The team used MATLAB software to run detailed simulations. They compared the results with real data to demonstrate the accuracy and usefulness of the model. This development will help improve control strategies for PMSMs and provide engineers and researchers with a valuable tool to increase accuracy and efficiency in engine applications. This research is making important advances in this field, providing key information to create better and more accurate motor control systems.

Paper ID-180

CLLC Resonant Power Converter For Electric Vehicle Charging Applications

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Abstract: Electric vehicles (EVs) have attracted significant interest for their ability to operate independently from traditional fossil fuels and their role in reducing greenhouse gas

emissions. This paper introduces a bidirectional CLLC resonant converter used for EV charging applications. The operating principles and characteristics of the converter are explained in this study. The key factors contributing to high efficiency in this converter include zero-voltage switching on the primary side and zero-current switching on the secondary side in both forward and reverse operation modes. Simulation results obtained using PLECS have validated the effectiveness of the converter.

Paper ID-181

ANN-Based Optimal Power Point Tracking For an Independent Solar Power System

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Abstract: The goal of this work is to use an artificial neural network (ANN) to track the maximum power (MPP) of a standalone photovoltaic (PV) system. A resistive load is connected to a Boost-type DC-DC converter and a photovoltaic system. ANNs monitor the MPPs, considering variations in insolation and temperature of the PV arrays. ANNs monitor the MPPs, considering variations in insolation and temperature of the PV arrays. ANNs monitor the MPPs, considering variations in insolation and temperature of the PV arrays. ANNs monitor the MPPs, considering variations in insolation and temperature of the PV arrays. ANN's monitor the MPPs, considering variations in insolation and temperature of the PV arrays. A 2-10-1 neuron structure artificial neural network (ANN) is used in the lab. It was trained using test data from the WAAREE50 photovoltaic panel. 25 percent of the data are used for validation and 75 percent for training. The control voltage, which is the roots' output, is likened to a high-frequency saw end wave. The scheme's experimental and theoretical outcomes are covered in this study.

Paper ID-258

UTILIZATION OF GLASS POWDER AND EGGSHELL POWDER AS FINE AGGREGATE IN MAKING BRICKS

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Abstract: Masonry structures, traditionally made with bricks, face raw material depletion. There is a need to, explore sustainable alternatives like glass and eggshell powder to replace traditional fine aggregate. The literature indicates the potential use of these materials in replacing fine aggregates. Materials including cement, fine aggregate, glass powder, and eggshell powder are characterized for various properties. Bricks were cast using different proportions of these materials and evaluated. The properties of bricks with glass and eggshell powder are compared to conventional ones for water absorption, initial rate of absorption, compressive strength, modulus of elasticity, masonry efficiency, and ultrasonic pulse velocity tests. Thus, utilizing these waste materials in construction can prove sustainable. Since this research demonstrates that the necessary mechanical properties—most notably, compressive strength and efficiency—are improved, these bricks can be used commercially.

Paper ID-390

Eco Drive: Revolutionizing Electric Mobility with Synergistic Fuel Cell and Photovoltaic Integration

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Abstract: Embarking upon the vanguard of sustainable mobility, Electric Vehicles (EVs) portend a transformative epoch, heralding an unparalleled and revolutionary era in avant-garde transportation paradigms. To augment the operational efficacy of these vehicles, a sophisticated epistemological framework has been deployed. This advanced system integrates a (PV) panel for power generation and a fuel cell for charging the Nickel-Hydride battery, thereby diminishing reliance on the conventional utilitygrid. An Incremental Conductance-derived peak power Extraction and Optimization Regulator is implemented. To optimize the energy harvested from the PV panel by modulating the duty cycle of the interleaved converter. The efficacy of the contrivance is appraised through computational emulations predicated on the Indian Drive Trajectory. Vectorial Field Command System (VFCS) is applied to govern the 3-phase inverter, which precisely regulates the Brushless DC Motor (BLDC). Furthermore, the system incorporates regenerative braking technology, enabling the recuperation and reallocation of energy during electric braking phases. This avant-garde system not only propels the trajectory of eco-centric mobility but also fortifies the commitment to national e-mobility objectives.

Paper ID-435

An Overview of Implementation LAUNCHXL-F28069M for Power Electronics Converters by using SIMULINK and PLECS

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Abstract: This article provides a hands-on approach for implementation of Texas Instruments™ (TI) LAUNCHXL-F28069M Digital Signal Processor (DSP) using different softwares such as Piecewise Linear Electrical Circuit Simulation (PLECS), MATLAB/SIMULINK and Code Composer Studio (CCS). These are widely used tools in power electronics converters control application in industry and also for research. In this work, step by step processes are given to embed the controller on the board by using each software. To further demonstration to use of ADC and pulse width modulation (PWM), a closed loop PI control structure for buck converter is implemented, which provides a very close tracking of the reference signal. The hands-on implementation process will be very helpful for the beginners of this board. Implementation of different blocks such as ADC and PWM are described.

Paper ID-498

Integration of Green Hydrogen in Rural Regions of India for Reliable and Secure Supply through Decentralized Renewable solutions

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Abstract: India has made significant progress in electrification, but rural areas still face issues with power reliability and sustainability due to frequent outages and voltage fluctuations in the existing centralized grid system. To address these issues, decentralizing power generation with green hydrogen as storage and backup is proposed. This paper examines the financial feasibility of integrating green hydrogen and renewable energy in rural India. Using HOMER Pro Software, simulations showed that integrating these technologies significantly reduces costs and emissions. Net Present Cost (NPC) and Levelized Cost of Energy (LCOE) dropped by 60.4%, operational and maintenance costs decreased by 74.2%, and emissions were reduced by 65-85%. Financial metrics suggest a 2–3-year breakeven point due to declining costs for electrolyzers and storage facilities by 2030. The study concludes that decentralizing power generation with green hydrogen and renewable energy can reduce the carbon footprint and promote sustainable development.

Paper ID-578

Transforming Wastewater Management: The Evolution and Future of Compact STPs

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Abstract: This paper is a comprehensive review that explores the evolution and future potential of compact Sewage Treatment Plants (STPs) in addressing the pressing need for effective wastewater management. With the increasing urbanization and industrialization, traditional centralized sewage systems face challenges such as space constraints, high infrastructure costs, and inefficiencies in treatment processes. Compact STPs emerge as a viable alternative, offering advantages in ease of operation, adaptability, and customization to local needs. The paper discusses various technologies employed in compact STPs, including Biocarbon Aerated Filters (BAF), Green Roof Models, and advancements in nanotechnology and hydrothermal carbonization. These innovations enhance the efficiency of wastewater treatment by reducing biochemical oxygen demand (BOD), chemical oxygen demand (COD), and microbe levels thereby contributing to environmental protection and resource recovery. The analysis also emphasizes the significance of proper design, maintenance, and scalability of compact STPs to meet future demands. This comprehensive review underscores the critical role of compact STPs in sustainable urban development and environmental conservation.

Paper ID-594

Optimized Incremental Conductance MPPT for Grid-Connected PV Systems with Battery and Supercapacitor Integration

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Abstract: This research paper presents an advanced gridlinked PV battery-supercapacitor System that utilizes the Modified Incremental Conductance (MINC) Maximum Power Point Tracking (MPPT) technique and compares its performance with traditional Perturb and Observe (P&O) and Incremental Conductance (INC) MPPT methods. The integration of a supercapacitor alongside the battery enhances the system's energy storage capability, enabling efficient handling of transient power demands and fluctuations. The MINC MPPT algorithm, with its adaptive step size and dynamic adjustment features, offers faster convergence and reduced oscillations around the Maximum Power Point (MPP), ensuring optimal energy extraction from the photovoltaic array. The comparative analysis highlights the superior tracking efficiency and stability of the MINC MPPT over the traditional P&O and INC algorithms, particularly under rapidly changing environmental conditions. Simulation results demonstrate that the MINC MPPT method significantly improves the overall performance and reliability of the grid-linked PV system, maximizing energy harvest and enhancing power quality. This study underscores the potential of the MINC MPPT in advancing the effectiveness of hybrid renewable energy systems and contributing to the development of more resilient and efficient grid-connected solutions.

Paper ID-599

Development of Mobile Application for Monitoring and Fault Diagnosis of Standalone Photovoltaic Systems

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Abstract: Photovoltaic (PV) systems are becoming a popular renewable energy source for electricity generation. Standalone PV systems are increasingly being adopted as an alternative to traditional grid power, especially by environmentally conscious consumers. To ensure the reliability and efficiency of these systems, effective tools for real-time monitoring and fault detection are essential. This paper presents an Android-based mobile application designed for monitoring and diagnosing faults in standalone PV systems. The app tracks key system parameters such as voltage, current, solar irradiance, and temperature, using sensors like the ACS712 and DHT11. Data is processed in real time via the ThingSpeak IoT platform, which enables remote monitoring and data storage. A neural network classifier analyses four critical power parameters (from the panel, DC-DC converter, battery, and inverter) to identify system faults. The app generates fault reports that can be shared with maintenance personnel for timely action. By integrating real-time data access and intelligent fault diagnosis, the app significantly improves the performance and safety of standalone PV systems.

Paper ID-644

Artificial Intelligence in Corporate Social Responsibility and Environment Sustainability

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Abstract: The advancements in technology in the modern era have led to the boom of Artificial Intelligence (AI) in the market including businesses and organizations seeking for increased accountability and recognition. This study investigates the possible advantages of Artificial Intelligence in Corporate Social Responsibility (CSR) and environmental sustainability moreover, the business and economic reforms of it on companies to become more and more sustainable over the years, and the possible strategies to implement it. The application of AI in CSR can lead to enhanced accuracy and real-time data monitoring. Yet, there are some shortcomings of AI such as data security risks and reliability concerns which demand addressing. By conducting this literature survey, we aim to prevail over the challenges across the way of AI in CSR and suggest the best possible mitigation strategies.

Paper ID-676

Optimizing Renewable Energy Using Scalable Solutions: IoT Integration in Renewable Energy Laboratories

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Abstract: This article presents one of the work results from the Cloud Energy Lab (CBEN) research project. The study explores how integrating Internet of Things (IoT) technology into laboratory devices enhances research efficiency, reduces equipment costs, and accelerates experimental processes without additional expenses. The project supports the development of scalable energy systems like electrical grids by enabling cloud-based data exchange between electrical resources, such as fuel cells and E-Drive test benches. It describes the project's IoT structure, showcasing test benches in different labs: a high-voltage battery simulator, an E-Drive test bench in the Electric Drives Lab, and a fuel cell test bench in the Vehicle Drives Lab. Data exchange between these test benches is facilitated by IoT technology, specifically OPC UA and MQTT, for cloud and inter-bench communication. Each test bench has defined interfaces, with equipment modeled as distinct components in MATLAB/Simulink software. This setup connects OPC UA server hardware via test benches or HTTP interfaces to the cloud for parameter setting and data capture, integrating models to form an automotive system for investigating electric and fuel-cell vehicles. Finally, the efficiency of various power scales between E-Drive and fuel cell test benches is evaluated. Key results show improved fuel cell design area, optimized energy flow, and significant cost savings through reduced equipment needs enabled by IoT and cloud technologies. These advancements contribute to the scalability of microgrids and simplify renewable energy integration without requiring co-located labs or large-scale power devices.

Paper ID-692

Blockchain-Powered Carbon Credit Management: Innovating Sustainability Tracking

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Abstract: —In the quest for effective climate action, managing carbon credits with accuracy and integrity is crucial. This paper presents a cutting-edge solution utilizing blockchain technology for carbon credit management. Our proposed system employs blockchain's distributed ledger capabilities to offer a secure, transparent, and tamperproof method for tracking carbon credits throughout their lifecycle. By integrating blockchain, we address common challenges in carbon credit systems, such as fraud, doublecounting, and lack of transparency. The use of smart contracts facilitates automated processes for the issuance, verification, and trading of carbon credits, thus enhancing operational efficiency and reducing administrative costs. The system's decentralized framework ensures that all transactions are publicly recorded and verifiable, which builds trust and accountability among stakeholders. This paper explores the design, implementation, and benefits of the blockchain-based carbon credit management system, providing insights into how it can advance the credibility and effectiveness of carbon markets and contribute to global sustainability goals.

Paper ID-693

Path Towards Sustainable Net Zero Decentralized Fuels Using Carbon Capture

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Abstract: — In the context of growing emphasis on sustainability, energy sustainability stands out prominently as Goal 7 of the United Nations Sustainable Development Goals (UN SDGs). Equally important is the recycling of waste, which impacts several UN SDGs. This paper explores the potential of decentralized energy production through biogas generated from food waste. This approach is largely carbon neutral and can support local energy needs, such as feeding a microgrid. Additionally, the paper presents early results on capturing carbon dioxide (CO₂) from biogas to produce higher-grade fuels, potentially achieving a net negative carbon footprint. The captured CO₂ can be utilized in various domestic and industrial applications, further advancing the principles of a circular economy.

Paper ID-721

Design and Implementation of Closed-Loop Series Resonant Boost Converter

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Abstract: —In this article, the proposed DC-DC boost converter offers a novel way to increase voltage gain while simplifying control methods. Unlike traditional boost converters, which usually require several components to manage basic functions, this novel design concentrates on accomplishing all control functions with a single low side switch. By simplifying the control system, this consolidation may reduce complexity and increase efficiency. A significant divergence from conventional boost converter design is the reorganization of the circuit architecture, specifically with the diode's location. In traditional configurations, the diode is typically placed at the boost converter's output. The suggested design, however, contradicts this arrangement by permitting both the natural input current from the source and the output capacitor's current to return via a series resonant network.

Paper ID-726

Electricity Harvester using Acoustic Energy

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Abstract: This paper investigates the conversion of ambient sound into electricity using piezoelectric sensors made from electro spun polyacrylonitrile (PAN) nanofibers by incorporating acoustic resonators, precision rectifiers and highvoltage DC-DC boost regulators. The study aims to enhance the efficiency of energy harvesting from sound. This novel approach offers a sustainable and clean alternative to conventional energy sources, addressing the urgent need for renewable energy solutions.

Paper ID-783

Eco-power nexus: Eccentric EV charging paradigms through bilateral vehicle-grid (B-VG) dynamics

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Abstract— The emergence of sophisticated energy architectures, seamlessly integrated with photovoltaic (PV) arrays and grid-synchronized frameworks, represents a quantum leap in the pursuit of unparalleled sustainability and optimized operational efficacy within the electric vehicle (EV) continuum. An interleaved converter, intricately conjugated with the PV system is modulated by an ANFIS MPPT algorithm, ensuring optimal energy extraction from PV. The charging station amalgamates with the grid through an inverter, utilizing bilateral vehicle grid synergy (B-VGS) control paradigms to orchestrate bidirectional energy flux and enhance grid resilience. The system encompasses a quiescent energy reservoir and the onboard EV battery, expediting synchronized power orchestration and efficient energy transference across the grid, stationary reservoir, and vehicle. A bi-Dex DC-DC converter is elegantly embedded within the battery system, facilitating adaptive energy transmutation and reciprocal power modulation between power cache system and the energy infrastructure. The deployed frame work engenders resilient mobility solutions by fortifying the deployment of renewable energy assets, augmenting energy orchestration flux dynamics, and attenuating dependence on conventional power grids, thereby propelling a paradigm of augmented ecological efficacy and systemic resilience in transportation.

Paper ID-845

Piezoelectric – Based Energy Harvesting Testbed for Sounding Rocket Platforms

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Abstract-This paper explores a sustainable energy harvesting method for space applications, focusing on the potential of piezoelectric materials. The energy harvesting payload, equipped with piezoelectric sensors, is tailored for sounding rocket platforms. The paper details the entire process from initial development to deployment, covering the design and implementation of the piezoelectric sensor array, the related power conditioning circuit, and the data acquisition system. The study demonstrates the viability of piezoelectric systems as a renewable power source for small signal-processing electronics in future spacecraft.

Paper ID-863

Deploying Multiple EV Fast Charging Stations in IEEE 33- Bus System Using Evolutionary Computation Technique

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Abstract: The transportation sector is currently going through a period of upheaval, with low carbon as well as green environment serving as its primary goals. The transportation industry is going electric. There is no denying that the installation of charging stations has been heavily influenced by the promotion of EVs (Electric vehicles). To meet the demand for quick energy replenishment while driving, it is crucial to establish rapid charging stations in accessible public spaces. Nevertheless, the sporadic arrival of electric vehicles (EVs) at charging stations and their connection to the grid network for rapid charging result in fluctuation of power as well as peak-valley loads intermittently, so disrupting the power system. The primary goals of this work are the establishment of rapid charging stations in the power grid and a contextual analysis of the IEEE 33- bus system. This article presents a case study of the IEEE.33-bus system, demonstrating how to properly place many fast-charging stations for electric vehicles inside the system without exceeding the voltage magnitude limit and line ratings in four different test scenarios. Using PSO (particle swarm optimization), this study demonstrates how to optimally distribute rapid charging stations for electric vehicles.

Paper ID-897

Investigation on Pristine and doped PVDF-HFP electrospun thin films

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Abstract: This paper focuses on the comparative study of pristine PVDF-HFP and Graphene oxide doped PVDF-HFP thin film fabricated by electro spinning method. The films are characterized by the SEM for the surface morphology of the films, XRD was carried out the phase conformation and FTIR was done to see the stretching of the bonds in pristine and doped films. This paper helps in understanding the effect of graphene oxide as dopant. Thus in conclusion we compared the PVDF-HFP films with graphene oxide doped film to know the presence of beta phase which is responsible for piezoelectric property and applied for the design of sensors.

Paper ID-952

Influence of Clay and Moisture Content on Characteristics of Stabilized Mud Blocks Made with Sandy Soil

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Abstract: Soil has been extensively utilized as the primary construction material in manufacturing masonry units since the advent of human civilization, primarily due to its abundant availability, ease of accessibility, and cost-effectiveness. Soils containing nearly 70% sand content and less than 15% clay content are suitable for manufacturing masonry units viz sandy soil. Stabilized mud block (SMB) represents an innovative alternative masonry unit increasingly favoured over traditional ones globally. Various parameters, including soil type and gradation, moisture content, block density and stabilizer content and type, influence the characteristics of SMB. In this context, an attempt has been made at the laboratory level to identify the effects of varying moisture content (by increasing OMC at a rate of 1%, viz., OMC, OMC+1%, & OMC+2%), clay content (7.5%, 10%, & 12.5%), and stabilizer content (8% and 10%) on the properties of SMB. Findings indicate that the moisture content plays a crucial role in block making, demonstrating greater ease of production at OMC+2. Despite variations in the properties, the dimensional stability of the blocks remains within acceptable limits. Blocks containing moisture content at OMC+1 and higher clay content attain maximum compressive strength and increased water absorption. The lowered initial rate of absorption was noted in blocks with clay content of 12.5%. The embodied energy and carbon of SMB are found to be 3.536 MJ/unit and 0.665 kg of CO₂e, resulting in 81% and 64% savings in energy and carbon compared to conventional masonry units.

establishment of rapid charging stations in the power grid and a contextual analysis of the IEEE 33- bus system. This article presents a case study of the IEEE.33-bus system, demonstrating how to properly place many fast-charging stations for electric vehicles inside the system without exceeding the voltage magnitude limit and line ratings in four different test scenarios. Using PSO (particle swarm optimization), this study demonstrates how to optimally distribute rapid charging stations for electric vehicles.

Paper ID-953

INFLUENCE OF ROAD PAVEMENT ROUGHNESS ON CARBON EMISSIONS OF VEHICULAR TRAFFIC TRAVELLING AT VARYING SPEEDS

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Abstract: Rolling resistance due to road pavement roughness is identified as a factor affecting carbon emission. Existing vehicle carbon emission models tend to ignore the influence of road pavement roughness on driving speed selection. It is important to study the effect of pavement roughness on carbon emission for vehicles travelling at varying speeds, which can aide in better decisions for pavement maintenance and management. This article also leads to determination of speeds with lowest carbon emission along pavements with varying roughness. Present work aims at investigation of effect of road roughness on carbon emission. Stretches with varying roughness between 1.2 to 1.6 m/km are chosen to find the emission of cars travelling at a speed of 10 to 60 kmph. The hydrocarbon and carbon monoxide emissions for stretch with a roughness values of 1.424 were found to be 98% and 0.88% higher respectively as compared to that of stretches with lower roughness values. The carbon dioxide and oxygen emissions for stretch with a roughness values of 1.424 were found to be 16.22% and 0.81% higher respectively. An algorithm is developed for the relationship between roughness and carbon emission for varying speeds of car.

Paper ID-960

Automation of a water treatment plant based on PLC integrated systems

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Abstract: As such, Technology advancements in automation have transformed the water treatment sector by significantly increasing operational efficiency and dependability. The study presented in this paper aims to provide a better understanding of the benefits, challenges, and possible outcomes of integrating automation into water treatment operations. By analyzing contemporary literature and case studies, the research explores how automation improves overall system performance, reduces operating costs, and maximizes process management. To show how significant technologies, such as sensor and PLC-based systems, could enhance plant operations, they are carefully examined. To maximize automation's benefits on water treatment plants, the paper also discusses areas for advancement and potential constraints for future research.

Paper ID-983

Impact of Variable Viscosity and Gravity Variations on Rayleigh-Bénard Instabilities of viscoelastic liquids in energy sustainable system.

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Abstract: Energy sustainability systems are vital for transitioning to a low-carbon economy, addressing climate change, and ensuring a sustainable future for all. Rayleigh-Bénard convection (RBC) in viscoelastic liquids is a crucial phenomenon in various industrial and environmental applications, including energy sustainability systems where fluid dynamics play a pivotal role in optimizing heat transfer and system efficiency. The study deals with the combined influence of variable viscosity and variable gravity on RBC in viscoelastic liquids. The influence of space-dependent gravity on the onset of convection is considered. The results are analyzed against the background of constant gravity RBC in viscoelastic/Newtonian liquids with constant/variable viscosity. The possibility of variable gravity accelerating/decelerating the onset of convective instability is examined in this paper.

Paper ID-991

Investigation of Variable Viscosity Impact on Convection Dynamics in Viscoelastic Ferromagnetic Fluids

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Abstract: A linear stability analysis is performed on convection with viscosity dependent on temperature of ferromagnetic non-Newtonian fluids, specifically Maxwell and Jeffrey's fluids, employing Galerkin technique in this study. The primary objective is to determine how variations in viscosity, influenced by temperature changes, affect the stability of the system. The analysis considers both stationary and oscillatory convection modes under different boundary conditions—specifically, free-free and rigid-rigid isothermal boundaries. The stress relaxation parameter and both magnetization parameters (buoyancy and non-buoyancy) destabilize the system, while the elastic ratio stabilizes the system. By leveraging the unique properties of these fluids, one can develop more efficient and adaptable energy systems, improve environmental remediation techniques, and contribute to a better understanding of atmospheric dynamics.

Paper ID-996

Kinetic Analysis of Immobilized Carbonic Anhydrase for Effective Environmental CO₂ Capture and Sequestration

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Abstract: Carbon capture and sequestration (CCS) is essential for mitigating climate change, with carbonic anhydrase (CA), a zinc metalloenzyme, emerging as a promising tool to enhance this process. CA facilitates the rapid conversion of CO₂ to bicarbonate, a reaction crucial for both physiological functions and industrial applications. This study investigates the immobilization of bovine carbonic anhydrase on various materials, including polyurethane foam, calcium alginate beads, and chitosan beads, to improve its stability and effectiveness for CCS. The immobilized enzyme exhibited enhanced thermal and pH stability and improved kinetic performance compared to its free form. Key kinetic parameters, including the Michaelis-Menten constant (K_m), maximum velocity (V_{max}), turnover number (k_{cat}), and specificity constant (k_{cat}/K_m), were evaluated to demonstrate these enhancements. The results underscore the potential of immobilized carbonic anhydrase in efficiently converting atmospheric CO₂ into bicarbonate, presenting a viable approach for carbon sequestration and contributing to global greenhouse gas reduction efforts.

Paper ID-1004

Analytical review of Carbon Footprinting at R V College Of Engineering

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Abstract: This particular study presents an overall measurement of the net Carbon Footprint of RV College of Engineering, to understand sustainability and green practices. The study uses a 4-Prong Measurement method using 3 types of emissions (Direct, Indirect and Energy Emissions) and carbon sequestration of in-campus flora. Using campus data surveys and energy emission calculations from various sources on campus, an estimate of the carbon footprint has been obtained. The study aims to promote carbon neutrality and sustainable infrastructure to be applied across the Higher Education Institutes (HEIs) of the Indian Subcontinent using RVCE as a lighthouse for the various institutions of the same.

Paper ID-1007

An attempt to reduce carbon footprint by enhancing the synthesis of biofuels with Pichia pastoris

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Abstract: Biofuels being renewable sources of energy means that they are cleaner, more sustainable and reduce greenhouse gas emissions and reliance on fossil fuel intake. The application of *Pichia pastoris* and its role as an enhancer in the industrial synthesis of alternative fuels in comparison with the traditional systems containing *Escherichia coli*, has shown promising results. This paper reviews the synthesis of biofuels with *P.pastoris*, an integrated approach used for enhancing the production of lipases which catalyze the process. *P. pastoris* enables the expression in a eukaryotic system, suitable for the synthesis of high-activity and glycosylated enzymes that can work more stably and efficiently under industrial conditions. This process also obtains useful by-products such as glycerol and long chain fatty acids, which find applications in pharmaceuticals, cosmetics, and food industries adding economic value to the industry and filling the concept of a circular bioeconomy model. The use of *P. pastoris* in biofuel production significantly reduces the carbon footprint by using feedstocks that absorb carbon dioxide from the atmosphere. When these biofuels are burnt, they release carbon dioxide that was recently captured from the environment creating a closed carbon cycle. Advances in biofuel production using *P. pastoris* have demonstrated its superior efficiency as a platform for large-scale biofuel production and the generation of high-value biochemicals. These results indicate that *P. pastoris* has significant potential for producing environmentally friendly and economically viable biofuels.

Paper ID-1011

Fungal assisted carbon capture: A comparative analysis of fungal strains in plastic degradation for carbon utilization

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Abstract: This paper investigates the biodegradation efficiency of four fungal species – Pestalotiopsis, Phanerochaete chrysosporium, Aspergillus niger and Penicillium simplicissimum - in degradable plastics and demonstrates their role in carbon capture and utilization (CCU). Plastic waste has a huge impact on the environment and carbon footprint due to its persistent nature. The selected fungi show unique enzymatic properties that easily break down various plastic polymers and convert them into less harmful compounds. In particular, Pestalotiopsis microspore degrades polyurethane well, while Phanerochaete

chrysosporium is sensitive to polyethylene. This paper highlights the ability of these fungi not only to reduce plastic pollution, but also to reduce carbon emissions during the biodegradation process. By optimizing mushroom applications in waste management, we can create sustainable strategies to reduce the carbon footprint associated with plastic waste, which will benefit environmental health. Use of carbon capture (CCU), environmental impact

Paper ID-1023

Impact of Fine aggregate on Properties of Geopolymer Concrete

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Abstract:

Geopolymer concrete (GPC) offers a sustainable alternative to ordinary Portland cement (OPC) concrete. This study investigates the influence of fine aggregate type on the strength and durability of GPC. River sand, manufactured sand, and granulated steel slag were used as fine aggregates their influence on mechanical behaviour were evaluated at various durations. Durability performance was assessed through water absorption, porosity, and acid resistance, sulphate resistance tests. The results confirm that the type of fine aggregate significantly impacts the strength and durability of GPC. River sand generally yielded the highest strength, while granulated steel slag exhibited the lowest. Water absorption and porosity were lower for GPC compared to OPC concrete, indicating improved durability. The lower density of GBFS-incorporated GPC makes it suitable for reducing dead load. Moreover, GPC with M-sand demonstrates exceptional resistance to water and chemical penetration, ensuring its durability as a structural material. Its high early strength also positions it favorably for use in pavements and retrofitting projects.

TRACK: CYBER-PHYSICAL SYSTEMS

Paper ID – 20

Improving Cyberbullying Detection Accuracy with Advanced Machine Learning Models

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Abstract— Cyberbullying poses a significant threat to individuals well-being in online environments, necessitating effective detection and prevention measures. In this study, Attack detection across different online platforms involves conducting a comprehensive literature review to survey existing research efforts and highlight the diverse feature the different scope of machine learning procedures employed in this domain. Specifically, exploring utilization of Naive Bayes, Logistic Regression, Support Vector Machine (SVM), Neural Network (NN), Gradient Boosting Machine (GBM), Random Forest (RF), Decision Tree (DT) for cyber bullying detection. Each approach is evaluated based on its performance in identifying instances of cyberbullying behavior, leveraging textual, multimedia, and social network features. The Findings reveal the limitations and strength of various machine learning methods and offer perceptions into their applicability and effectiveness in addressing the complex challenges of cyberbullying detection. Through this analysis, this paper mainly focuses to the development of robust as well as scalable solutions for mitigating the adverse effects of cyberbullying in online communities.

Paper ID - 23

Multifactor Authentication using Blockchain in 6G

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Abstract—With the rise of 6G technology, cyberattacks have become a significant concern, necessitating robust data security measures. Multi-factor authentication (MFA) systems, integrating advanced biometric methods, offer a promising solution to enhance security and protect sensitive information. This work explores the integration of iris and voice recognition with blockchain technology to enhance security measures for 6G networks. The increasing complexity of cyberattacks, privacy concerns from massive data collection, and the vulnerabilities associated with edge computing and quantum computing highlight the necessity for robust security solutions. Gaps in current 6G network security research, including limited studies on integrating multiple biometric modalities within MultiFactor Authentication (MFA) systems and the lack of practical integration of AI/ML, Distributed Ledger Technology, and quantum computing have been identified. Addressing these gaps can lead to scalable and effective security solutions for 6G networks. The combination of unique

iris and voice patterns with the tamper-proof and decentralized nature of blockchain ensures a robust authentication process. This framework was implemented and its efficacy and feasibility were demonstrated through simulated authentication procedures. The results show a significant improvement in security metrics over conventional single-factor authentication methods, with high accuracy rates for both voice and iris recognition. These outcomes, along with the blockchain's tamper-proof features, provide a strong defense against unauthorized access.

Paper ID - 107

Enhancing Decentralized Finance for Scalability, Interoperability, and User Experience

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Abstract— This research explores Decentralized Finance (DeFi) through the lens of enhanced applications, introducing the concept of Decentralized Finance Enhanced (DeFine). It examines the transformative potential of DeFi, analyzing its evolution and the innovative solutions driving its progress. The objective is to investigate how DeFine addresses scalability, interoperability, security, and user experience challenges in the DeFi ecosystem. Through case studies and analysis, this proposed work provides insights into the implications, opportunities, and risks associated with the adoption and maturation of DeFi enhancements.

Paper ID - 135

Enumeration and Post-Enumeration Attack on Active Directory and Their Detection Using Log Correlation Method

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Abstract— Microsoft Active Directory Domain Services (AD DS) is a cornerstone of IT infrastructure in many organizations due to its widespread use and comprehensive feature set. AD DS centralizes network management, streamlines user authentication, and simplifies access control, thereby enhancing the efficiency of IT operations. However, its ubiquity and critical role also make it a prime target for attackers. This study delves into the Kerberos authentication protocol, which is often exploited in various attacks on AD DS. It investigates

techniques used for enumeration and post-enumeration activities in AD environments and proposes strategies for detecting and mitigating these security threats. Furthermore, an experimental setup has been developed to demonstrate examples of these attacks. Addressing the challenge of detecting and thwarting enumeration and postenumeration attacks is crucial, as it is vital to intercept attackers during the early stages of their attempts. This resource aims to be a comprehensive guide for IT security professionals managing Microsoft AD environments, providing essential insights into securing their systems against such threats.

Paper ID - 232

Lightweight Strobe Security Libdisco Scheme for IoT-Based Sensor data

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Abstract—Strobe appears to be a promising solution to address some of the challenges associated with securing IoT devices. Its lightweight nature and flexibility make it wellsuited for deployment in resource-constrained environments such as microcontrollers and small hardware devices. By providing support for cryptographic primitives and network protocols, Strobe offers a comprehensive framework for securing IoT ecosystems. The support for Schnorr signature variant with an elliptic curve or other group primitives further enhances the security features of Strobe, making it suitable for applications where authentication and integrity are crucial. Furthermore, the lightweight implementation of Strobe is particularly noteworthy, as it addresses the constraints imposed by microcontrollers and small hardware devices. By optimizing resource usage and maximizing efficiency, this implementation ensures that Strobe can be deployed effectively in a wide range of IoT devices without compromising performance or reliability. NFTs have been widely used in blockchain systems to represent unique and irreplaceable assets. Traditional NFTs typically have one identifier representing an asset and ownership by a single entity. This work introduces smart NFTs, tagging IoT devices as Tangible Smart Assets. These devices have blockchain account addresses, establish secure communication channels, and operate in different modes based on their token states. By using Physical Unclonable Functions (PUFs), each smart NFT is securely linked to its IoT device, enabling private key recovery and corresponding blockchain address recovery. This secure pairing ensures trusted hardware and software throughout the device's lifecycle. We will demonstrate this concept using ESP32-based IoT devices and the Ethereum blockchain, utilizing the ESP32's SRAM as the PUF. **Keywords**— IoT-Internet of Things, ECC- Elliptic curve cryptography, SEC- U.S. Securities and Exchange Commission, The NIST- National Institute of Standards and Technology, NSANational Security Agency, EdDSA - Edwards curve Digital Signature Algorithm Nonce - number only used once, RAG Random number generator.

Paper ID - 242

A Novel Approach for Building Cyber Crime Prediction and Analysis Model using Random Forest

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Abstract—According to Indian Cyber Crime Coordination Centre, In May 2024, Around 7,000 cybercrime complaints were registered per day, a jump of 113.7% between 2021-2023 and 60.9% from 2022-2023, and 85% of them were financial online frauds. Cybercrimes can result in significant financial losses, compromise sensitive data, disrupt critical infrastructure, and erode public trust in digital systems. There is a need for analyzing the trends and patterns of cyber crimes in different parts of India. This paper focuses on building a model for analyzing and predicting cyber crimes rate in different parts of India in future. The datasets from NCRB (National Crime Record Bureau), the official Indian government website, are used for data collection. Random forest technique is applied on preprocessing data to build the predictive model and XGBoost is used on huge data for accurate prediction and efficient decision-making. High prediction accuracy for cybercrimes is demonstrated by the evaluation results, providing a solid means of bolstering cyber secure defenses. An 80:20 ratio was chosen to divide the data into training and testing sets since it was shown to be ideal for model accuracy. A number of machine learning models were examined, Random Forest Regressor was selected due to its accuracy and robustness. Metrics for evaluating the model, such as Mean Squared Error (MSE) and R-squared, showed how well the model predicted trends in cybercrime in the future. The HTML, CSS, and JavaScript were used for the good performance of the application's front end to deliver a userfriendly interface for data display and interaction, making the results accessible and useful for stakeholders

Paper ID - 254

Integration of Blockchain Technology and Machine Learning in Online Secure Banking System

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Abstract— Blockchain technology offers transformative potential for enhancing the security of online banking systems from the intruders. This paper investigates the application of blockchain in secure banking, focusing on the integration of tools such as Meta Mask and Ganache for the implementation of the system and machine learning algorithms to detect the illegal transactions. Through a comprehensive literature review, methodology, implementation strategies, case-studies, challenges, and future prospects, the paper provides a thorough analysis of blockchain's role in secure online banking system with the help of machine learning. Key findings indicate that blockchain can significantly mitigate fraud, streamline operations, and enhance data integrity, though challenges such as scalability and regulatory compliance must be addressed in the banking systems with the help of machine learning classifying algorithms

Paper ID - 325

Deep Neural Network Approach on Phishing Websites Detection, Identification and Proactive Prevention

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Abstract— Phishing is a prevalent type of cyberattack that involves posing as a trustworthy source in an email message to fraudulently attempt to get personal information such as usernames, passwords, and bank account information. Strong detection and prevention methods are required to address the phishing issue. The objective is to develop efficient algorithms that use machine learning (ML) and data mining methods to accurately detect and categorize phishing URLs. This initiative aims to support ongoing initiatives to strengthen cybersecurity and shield consumers from the risks associated with phishing scams. It can be observed from the results that the Deep neural network model gives 95% of accuracy and 96% of precision for classification and detection of phishing websites.

Paper ID – 346

AI-Driven Zero Trust Architecture: Enhancing Cyber-Security Resilience

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Abstract— In the ever-changing field of cybersecurity, conventional defenses that rely on boundaries are no longer adequate to safeguard against sophisticated and persistent assaults. The Zero Trust Architecture (ZTA) paradigm, powered by AI, provides a strong answer by removing the concept of inherent trust within a network and demanding ongoing verification for each access request. This article examines the combination of artificial intelligence (AI) with Zero Trust principles to improve the resilience of cybersecurity. This study demonstrates the enhanced accuracy, sensitivity, and specificity of AI-driven techniques in comparison to conventional security models. The findings highlight the

significance of utilizing AI-driven Zero Trust Architecture (ZTA) to protect contemporary digital infrastructures. It provides robust protection against emerging cyber threats as well as addressing challenges related to data privacy and system integration. The paper also explores potential areas for future study and the practical consequences of implementing AI-driven Zero Trust Architecture (ZTA) in different organizational settings

Paper ID - 365

ConfigMaster: An interactive solution for system management

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Abstract— The "ConfigMaster: An interactive solution for system management" is a simple utility written using Bash scripting. It is designed for Unix-like systems. The tool lets users easily configure system settings and do administrative tasks without having to remember complex commands. The tool minimizes user's work by automating tasks. The tool can be used even by users with very little technical knowledge, as it has a simple menu-based interface to manage things like network settings, software packages, and wireless connections directly from the terminal. By automating common tasks, the tool makes system management more efficient and accessible. By automating common tasks, the tool makes system management more efficient and accessible. It's very useful to simplify system configuration on Unix-like systems using scripting languages like Bash. "ConfigMaster" aims to offer a smooth user experience with the incorporation of core management principles from an operating system, such as disk scheduling, process synchronization, and memory management etc. Being flexible itself, this tool will bring further improvements to make effective responses to emerging user needs. The framework being flexible, it can be expanded to add new features to configure under different scenarios. By integrating essentials operating system operations,"ConfigMaster" enables users to efficiently perform system configurations along with promoting ease of use.

Paper ID - 372

Ensuring Secure Cloud Communication with MedTech Devices Using a Public Key Infrastructure

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Abstract— In the current landscape of digital healthcare, the integrity of communication between health device applications and central data repositories is paramount. To safeguard this data exchange cryptographic measures are employed. Health devices act as clients, gathering and transmitting patient information to a central server. It undergoes processing, is securely stored, shielded by potent encryption protocols like AES and RSA. The objective of this research is to leverage characteristics of Public Key Infrastructure (PKI) in protecting medical data transfer. This involves the application of the RSA algorithm to fortify the communication pathways between health device applications and the server. By reinforcing these communication conduits, the current work posits that we can substantially reduce the hazards linked to data compromises and cyber incursions. The emphasis of the current study is on the healthcare domain, thereby enhancing patient confidentiality and bolstering confidence in digital health solutions. Key performance indicators used are time for encryption and CPU usage. The improved encryption performance achieved is 0.0125 ms/byte. The optimized CPU utilization for the same data size (8 bytes) is 91.97%.

Paper ID - 391

Leveraging IPFS and Smart Contracts for Secure File Collaboration

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Abstract— Traditional file-sharing systems relying on centralized servers pose significant security risks, leaving users vulnerable to data leaks and cyberattacks. As a result, individuals and organizations exercise caution when sharing sensitive information through such platforms. Proposed system introduces a cutting-edge decentralized file-sharing system, achieved by seamlessly integrating the InterPlanetary File System (IPFS) with blockchain technology. This innovative approach revolutionizes data exchange, ensuring secure and efficient file sharing and storage without the need for a centralized middleman. This offers an in-depth exposition of the system's architecture and design, highlighting the integration of smart contracts for safe transactions and IPFS for distributed file storage. Notably, the

proposed system covers the unique features brought forth by smart contracts and IPFS, such as trustless data exchange, distributed file access control, and dynamic file sharing permissions. The research contributes significantly to the growing body of knowledge on blockchainbased file sharing platforms, demonstrating the transformative potential of this secure and decentralized data exchange paradigm. As blockchain technology continues to evolve, this work opens up new possibilities compared to traditional file sharing paradigms and ushering in a more equitable and resilient data-sharing ecosystem.

Paper ID - 427

Real-Time Task Manager: A Python-Based Approach Using Psutil and Tkinter

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Abstract— The creation of a Real-Time Task Manager with a user-friendly interface and effective system monitoring is presented in this work utilizing Python. The Psutil library was used to retrieve comprehensive system information, and Tkinter was used to develop the graphical user interface (GUI). The task manager's capacity to show parent processes at first, enabling users to expand and examine matching child processes upon request, is one of its primary features. In addition, the system permits the termination of user processes and facilitates the search for running processes. Real-time process data refreshing is another essential feature that makes sure the most recent information is shown. The Process ID, Process Name, Username, Memory Usage Percentage, and CPU Usage Percentage are among the prominent metrics displayed. These indicators are essential for locating operations that use a lot of resources and for efficiently controlling system performance. Iterative development was prioritized in the design process, including user feedback to improve stability and performance. The task manager is a potent tool for users and system administrators, providing real-time updates and responsive monitoring and management features through its modular and scalable architecture.

Paper ID - 523

Framework Analysis and Zero Trust Security Issues in Contemporary Network Systems

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Abstract— The security perimeter is expanding, so no one can be trusted to permit network or data access. Furthermore, there is a significant danger associated with insider threats, which facilitate data leaks from the network. To strengthen an organization's security posture, zero trust security must totally replace traditional security. In addition to limiting resource access through the principle of least privilege, the zero-trust paradigm emphasizes how important it is to authenticate and validate each individual and device. Devices are granted access only after they have received their login credentials and access privileges. User identity, application security, and device security are a few of the factors that decide these. The zero-trust framework is a practical way to solve issues with contemporary network systems and secure legacy systems. This article looks at complete framework analysis and zero trust security challenges in a number of contemporary networks, including the financial industry, IOT(Internet of Things), enterprise, and 5G networks

Paper ID - 526

Malware Classification Using XGBoost and Genetic Algorithm for Hyperparameter Tuning

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Abstract— All human activities are being moved into the virtual world due to technological advancements. Since so much of our data is stored on computers and networks, the frequency of cyberattacks has sharply increased. Understanding the many types of malware, their danger level, defense strategies, and potential methods of infecting computers and other devices requires the ability to identify and classify them. In this research, we propose a malware categorization model. Our proposed model is based on XGBoost and uses a Genetic Algorithm for hyperparameter tuning. The system achieved high accuracy with the help of two different malware datasets used for testing and training: Malevis and Malimg.

Paper ID - 574

Plagiarism Detection: Identifying AI-Generated and Paraphrased Content

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Abstract— This report presents a comprehensive analysis of a demo application designed for AI detection and paraphrase detection using state-of-the-art natural language processing (NLP) models. The demo leverages the GPT-2 model for AI detection, evaluating the input text based on perplexity and burstiness scores to determine the likelihood of being generated by an AI. Additionally, the demo integrates a paraphrase detector utilizing BERT (Bidirectional Encoder Representations from Transformers) to identify similarities between input sentences. The GPT-2-based AI detection module assesses the input text's perplexity and burstiness scores, which serve as indicators of language complexity and repetition, respectively. Texts with high perplexity and low burstiness scores are flagged as potentially AI-generated. The paraphrase detection module, powered by BERT, employs semantic similarity techniques to compare input sentences and identify paraphrases or closely related sentences. Through a user-friendly interface, the demo allows users to input text for analysis and receive real-time feedback on AI likelihood and paraphrase similarity. The report provides insights into the implementation details, including the integration of the GPT-2 and BERT models, text preprocessing techniques, and result interpretation.

Paper ID - 611

Leveraging XGBoost Machine Learning Algorithm for Common Vulnerabilities and Exposures (CVE) Exploitability Classification

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Abstract— The problem of exploitation is highly critical in cybersecurity. Therefore, it is very important for the prioritization of security patching efforts and risk mitigation to accurately predict the exploitability of a given vulnerability using the Common Vulnerabilities and Exposures System. In this paper XGBoost ML model is used for the classification of CVEs. According to the analysis of the data, compared with others, network-based vulnerabilities are still predominant at 85%, while local and adjacent network vectors stood at 12.9% and 1.9%, respectively. The estimate of the most affected operating systems was on Linux and Microsoft, with about 37,500 and 11,000 CVEs, respectively. Most of the vulnerabilities resided in cryptographic issues, cross-site scripting, restriction on memory buffers, and SQL injection. The training and testing used in the XGBoost model was based on a CVE dataset obtained from the National Vulnerability Database where major features impacting exploitability were targeted. Proposed model obtained good model accuracy, precision, recall, and an F1-score, of 94%, 92%, 91%, and 92%, respectively, thereby proving to be a very efficient model in distinguishing between exploitable and non-exploitable vulnerabilities. This work contributes to the domain of vulnerability analysis by presenting the potential of XGBoost on CVE classification, along with several actionable insights into vulnerability management.

Paper ID - 622**Static Timing Analysis of Nonlinear-Feedback Shift Register****¹Hithesh S, ²Yugasni S, ³Chirukuri Uttam, ⁴Chandan N, ⁵Shylashree N****^{1,2,3,4,5} Dept. of Electronics and Communication Engineering RV College of Engineering Bangalore, India****¹hitheshs.lvs23@rvce.edu.in, ²yugasnis.lvs23@rvce.edu.in,****³chirukuriuttam.lvs23@rvce.edu.in, ⁴chandann.lvs23@rvce.edu.in,****⁵shylashreen@rvce.edu.in**

Abstract— An 8-bit Non-Linear Feedback Shift Register (NLFSR) is designed and implemented using Verilog, with synthesis and timing analysis conducted on the Vivado platform. The NLFSR employs a non-linear feedback function with a dynamic feedback selection mechanism, enhancing the randomness of the generated keystream. In contrast, the conventional LFSR utilizes a fixed polynomial feedback, resulting in simpler architecture but comparatively weaker randomness in the keystream. Worst Negative Slack (WNS) and Worst Hold Slack (WHS) are measured to evaluate the performance. The WNS of NLFSR and LFSR are 7.165ns and 7.820ns, whereas the WHS are 0.284ns and 0.132ns, respectively. The findings show that while NLFSRs are more complex due to nonlinear feedback, they produce a more robust and random keystream compared to LFSRs, which are simpler but less random. This highlights the trade-off between complexity and performance, with NLFSRs offering superior keystream quality

Paper ID - 625**A Smart Bookshelf for Library Administration****¹S. Poornima, ²Abhijeet Kumar, ³Ajudiya Shubam, ⁴Sushant Kumar Singh, ⁵yush Avinav****^{1,2,3,4,5} DEEE M. S. Ramaiah Institute of Technology, Bengaluru, India****¹sripoorni@msrit.edu, ²1ms19ee002@gmail.com, ³1ms19ee002@gmail.com,****⁴1ms19ee058@gmail.com, ⁵1ms19ee065@gmail.com**

Abstract— A smart bookshelf system has been aimed at addressing the challenges associated with managing library books particularly the tedious task of locating them. The system features a dart based integrated app that allows librarian to search books using text or optical character recognition, which then sends the data to an IoT node. A database stores all information regarding the books in the library. Upon receiving the input from the app, a microcontroller processes the data and sends a signal to a relay, which triggers the indicators of the bookshelf to indicate the precise position of the book. The bookshelf is fitted with LEDs as indicators in the top rack while the bottom rack has a motor actuator with a pinion mechanism to push and retrieve books. The system allows readers to remotely use the app and access availability information of the books. The work aims to enhance the efficiency and effectiveness of libraries with large collections, by making it easier for readers to locate and access books. The system presents an innovative solution to the challenges associated with locating books and has the potential to be a valuable addition to any library and office shelves.

Paper ID - 650

Enhancing Online Security Using U2F FIDO Security Keys: A Comprehensive Two-Factor Authentication Approach

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Abstract— In the rapidly-evolving world of online threats, traditional password-based methods of security have failed. Two-factor authentication adds a level of security through dual verification: something one knows, namely a password, and something one possesses, namely a security key. It discusses the development of 2FA using U2F Fast Identity Online (FIDO) security keys within a Ruby on Rails framework, detailing the methodology, implementation process, and the security benefits these keys provide. It was shown to prove that, in tackling phishing and unauthorized access, FIDO security keys from U2F were really very strong, which indicated the key role played in modern cybersecurity strategies. Real-world implementation difficulties, cost-benefit analysis, and insights into broader implications for wide adoption have also been addressed.

Paper ID - 767

Integrating Brainwave Analysis and Facial Detection for Enhanced Security in Transactional Systems

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Abstract— This paper proposes an innovative user authentication system tailored for high-value asset transactions, leveraging advancements in brainwave analysis and emotional state detection. Traditional authentication methods are increasingly vulnerable to sophisticated attacks, necessitating novel approaches to bolster security in transactional systems. Our research explores the untapped potential of Electroencephalography (EEG) data to establish a unique user identifier based on distinctive brainwave patterns, including alpha, beta, gamma, delta, and theta waves. We identify specific patterns associated with the user's relaxed state through rigorous analysis, presenting a robust and bypass-resistant authentication factor. Furthermore, our system integrates facial expression recognition technology to detect negative emotional states, such as stress or panic, during transactional interactions. By combining brainwave analysis with facial recognition, our multi-layered approach enhances security by considering both physiological and emotional indicators. If the brainwave analysis identifies a relaxed state while facial recognition detects negative emotions, the system identifies potential coercion attempts and restricts transaction completion, thus safeguarding against fraudulent activities.

Paper ID - 788

Architecture Comparison and Security Assessment Tool for Network Infrastructure

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Abstract— Ensuring robust security and effective architectural design is vital in network infrastructure across various domains. This paper presents the Architecture Comparison and Security Assessment Tool (ACSAT), a novel solution that integrates architectural analysis with cybersecurity expertise to provide comprehensive gap assessments. ACSAT utilizes advanced machine learning techniques, including Optical Character Recognition (OCR) for text extraction, component bounding box detection models, and sophisticated algorithms for mapping interconnections. The tool is implemented as an intuitive desktop Electron application, interfacing with a Flask API orchestrated by Docker containers for scalability and robustness.

Paper ID - 911

Integrating Cypress Testing with Web Interfaces in Cyber-Physical Systems

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Abstract— As cyber threats increasingly target critical infrastructure, safeguarding power systems has become a top priority. This paper investigates the integration of advanced simulation tools to enhance the resilience of power systems against evolving cyber threats. By leveraging the CYPRESS tool, which offers a comprehensive approach to simulating both power systems and cyber networks, the study demonstrates how these simulations can reveal vulnerabilities and inform mitigation strategies. The paper explores how real-time co-simulation of physical and cyber systems, combined with hardware-in-the-loop testing, provides valuable insights into the impact of cyber-attacks on power system stability and security.

Paper ID - 943

Temporal Analysis and Common Weakness Enumeration (CWE) Code Prediction for Software Vulnerabilities using Machine Learning

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Abstract— A smart bookshelf system has been aimed at addressing the challenges associated with managing library books particularly the tedious task of locating them. The system features a dart based integrated app that allows librarian to search books using text or optical character recognition, which then sends the data to an IoT node. A database stores all information regarding the books in the library. Upon receiving the input from the app, a microcontroller processes the data and sends a signal to a relay, which triggers the indicators of the bookshelf to indicate the precise position of the book. The bookshelf is fitted with LEDs as indicators in the top rack while the bottom rack has a motor actuator with a pinion mechanism to push and retrieve books. The system allows readers to remotely use the app and access availability information of the books. The work aims to enhance the efficiency and effectiveness of libraries with large collections, by making it easier for readers to locate and access books. The system presents an innovative solution to the challenges associated with locating books and has the potential to be a valuable addition to any library and office shelves.

Paper ID - 950

Optimizing SaaS Metrics with Advanced Data Processing and Machine Learning Techniques

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Abstract— In the realm of Software-as-a-Service (SaaS) applications, optimizing metrics is pivotal for enhancing improving efficiency, user satisfaction, and overall system performance. This paper presents a comprehensive framework that integrates advanced data processing and machine learning techniques within a scalable data lake architecture to optimize SaaS metrics. The proposed solution leverages Amazon Web Services (AWS) technologies such as Kinesis Streams for real-time data ingestion, AWS Glue for ETL processes, Amazon S3 for scalable data storage, and Amazon Redshift for data warehousing. Amazon SageMaker is utilized for the development and deployment of machine learning models, enabling predictive analytics and real-time anomaly detection. Additionally, real-time querying and visualization are facilitated through Amazon Athena and Amazon QuickSight, respectively. The integration of Amazon Lookout for Metrics ensures timely identification of anomalies, enhancing proactive system management. Experimental data highlights notable progress in data processing efficiency, anomaly detection accuracy, and predictive insight generation, thereby contributing to better resource allocation and

customer retention strategies. This framework provides a robust foundation for SaaS providers to achieve optimal performance and scalability in multi-tenant environments.

Paper ID - 958

DOH INTEGRATOR TOOL

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Abstract— The project labelled "DOH Integrator tool" aims to improve internet privacy and security by implementing the DNS over HTTPS (DoH) protocol. Traditional DNS queries are sent in cleartext, which makes them subject to eavesdropping and manipulation. This project tries to address these vulnerabilities by encapsulating DNS traffic within HTTPS, encrypting the requests and responses sent between client devices and DNS servers. The study discusses high-level design issues like user interface features, error management, and system architecture. It describes the implementation process, highlighting the programming languages and tools utilized, including JavaScript, HTML, CSS, and Bootstrap. The project also includes testing procedures to ensure that the application is reliable

Paper ID - 973

DDOS detection using ML and Deep learning approaches

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Abstract— DDoS has a huge potential of threat towards the availability and performance of webservices. The attack system makes the systems unavailable to the valid users by flooding them with malignant traffic. Traditional defense mechanisms are mostly ill-designed to counter such fast-changing and increasing attacks, so service disruption, financial loss, and reputational damage are expected results. This work explores the potential of real-time DDoS attack detection and mitigation using machine learning and deep learning, with a particular emphasis on scalability, accuracy, and adaptability. The research involves the creation and assessment of several machine learning (ML) methods, such as Random Forests and Decision Trees, in addition to deep learning (DL) models like Artificial Neural Networks (ANN) and Long Short-Term Memory (LSTM) networks. The study attempts to determine the best models for real-time DDoS detection by comparing and contrasting these methods. The methodology consists of comprehensive data collecting and preprocessing, model building, training, and evaluation. The performance of the models on parameters such as detection speed, accuracy, and resource efficiency is compared and analyzed

Paper ID - 1009

Secure Data Hiding: A Comprehensive LSB-Based Steganography Framework With Cryptographic Enhancements

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Abstract— This paper explores advanced steganographic techniques for concealing various forms of data within digital media using the Least Significant Bit (LSB) method. The focus is on four key features: embedding plaintext within images, embedding AES-encrypted text within audio files, embedding AES-encrypted text within video files, and embedding images within other images. The goal is to enhance the security and integrity of the concealed data, ensuring it remains imperceptible to unintended recipients while preserving the quality of the host media. By utilizing the LSB technique, which modifies only the least significant bits of media files, the approach aims to achieve a high level of data concealment with minimal perceptual impact on the host files. The implementation integrates cryptographic algorithms with steganographic methods to provide robust and secure data hiding solutions. Plain text is embedded directly within images using LSB, while for audio and video files, text is first encrypted with the AES cipher before embedding. Similarly, the LSB method is used to embed images within other images, ensuring that the hidden content is visually indistinguishable from the original. This multi-faceted steganographic approach not only enhances data security but also offers a versatile framework adaptable to different media types, demonstrating the effectiveness of combining cryptography and steganography for digital data protection.

Paper ID - 1019

A Tender Management System using Blockchain and IPFS

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Abstract— Ensuring that businesses and government agencies acquire goods and services effectively depends on competent tender management. Inadequate record-keeping, contractor favoritism, and security vulnerabilities are just a few of the problems that can arise from bad bid and contract management procedures. Encryption and blockchain technology are used to solve these problems and reduce related risks. Blockchain, a decentralized ledger system, offers an impenetrable means of capturing transactions, while encryption converts private data into unintelligible code that can only be accessed with a decryption key. Through the use of these cutting-edge technology improves the integrity, security, and transparency throughout the procurement process. This strategy encourages a more dependable and accountable procurement system while simultaneously protecting sensitive data.

TRACK: BIOMEDICAL ELECTRONICS AND HEALTHCARE APPLICATIONS

Paper ID – 12

A Robust Model for Early Detection and Diagnosis of Breast Cancer using Linear Discriminant Analysis

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Abstract—Breast cancer ranks among the top causes of mortality for women worldwide. The ability of current imaging modalities such as MRI, ultrasound and mammography to identify cancer and differentiate it from benign conditions is limited. Additionally, ionizing radiation exposure from routine mammograms can be concerning, particularly for younger women. Patient outcomes can be significantly improved by early detection, and by developing accurate preventive measures. In this article, we propose an innovative method for identifying breast cancer using Linear Discriminant Analysis (LDA). We maintained as much class-discriminatory information as possible while reducing the dimensionality of the data. This is especially helpful for highdimensional data reduction without losing important information in healthcare diagnostics. Discriminative features are extracted from high-dimensional breast cancer data using LDA. Our suggested approach distinguishes benign versus malignant tumors from a dataset of mammography pictures and related clinical data. A classification algorithm that accurately detects cases of breast cancer was trained using the extracted features. Our model obtained an accuracy of 96.04% demonstrating the potential of LDA to be an effective tool for improving breast cancer early detection. This would lower the chance of fatalities by enabling prompt intervention and improved patient outcomes.

Paper ID – 13

Smart IoT-Driven Monitoring and Control System for Enhancing Shrimp Aquaculture Health

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Abstract—In the emerging field of aquaculture, the necessity for precise environmental monitoring is paramount for the sustainability and profitability of shrimp farming. This study explores the deployment of an IoT-based system to rigorously monitor water quality parameters such as temperature, pH, turbidity, and total dissolved solids in shrimp tanks. Employing a suite of sensors integrated with an ESP32 microcontroller and real-time data transmission to the Blynk platform, the methodology allows for continuous monitoring and immediate adjustment of tank conditions to minimize loss and optimize yield. The study highlights significant challenges such as high stocking densities, manual feeding practices that lead to growth irregularities, and the impact of erratic power supply and fixed market prices on operational costs. The results demonstrate that our advanced IoT solution not only enhances operational efficiency and shrimp health but also contributes to reducing resource

wastage and increasing shrimp yield, thereby supporting the argument that technology driven approaches can substantially improve the stability and control of farming conditions, fostering sustainable development in aquaculture.

Paper ID – 131

Computational Modelling of Lifestyle-Driven Mental Health Disorders: Gender-Based Insights

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ABSTRACT – Lifestyle disorders, driven by the mismanagement of daily activities and an inappropriate relationship with the environment, are increasingly leading to severe psychological and physiological consequences. In this study, we investigate the psychological disorders associated with individual lifestyle choices, focusing on gender-based differences. Data was collected through a comprehensive survey, capturing various mental health attributes such as depression, anxiety, and suicidal tendencies, alongside lifestyle parameters including work activities, age, and hereditary factors. This data was then analyzed using mathematical models to predict chronic psychological impacts. Linear regression plots were employed to evaluate the correlation between these mental health attributes and lifestyle parameters for both male and female participants. The findings were further validated using t-values for Pearson's correlation coefficient, providing insights into the gender-specific influences of lifestyle on mental health. These results highlight the importance of computational modelling in understanding and addressing lifestyle driven mental health disorders, offering sustainable solutions for improved psychological well-being.

Paper ID – 202

Automated Multiclass Classification for Ocular Disease Diagnosis Using Deep Learning

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Abstract— Blindness, largely resulting from conditions such as Diabetic Retinopathy, Glaucoma, and Cataract, stands as a significant health concern. This paper introduces a novel approach proposing an automatic, self-diagnosing method utilizing a deep learning model for the rapid detection of these three prevalent eye diseases, achieving a high prediction rate within a minute. Leveraging revolutionary deep learning techniques, our model features a convolutional architecture with specifically designed layers to address the challenge of classifying multiple ocular diseases. Consequently, the proposed model yields predictions based on fundus images, effectively indicating the existence or non-existence of Diabetic Retinopathy, Glaucoma, or Cataract

Paper ID – 233

Level Up ASD (Autistic Spectrum Disorder)-Interactive Learning for Autistic Children

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Abstract—Autistic Spectrum Disorder (ASD) is a pervasive developmental disorder having issues with social communication, interests, coordination, attention, and health. People with autism are very sensitive and cannot afford a minor change in their surrounding environment. They do not know how to react according to the situation. “Level Up ASD (Autistic Spectrum Disorder)- Interactive Learning for Autistic Children” is an innovative educational tool designed to support children with ASD. Our paper aims to foster cognitive development and enhance coping mechanisms for children with autism. We focus on providing game-like environment for children to help them to interact easily & freely. Our paper consists of few levels, after which statistics are uploaded which displays the progress of the child.

Paper ID – 274**EfficientNetB7-Based Deep Learning for Skin Lesion Classification****¹Shreya Ramesh, ²Yuktha B N, ³Chaitra M, ⁴Santosh Reddy P, ⁵Anitha N**¹²³⁴⁵*Department of Computer Science and Engineering BNM Institute of Technology Affiliated to VTU Bangalore, India*shreyaramesh7280@gmail.com yktaa888@gmail.com ylchaitra@gmail.com
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Abstract— Skin cancer ranks among the most prevalent types of cancer worldwide. For the purpose of giving effective treatment to the patients, it has to be treated in its initial stages. This study introduces Skin Lesion Classification using deep learning techniques with EfficientNetB7. It is trained on the ISIC 2020 Challenge dataset. Data preprocessing included organizing image file paths and labels, followed by data augmentation with Image Data Generator. The EfficientNetB7 model has been pre-trained on ImageNet. It was fine-tuned with additional BatchNormalization, Dense, and Dropout layers. After five epochs of training, the model demonstrated high accuracy in classifying various skin lesions, as evidenced by the validation and test results. Our project's findings emphasize the model's potential as a dependable automated system for detecting skin cancer, assisting dermatologists in early diagnosis and treatment. To enhance our work, we can consider hyperparameter tuning, advanced data augmentation, and enlarging the dataset for enhanced model generalizability

Paper ID – 281**Non-Invasive Wearable Glove for Parkinson's Patient****¹Saranya G, Naveenkumar R, ²A S Augustine Fletcher, ³Poonthamil.V, ⁴P Murugapandiyar,****⁵Indhumathi G**¹⁶*Department of Electronics and Communication Engineering Rajalakshmi Engineering College Chennai, India*²*Department of Electronics and Communication Engineering Sri Krishna College of Technology Coimbatore, India*³*Department of Electronics and Communication Engineering SRM Institute of Science and Technology, Chennai, India*⁴*Department of Electronics and Communication Engineering Thanthai Periyar Government Institute of Technology Vellore, India*⁵*Department of Electronics and Communication Engineering Anil Neerkukonda Institute of Technology and Sciences Visakhapatnam, India*¹saranya.g@rajalakshmi.edu.in, ²naveentamil256@gmail.com,³augustinefletcher@gmail.com, ⁴poonthamil.vu@gmail.com,⁵muruganlsi@gmail.com, ⁶indhumathi_g@gmail.com

Abstract— Parkinson's disease (PD) is a neurodegenerative disorder that affects millions of people worldwide. One of the most common symptoms of PD is tremors, which can

significantly impact a person's quality of life. To address this issue, a non-invasive wearable glove was designed for Parkinson's patient that uses an Arduino Nano, a gyroscope sensor, and a coin vibration motor to monitor and manage their motor symptoms. This glove uses vibrational feedback to reduce tremors in people with PD. The tremor-stabilizing glove has the potential to be a non-invasive, affordable, and effective tool for people with Parkinson's disease to manage their tremors and improve their quality of life. The glove is also designed to be portable, allowing patients to use it in their daily activities and monitor their symptoms in real-time. Overall, the non-invasive wearable glove offers a promising solution for monitoring and managing the motor symptoms of Parkinson's disease.

Paper ID – 290

Mechanical Analysis and Optimization of a Prosthetic Hand Incorporating a Compliant Mechanism Finger Design

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Abstract—Prosthetic fingers are the key component in Prosthetic hand, it is specific for individual, as each person have unique dimension for their finger. Fingers in human hand play

a vital role in handling minute and delicate objects with accurate and precise control. A prosthetic finger can be as challenging to design and manufacture, purely due to its complexity in designing small and complex parts starting from phalanges, knuckles, and actuation systems. Developing and manufacturing automorphic prosthetic finger which closely replicate the movements and functionality of human finger is a challenging area. This paper studies the structural compliance of thermoplastic urethane (TPU) in application to prosthetic finger. In this work the design and analysis of prosthetic finger with compliant joints is proposed, by designing a computer aided (CAD) model. The proposed design incorporates a monolithic design where no further post processing and assembly is required for a fabricated prosthetic finger, thus reducing the cost in manufacturing and implement simple design, increasing the reliability of the prosthetic finger. In order to validate the proposed design, the structural design is analyzed using computational analysis tool like finite element analysis (FEM). And the upshot of this study demonstrates the potential for advancements in shaping the advanced and costeffective prosthetic finger. The findings from this study can typically reinforce the customization and functionality of prosthetic devices, conclusively enhancing the quality of life for those who are amputated.

Paper ID – 332

Machine Learning (IQ tree 2) Integrated Phylogenetic Assessment Studies of Avian Influenza Virus A (H5N1) Considering Polymerase Basic Protein 1 (PB-1) Sequences

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Abstract—The evolution of the avian influenza A or H5N1 virus is subjected to all-embracing research and investigation due to its potential threat to both animal health and human health. The H5N1 virus is notorious for its ability to mutate rapidly, leading to variations in its genetic profile and antigenic properties, which pose significant challenges for public health and safety. Hence, it is needed to obtain in-depth knowledge of H5N1 viral strain. The polymerase PB1 protein plays a major role in replicating the H5N1 viral particle within the host cell, the protein molecules isolated from various strains of H5N1 virus were selected for phylogenetic assessment studies. The present study aims to analyze sequential and functional similarities of various strains of H5N1 virus through phylogenetic studies for target protein polymerase PB1. Through a meticulous examination of 100 sequences of the PB1 protein, a phylogenetic or evolutionary tree was generated with the help of the Maximum Likelihood (ML) algorithm. Further, the Phylogenetic Tree (PT) was validated through bootstrapping (1000) method. From the results, it was evident that the query protein sequence of Id 10006 was closest to the standard protein sequence of Id 10001. Further, the query protein Id 10006 displayed a structural similarity of 99% with the standard protein sequence of Id 10001. The present paper concludes that the results obtained can assist in repurposing the FDA-approved standard vaccine (Audenz) tested for standard protein sequence Id 10001.

Paper ID – 355

Advancement in EEG Signal Feature Extraction for Enhanced Seizure Detection and Prediction

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Abstract—Epileptic seizure is a highly severe neurological disorder that abruptly interrupts the daily life of those afflicted. In order to advance the technology utilized for managing epileptic seizures, new diagnostic procedures have concentrated on creating

electroencephalogram (EEG) techniques that are based on machine learning and deep learning models . The main aim of this research is to focus on some of the commonly used methods for feature extraction as mentioned in the literature. It will also delve into potential uses of these methods. There are many ways described in this article to process and extract features from EEG signals. Those include time, frequency, decomposing, time-frequency and spatial. Finally, we look at different areas where artificial intelligence is utilized including assistive technology, classification of brain related diseases brain-computer interface systems and integration of machine learning techniques. These applications contribute to a general architecture for analyzing EEG signals. Lastly, potential directions in EEG signal analysis involving feature extraction will be discussed. This study's findings will guide researchers find out which machine learning models that are most effective when it comes to deep learning as well as how feature extraction can be done so that it can enhance detection accuracy of epilepsy seizure based on EEG data.

Paper ID – 404

MRI and CT scan Images Quality Enhancement Using Generative Adversarial Network

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Abstract— In the present era, medical imaging is of vital importance within the healthcare system. It offers critical information for precise and accurate diagnosis and therapy planning. However, subpar image quality still severely limits the ability to fully harness the potential of the deep learning models in the medical field. A dual strategy, combining both conventional Generative Adversarial Networks (GANs) and Pix2Pix GANs is proposed in this research paper to improve the quality of the medical photographs. This GAN framework produces visually enhanced and high-resolution medical images through adversarial training. Moreover, the incorporation of Pix2Pix GAN enhances this process even more, emphasizing the preservation of pertinent details in the photos and structural coherence. The combined effect of these two architectures of GAN guarantees a thorough and subtle enhancement of the visual integrity of medical images specifically of brain tumour. The process yields to improve photos that are a useful dataset for deep learning model for the training purpose. It is anticipated that the deep learning model that has been tuned, would perform better in the medical image processing tasks as compared to the normal ones, which will lead to the more precise and accurate diagnosis and treatment. By bridging the gap between the image quality enhancement methods and the demands for the strong deep learning models in the medical field, this research holds promise for improvements in patient care and healthcare domain.

Paper ID – 413

***Robust Brain Tumor Classification of MRI Images Using Deep Learning via
Inception ResNetV2***

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Abstract - The increasing application of AI (Artificial Intelligence) and ML (Machine Learning) in various domains has shown great promise, particularly in addressing complex real-time challenges. One of the most impactful areas is DL (Deep Learning), which has proven essential in medical image analysis. This paper proposes robust method for classifying brain MRI images using InceptionResNetV2 architecture. The dataset is preprocessed by converting grayscale images to RGB and applying an extensive data augmentation pipeline, including random flipping, rotation, contrast adjustment, zooming, and translation. The model is enhanced with additional classification layers and optimized using Adam optimizer. Training is improved with callbacks such as ReduceLROnPlateau and a custom ReduceLROnMultipleAccuracies for dynamic learning rate adjustment. The proposed model, trained for 30 epochs, achieved a validation accuracy of 99.45%. Class-wise metrics indicated high precision, recall, and F1-scores across all classes, indicating the model's robustness and effectiveness in classifying brain MRI images, making it a valuable tool for aiding in the diagnosis of neurological conditions

Paper ID – 420

***Real-Time Food Detection and Nutritional Tracking Application for
Personalized Health Management Using MobileNetV2***

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Abstract—Accurate and timely dietary assessment is essential for health management. This study presents a deep learning based approach for real-time, personalized food analysis through image analysis. The preparation process accurately predicts the content of food products based on images captured by a smartphone camera. The model is trained on a comprehensive database of food images along with their corresponding menu items. To enhance user experience and engagement, the system integrates a mobile application that allows users to easily record their meals by taking photos. Test results show the system's effectiveness in accurately estimating macronutrients and calories, providing users with a

better understanding of making dietary decisions. This research contributes to the development of smart health devices and has the potential to impact public health through health promotion.

Paper ID – 500

Ocular Insight – VGG16 Powered Multilabel Disease Detection

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Abstract—The objective of the Eye Disease Detection System is to present an automated approach for the timely detection and diagnosis of eye ailments using deep learning techniques. Ailments such as cataracts play a significant role in the worldwide prevalence of vision impairment and blindness. Prompt identification and intervention are essential in halting further deterioration of vision and maintaining ocular health. Nonetheless, the manual scrutiny of fundus images by healthcare practitioners can be arduous and susceptible to biases. To address this challenge, our research employs transfer learning with the VGG16 convolutional neural network to scrutinize fundus images and anticipate the existence and nature of eye disorders. The system encompasses a user-friendly online platform that permits users to upload fundus images, examine prediction outcomes, and provide input to enhance the model's efficacy. The dataset employed for training and assessing the model consists of 5,000 labeled fundus images, encompassing a range of ocular ailments and normal states

Paper ID – 504

Design and testing of myoelectric control with swappable end-effector for prosthetic hand

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Abstract—Prosthetic arms are an effective way to enhance the quality of life for patients with upper-limb amputations. Though there are plenty of prosthetic arms commercially available on the market, functional prosthetic hands are still unaffordable for many due to complex control and design costs. In order to tackle this challenge, this paper explores the use of a swappable end-effector based prosthetic forearm with a machine learning based advanced control unit. In this paper, two different end effectors, such as a simple four-bar linkage based gripper and an anthropomorphic hand, have been implemented to test the prosthetic hand functionality using quadratic SVM based classification and a dual-stage

control unit. The control unit of the proposed system consists of two levels of controls: first raspberry pi-based EMG data processing and classification, and then an end-effector microcontroller for the end-effector control, which helps in choosing two different types of end-effectors for the user. The design and dataset details are explained in this paper.

Paper ID – 534

NLP Enabled Autonomous Indoor Navigation Robot for Kannada in RHCs

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Abstract—In Regional Healthcare Centers (RHCs) in many of rural areas of India, due to the language barriers between the patients and the RHC staff, communication difficulties often intensifies the patient's stress due to their inability to understand the workings of a RHC. This research paper presents a medical service robot which is designed to overcome these issues. The medical service robot can understand the patient's symptoms which are described to it in Kannada language using speech recognition and then using NLP techniques, it will be able to predict the appropriate department to guide the patient to. The robot then uses ROS2 and its navigation techniques to guide the patient to the appropriate department location. The robot is also attached with a camera at the back so that it can track the patient and see to it that the patient follows the robot. This paper discusses the technical aspects of the robot, highlighting its potency in improving the patient experience. This innovation has the capability to amplify the healthcare accessibility and patient care in rural areas of India, reducing linguistic and navigational challenges.

Paper ID-549

SMARTSIGHT: ANDROID-BASED RETINAL DISEASE DETECTION USING RETINAL FUNDUS IMAGES WITH XAI

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Abstract: Diabetic retinopathy (DR) is a serious eye condition affecting diabetic patients, stemming from microvascular damage to retinal blood vessels. If not diagnosed and treated early, DR can lead to blindness. Traditional diagnostic methods involve manual examination of retinal images by ophthalmologists, which is labor-intensive and time-consuming. This highlights the need for automated, efficient, and accurate diagnostic tools. This study proposes a deep learning-based framework using ResNet50 architecture enhanced with Gradient-weighted Class Activation Mapping (Grad-CAM) for the automatic detection and classification of diabetic retinopathy from retinal images obtained via a smartphone-based fundus camera. The ResNet50 model, known for its deep residual learning capabilities, was

trained on a dataset of retinal images to differentiate between healthy and DR-affected eyes. Incorporating Grad-CAM provides visual explanations by highlighting the retinal image regions most indicative of DR, thereby improving model interpretability. The proposed model demonstrated high performance, achieving 98% accuracy on the training dataset, 91% on the validation dataset, and 96% on the test dataset. These results highlight the model's robustness and potential for facilitating early DR detection, especially in resource-constrained environments with limited access to specialized ophthalmic care.

Paper ID-561

IoT BASED EPILEPSY MONITORING DEVICE FOR CHILDREN

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Abstract: This paper presents an IoT-based Epilepsy Monitoring Device designed to enhance the care and safety of children with epilepsy. The wearable device integrates a suite of biosensors, including PPG, gyroscope, GSR, GPS, and GSM modules, with the ESP32 microcontroller. Through real-time symptom detection, the device identifies epileptic episodes and promptly notifies caregivers via alert messages, including precise coordinates. Additionally, the device leverages the ThingSpeak IoT platform to track and analyze collected data, facilitating comprehensive monitoring and management of epilepsy in pediatric patients.

Paper ID-579

CRISPR-Cas9 Guide RNA Designer using Python

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Abstract: The CRISPR-Cas9 gene editing, based on a bacterial immune mechanism, offers precise DNA editing techniques for gene therapy, disease treatment, and improved agricultural crops. This paper reviews the various aspects of the technology and outlines how a bioinformatics tool that combines sequence retrieval, characteristics analysis, and user interaction can be used to create a systematic framework for building guide RNAs for CRISPR-Cas9 gene editing. The tool, built using Python and Streamlit, allows users to enter in the DNA sequence of choice, and automatically extract guide RNAs that can potentially be used for gene editing. Then, based on user inputs, it then ranks the extracted sequences from least compatible to most compatible for the user's purpose.

Paper ID-589

A Systematic Review on Multi-Modal Federated Learning Techniques for Early Alzheimer's Disease Detection

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Abstract: Effective patient therapy for Alzheimer's disease (AD) depends on an accurate diagnosis, especially in the initial stages when early discovery enables preventive actions to be taken before irreversible brain damage develops. Despite using computational methods in recent studies for AD diagnosis, many machine detection techniques are constrained by congenital observations. While AD can be diagnosed early, prediction is only feasible before the disease's symptoms appear. In this brief review, key literature on AD is examined, and the role of DL in addressing diagnostic challenges is discussed, combined with federated and multimodal learning approaches, can aid researchers in diagnosing the disease at its initial stages.

Paper ID-654

Machine Learning-Based Food Edibility Prediction Using Neural Networks

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Abstract: —Safety and the edibility of products is a must in the food industry. This research paper introduces a machine learning method for predicting whether food products can be eaten or not. A neural network model was created using various characteristics of the dataset including shelf life, manufacture date, optimum storage temperature and product type (solid, liquid or gas) to predict the edibility of a given item. The performance of the model was measured using accuracy, Mean Squared Error (MSE), and R-squared (R2). These findings demonstrate that neural networks are effective in classification tasks as they offer dependable means of forecasting if food is unsafe to eat.[1] Traditional methods have received a significant boost by this approach since it allows faster scalable automated predictions that could be integrated into larger food safety systems.

Paper ID-660**Comparative Study of Deep Learning Models to Classify Arrhythmia**

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Abstract: An irregular heart rhythm that can result from various heart-related conditions are arrhythmia. Globally an estimate of 3% to 5% of population is affected by arrhythmia. If it is not diagnosed and treated quickly, it can lead to sudden cardiac death (SCD). Hence early detection of SCD is essential for patient safety. Detection of arrhythmia has improved with the recent advancements in deep learning (DL). This research paper examines arrhythmia classification based on the AAMI EC57 standard, using several prominent deep learning models applied to the lead II Electrocardiogram heartbeat data from the well-known MIT-BIH Arrhythmia dataset. The models trained and tested in this research work are Artificial Neural Network (ANN), Long Short-Term Memory (LSTM), Convolutional Neural Network (CNN), Residual Network (ResNet), and Temporal Convolution Network (TCN). The results showed that both the ResNet and TCN models performed the best, achieving an impressive accuracy of 96% and precision of 97% and 98% respectively. These models could be further fine-tuned to achieve better generalization and improve performance.

Paper ID – 663**A Two-Stage Anomaly Filter Model for Continuous Stress Monitoring-based on PPG**

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Abstract—Stress plays a significant role in human well-being. Chronic stress can lead to many life-threatening diseases like hypertension, diabetes, and asthma. Therefore, efficient monitoring and mitigating stress are of prime interest among researchers in this domain. The advancement of wearable and sensor technologies has made it possible to develop continuous stress monitoring in real-time. This study emphasizes developing a continuous stress estimator dedicated to wearable devices or smart watches. The study leverages the time domain features derived from interbeat-interval signals from a photo photoplethysmography (PPG) sensor. A two-stage data filter is employed that uses an anomaly filter followed by a median filter. The features derived from the filtered data are utilized to get a stress estimation model. The proposed stress estimator has achieved a root

mean squared error of 0.2 which is found lowest compared to the other baseline models. The model is evaluated in the edge device in the context of memory and inference time capabilities. Index Terms—Stress, Machine Learning, Wearable, Smart Watch, Regression, Anomaly Detection

Paper ID – 665

Transitioning from Halogen to LED: Neonatal Warmer Power Board Redesign

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Abstract— Neonatal infant warmers play a crucial role in maintaining newborns' body temperatures, particularly by mitigating convective and evaporative heat loss. Traditional warmers based on halogen lights have been increasingly replaced by Light Emitting Diode (LED)-based systems due to their enhanced efficiency and performance characteristics. This paper presents a detailed study on redesigning the power board of neonatal infant warmers to accommodate LED technology. The redesign focuses on adapting the power supply configurations, voltage regulation, and thermal management systems to support the electrical requirements of LEDs. Key improvements include integrating LED drivers, optimizing thermal dissipation mechanisms, and ensuring compliance with safety standards. Performance evaluations demonstrate significant reductions in energy consumption and heat generation, contributing to safer operation. Moreover, the LED based system offers enhanced reliability and maintenance benefits compared to conventional halogen-based designs. This research aligns with medical technology goals by advancing environmental sustainability and improving neonatal care through innovative lighting solutions.

Paper ID – 847

In Silico Docking Studies of Phytochemicals from Oxalis corniculata for anti-inflammatory effects targeting COX-4

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Abstract— Inflammation is a critical factor in numerous chronic diseases, and discovering effective anti-inflammatory agents is essential for advancing therapeutic options. Synthetic chemicals can be used to treat inflammatory disorders, but they pose one or more side

effects. As a result, plant extracts and natural products are increasingly preferred as an alternative. This study investigated the anti-inflammatory potential of the medicinal plant *Oxalis corniculata*, using GC-MS analysis to identify relevant phytochemicals. In silico docking studies were performed with COX 4 and thirty ligands to evaluate their binding affinities and hydrogen bond interactions. Among these, five ligands—4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl- (- 6.1) [7]; 9-Octadecenal (Z) (-5.3) [7]; 9,12-Octadecadienoic acid (Z, Z) (-5.0) [7]; Arachidonic Acid (-5.1) [7]; and Tetradecanoic acid (-4.2) [7]—demonstrated low binding affinities but significant conventional hydrogen bonds with the receptor. ADMET analysis further highlighted 9-octadecenal (Z), 9,12-octadecadienoic acid (Z, Z), Arachidonic Acid, and Tetradecanoic acid as promising candidates for further research due to their favorable profiles. These compounds have potential as therapeutic agents for inflammatory diseases. Future studies should include in vivo research, toxicology assessments, and pre-clinical trials to validate their efficacy and safety.

Paper ID – 861

Targeted Drug Repurposing for Idiopathic Pulmonary Fibrosis

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Abstract—Idiopathic Pulmonary Fibrosis (IPF) is a chronic lung disease that leads to the thickening and scarring of lung tissue, primarily affecting the alveoli. The progression of IPF is driven by several molecular targets, including “Fibroblast Growth Factor” (FGF), “Tumor Necrosis Factor- α (TNF- α)”, and “Transforming Growth Factor- β (TGF- β)”. Although various therapeutic agents have been developed to relieve symptoms and slow disease progression, effective treatment options remain limited. This study explores the potential of repurposing existing drugs, such as statins, “angiotensin II receptor blockers” (ARBs), and antidiabetic agents, for the treatment of IPF. Through computational docking studies, pharmacokinetic assessment, and toxicity evaluation, a pyrazole compound (PubChem ID 24825307) was identified as a promising candidate, showing strong binding affinities to FGF and TNF- α receptors. These findings suggest that this compound could be a valuable therapeutic option for IPF, warranting further laboratory and clinical investigation.

Paper ID – 875**Prevalence of life style factors on quality of life and mental well being**¹**Snigdha Tutika , ²Vineeth Kiran , ³Sumathra Manokaran , ⁴KN Subramanya ,**⁵**AH Manjunatha Reddy**^{1,2,3,5} *Department of Biotechnology RV College of Engineering Bangalore 560059*⁴ *Department of Industrial Engineering and Management RV College of Engineering Bangalore 560059*³ sumathram@rvce.edu.in , ⁴ subramanyakn@rvce.edu.in , ⁵ ahmanjunatha@rvce.edu.in

Abstract— The study investigates the complex connections among sociodemographic traits, lifestyle factors, psychological discomfort, and health management among the inhabitants of Bengaluru, India. The main goal is to determine the relationships between these characteristics in order to provide specific public health interventions that target the enhancement of overall well-being. A survey was conducted with 406 participants, aged 18-65, representing a wide range of demographic backgrounds, in order to collect data. It employed a range of statistical techniques, such as ANOVA, to reveal noteworthy connections between the variables. This indicates the necessity for focused interventions in these specific groups. Employment in specific sectors, particularly private and public, is related with better lifestyle choices and reduced health risks, whereas unemployment correlates with poorer lifestyles and higher health risks. Additionally, persons working longer hours demonstrate higher health risks, underlining the necessity of work-life balance. This stresses the essential link between lifestyle choices and psychological suffering, arguing for integrated approaches to mental and physical health. Socioeconomic differences, particularly among lower-income groups and specific jobs, are significantly connected with higher distress risks and poorer lifestyle outcomes, underlining the significance of addressing these inequities through targeted public health interventions. Overall, the study's findings indicate the need for comprehensive, personalized interventions to increase holistic well-being across varied population groups in Bengaluru. By addressing the interplay of sociodemographic characteristics, lifestyle choices, and psychological health, public health interventions can be more successfully structured to promote both physical and mental health outcomes in Indian populations.

Paper ID – 886**Static Timing Analysis of Modified 8 bit Pipelined Multiplier with Carry****Lookahead Adder Approach**¹**Revanna J T , ²Gurudatt B M , ³G R Deepakkumar , ⁴Vedashree B S , ⁵Shylashree N**^{1,2,3,4} *M Tech. in VLSI Design and Embedded Systems R V College of Engineering Bengaluru-*⁵ *Associate Professor Dept. of Electronics and Communication Engineering R V College of Engineering Bengaluru-560059 Karnataka, India*¹ revannajt.lvs23@rvce.edu.in, ² gurudattbm.lvs23@rvce.edu.in,³ grdeepakkumar.lvs23@rvce.edu.in, ⁴ vedashreebs.lvs23@rvce.edu.in ,⁵ shylashreen@rvce.edu.in

Abstract—An 8-bit multiplier employing a carry-look-ahead adder (CLA) with a modified pipelined architecture. The research underscores the complexity of multiplication operations, which integrate both addition and shifting processes, leading to longer execution times ranging between 2 to 8 cycles. The modified pipelined approach has given better yield of 2 percent utilisation factor and minimal power consumption of 0.081W and propagation delay of 7.783ns. The analysis helps Verilog to model and analyze the multiplier design, focusing on unsigned data. The modified pipelined approach aims to optimize the performance by breaking down the computation into stages, thereby allowing higher clock frequencies and reducing dynamic power consumption.

Paper ID – 903

Targeting Friedreich Ataxia: A sustainable path to safer and smarter therapeutics through integrated Docking and Toxicology

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Abstract— Friedreich's ataxia (FA) is an autosomal recessive disorder affecting the nervous and cardiovascular systems, characterized by progressive ataxia, dysarthria, and muscle weakness. It results from a GAA trinucleotide repeat expansion in the FXN gene, leading to epigenetic silencing via heterochromatin formation, which reduces frataxin production—a mitochondrial protein essential for iron-sulphur cluster biogenesis and cellular energy production. Frataxin deficiency causes oxidative stress and mitochondrial dysfunction. Current treatments offer limited effectiveness, primarily addressing symptoms. Our study aims to develop novel therapeutic candidates by leveraging computational protein-ligand docking through the Galaxy EU platform, targeting frataxin deficiencies. High-throughput docking and toxicology studies have identified several promising compounds with potential therapeutic efficacy, offering hope for more effective and sustainable treatments for FA.

Paper ID – 940

Machine Learning for Predictive Modeling and Personalized Treatment in Magnesium-based Biomedical Applications

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Abstract- This paper explores the integration of machine learning (ML) techniques with magnesium-based biomedical applications, focusing on predictive modeling and personalized treatment strategies. Magnesium's biocompatibility and biodegradability make it an attractive material for various medical applications, including implants and drug delivery systems. However, optimizing its use for individual patients remains challenging. In this paper it is proposed that ML can bridge this gap by enabling more accurate predictions of treatment outcomes and facilitating personalized approaches. Through a comprehensive review of existing literature and analysis of case studies, it is demonstrated that how supervised learning, unsupervised learning, and deep learning techniques can be applied to improve patient outcomes in magnesium-based treatments. The paper also addresses challenges such as data privacy and model interpretability, proposing solutions for integrating ML into clinical workflows. Our findings suggest that the synergy between ML and magnesiumbased biomedical applications has the potential to significantly advance personalized medicine, opening new avenues for research and clinical practice.

Paper ID – 1010

Fluorescent Nucleic Acid Biosensors: A Comparative Study of DNA and RNA-Based Sensing Platforms

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Abstract—Biosensors have emerged as crucial tools in biomedical research, offering sensitive and specific detection of various biomolecules. These are the tools that use fluorescent molecules to sense the presence of working of given biological targets. These sensors work by detecting fluorescent molecules and are used in a wide range of applications ranging from health care to medical sciences and many biotechnological industries like environmental detection, pollution monitoring, food analysis, pathogen biomedical research, etc, which will be elaborated specifically in the later sections. This sheds light on the structures, properties, and the many applications of DNA and RNA-based

fluorescent biosensors. We elaborate on the main principle behind the working of fluorescent aptamer-based biosensors and their applications. The paper contains information on their specificity and sensitivity. It is important to explain the functions and processes of various applications, including their anomalies and benefits. Current diagnostic tools are unable to meet the needs of detecting parasitic diseases, and a new detection strategy based on aptamers, characterised by high precision and affinity for target mould, has been developed recently. Here we talk about aptamer-based viral protein detection, biosensors in cancer detection, and Nipah virus detection.

TRACK: QUANTUM MECHANICS AND COMPUTING***Paper ID-102*****Public Key Security for Quantum Key Distribution****¹ Mamatha G S, ²Aneesh Adiga S, ³Chaithanya Ganesh*****^{1,2,3}RV College Of Engineering***

Abstract— This paper explores the intersection of Quantum Key Distribution (QKD) and Lattice Cryptography, two innovative fields in modern cryptography. The quantum realm provides unique opportunities for secure communication through principles like superposition and entanglement, while lattice-based cryptography offers promising post-quantum secure solutions. We delve into three prominent QKD protocols—BB84, B92, and EPR—and examine foundational aspects of Lattice Cryptography, including Learning With Errors (LWE) and the Shortest Vector Problem (SVP). By bridging quantum and classical cryptographic concepts, this paper contributes to the evolving landscape of secure communication in an era where the threat of quantum computing looms. This paper will further discuss how to make a QKD work along with SVP, so that we can convert a shared key algorithm(QKD) to a Public Key Cryptography for more safety. This paper will mostly deal with QKD protocol-BB84 and Shortest Vector Problems along with some basic requirements to understand these two algorithms.

Paper ID-284**Enhancing Differential Privacy in Federated Learning via Quantum Computation and Algorithms****¹Yash Gupta, ² Jeswin. M. S, ³Aniruddh Manrala, ⁴Davin Henry Monteiro, ⁵Adhithi. M, ⁶ M. N. Thippeswamy*****^{1,4}Dept. of CSE (Cyber Security) ,Ramaiah Institute of Technology, Bangalore, India******^{2,3}Dept. of CSE (AI & ML), Ramaiah Institute of Technology, Bangalore, India******⁵Dept. of CSE, Ramaiah Institute of Technology, Bangalore, India******⁶Principal, Dr. Ambedkar Institute of Technology, Bangalore, India******¹1ms21cy062@msrit.edu, ²1ms21ci024@msrit.edu, ³1ms21ci004@msrit.edu,******⁴1ms21cy012@msrit.edu, ⁵1ms21cs004@msrit.edu, ⁶mntswamy@gmail.com***

Abstract—The exponential expansion of data-driven technologies underscores the critical need for robust privacy safeguards. This study introduces an innovative privacy-preserving framework that combines Differential Privacy (DP) and Federated Learning (FL) with the cutting-edge capability of quantum computing. Leveraging Quantum Random Number Generators (QRNGs), the framework incorporates truly random quantum generated noise into the differential privacy mechanism, substantially enhancing the security of gradient updates within machine learning models. This noise is specifically added to the gradient updates during the optimization process, using various optimizers. Quantum mechanics'

inherent randomness ensures unpredictability, fortifying defenses against sophisticated attacks. This research signifies a significant step towards the development of secure and ethical AI technologies. By integrating quantum computing's random number generation capabilities into privacy preserving mechanisms, the research paves the way for enhanced data security across various sectors. The findings indicate a promising path for further investigation and experimentation, with potential applications in fields demanding high-stakes data protection. This fusion of quantum computing and privacy preserving techniques not only enhances the confidentiality of sensitive information but also sets a new standard for privacy in the age of data-driven innovation.

Paper ID-338

Virtual Machine Fault Tolerance Placement in Data Centers using Multi-Objective Optimization

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In cloud computing, Virtualization facilitates the creation of virtual version of a desktop, operating system, network resources, or server that ensures the smooth functioning of multiple operating systems. Fault tolerance is a parameter that ensures the robustness, reliability, and availability of all the applications. If fault tolerance is not taken into account, cloud apps installed on malfunctioning Virtual machines will crash. In this paper, a heuristic Dragonfly Algorithm is used to construct a model of initial Virtual Machine fault-tolerant placement. The placement problem for virtual machines can be effectively solved using the static and dynamic swarming behaviour of dragonflies. The experimental findings indicate that, when compared to the traditional approaches, the proposed strategy can produce a more fault-tolerant placement for virtual machines.

Paper ID-343

$L_g = 10$ nm Gate All Around Si based Nanowire MOSFET for High Performance Computing should not be used

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Abstract: This paper analyses the DC characteristics and electrostatic behavior of a Gate All Around (GAA) Silicon-based Nanowire MOSFET with a gate length $L_g = 10$ nm. The device

demonstrates a drain current of 7.6×10^{-5} A/mm at $V_{DS} = 1.2$ V for a gate-to-source voltage sweep between 0 to 1 V. The threshold voltage achieved for the 3D SiNW-based MOSFET is 2.5 V. In addition, the conduction band and valence band are characterized at $Y = 1$ nm, 2 nm, and 3 nm, respectively. The proposed structure exhibits a leakage current of 10×10^{-10} A/mm. Furthermore, it offers a subthreshold swing of 71 mV/dec. Additionally, Shockley-Read-Hall recombination and potential distribution are also considered. Therefore, the proposed GAA Si-based NW MOSFET is suitable for next generation high-performance computing

Paper ID-370

Parallelized Clustering-Based Optimization for CVRP: Leveraging Quantum Computing and GPU Acceleration

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Abstract— The Capacitated Vehicle Routing Problem is one of the most well-known issues in operations research and transportation logistics. It comprises optimizing a set of vehicle routes to serve a set of clients, subject to vehicle capacity restrictions. Reducing the total distance that the cars go is the aim of the challenge. The Capacitated Vehicle Routing Problem has been studied by academics for a very long time. This topic is receiving a lot of interest because it can be applied to almost every industry, including marketing, logistics, healthcare, and others. One of the main obstacles, though, is that when the problem is attempted to be solved for a greater number of clients and vehicles, the problem becomes so complex that standard computers are either unable to solve it or require several months or even years to generate an output. We proposed an approach for this restriction that enables the problem to be resolved with quantum computers. We use two algorithms in our methodology, Constrained Clustering and Fuzzy C-Means, to attain our results. Clustering and routing are the two phases each of these algorithms go through. This method involves grouping all connected consumers into different clusters and then conducting routing within each cluster. They work with notable efficiency, producing optimal solutions in a noticeably smaller span of time. The results show that the CC approach outperforms FCM in most instances, achieving an average optimality gap of 13.04%, compared to 16.5% for FCM. Furthermore, both approaches perform significantly better than non-clustered methods.

Paper ID-545**Cyclone Intensity Estimation using Quantum Machine Learning****¹Vedant Raut, ²Kaina Shaikh, ³Vaishnavi Shendge, ⁴Digambar Padulkar****^{1,2,3,4}Artificial Intelligence & Data Science, VPKBIET, Baramati, India****¹vedantraut912@gmail.com**

Abstract—This research addresses the critical challenges of cyclone analysis and prediction, aiming to significantly advance the accuracy and efficiency of our understanding of cyclone behavior. Cyclones are powerful and destructive weather phenomena that can cause significant damage to life and property. Accurately predicting their intensity and potential impact is vital for timely evacuations and mitigation strategies. Current classical CNN models often struggle with classifying cyclones, mainly when their intensities exhibit subtle differences. Leveraging the NRLMRY (Naval Research Laboratory Monterey) Tropical Cyclone Data (TCDAT), we employ Quantum Machine Learning (QML) to enhance cyclone intensity estimation. By adopting a Quantum-Classical hybrid approach, which harnesses the power of quantum computing principles, we seek to overcome these limitations, providing more precise intensity estimations. Beyond intensity estimation, this project extends its focus to predicting the potential severity of damage that cyclones may inflict on cyclone-prone regions. Utilizing the same quantum-powered approach, we aspire to accurately classify whether a cyclone poses a significant threat to these vulnerable areas. Our holistic research endeavors to enhance the reliability of cyclone intensity estimation and damage prediction. Ultimately, integrating quantum machine learning and convolutional neural networks in cyclone analysis promises to contribute significantly to more effective disaster preparedness and response measures, safeguarding lives and property in cyclone-prone regions.

Paper ID-572**Innovative Approach to High-Performance Multiplier Design: Inexact Signed Wallace Tree Multiplier Utilizing Reversible Logic****¹Nandini S M, ²Sudha K L****¹Post-Graduation Student, Department of Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India****²Professor, Department of Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India****¹nandinism389@gmail.com, ²drsudha-ece@dayanandasagar.edu**

Abstract— Multiplication operations form the backbone of various computational tasks, making the design of efficient multipliers a key focus in digital circuitry. High speed, less area, and power-efficient multipliers are in demand for applications like neural networks and multimedia. This research paper explores Inexact Signed Wallace Tree Multipliers with Reversible Logic. The study investigates the synergy between inexact arithmetic and reversible logic, aiming to optimize both precision and energy efficiency. In this work, we present a comprehensive analysis of existing methodologies and challenges related to multiplier designs, highlighting the shortcomings and areas for improvement. Leveraging the versatile nature of reversible logic gates, we propose innovative techniques to enhance the

efficiency of the Wallace Tree Multiplier architecture. By integrating inexact arithmetic principles, a dynamic precision adjustment mechanism is introduced, ensuring accuracy while minimizing computational cost. The system developed showcases remarkable gains in terms of speed and area.

Paper ID-634

QUANTUM ALGORITHMIC APPROACHES TO PROTEIN FOLDING: A COMPREHENSIVE STUDY OF DIVERSE LATTICE STRUCTURES

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Abstract—In computational biology, protein folding continues to be a key challenge with important implications for drug design and biological function comprehension. Using both classical and quantum computing methods, this paper provides an in-depth analysis of various possible lattice configurations and how they are used in protein folding. To assess the protein design, we investigate classic models including the more intricate Miyazawa-Jernigan (MJ) interaction matrix and the hydrophobic-hydrophilic (HP) lattice model. Furthermore, we use integer programming methods to protein folding problems on lattices, addressing their NP-hardness and proving their effectiveness in obtaining optimal solutions. Expanding upon these conventional techniques, we present sophisticated graph neural network (GNN) models, particularly the RG-MPNN, which integrate pharmacophore ideas to predict chemical properties by using task-related representations. In the latter section of our paper, we examine how protein folding simulations on lattice structures could be transformed using quantum algorithms. Compared to classical methods, quantum computational techniques promise to be more accurate and efficient at handling the enormous diversity and complexity of protein folding.

Paper ID-833

Exploring the Synergy of Quantum Encryption and Light Fidelity for Secure Data Transmission

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Abstract—In the fast-paced world of digital communication, the need for secure and efficient data transmission is growing. For the growing need to integrate Quantum Key Distribution and Light Fidelity technologies to revolutionize information transfer, we propose an innovative framework that combines end-to-end quantum encryption with high-speed optical data transfer via LiFi, using polarized photons as bitwise data carriers. There are two components of the proposition, the hardware and the software. The hardware components facilitate the encoding, transmission, and reception of data. Software aspects involve using Arduino IDE for programming secure communication protocols, and encoding algorithms, and ensuring synchronization and the usage of Quantum Toolbox in Python for simulating the BB84 quantum algorithms and error rate analysis. Testing involves unit testing of individual components, integration testing of the complete system, and performance evaluation of Li-Fi communication speed and QKD security. The simulation converts each bit of data into a virtual photon, passing it through polarizers, and receiving it with potential bit alterations. Router R1 and Router R2 handle photon initialization, error checking, secure key establishment, and final message transmission and decryption. The integration of a Li-Fi prototype evaluates data transfer efficiency. Router R1 begins by encoding data into virtual photons and generating a secure encryption key. Router R2 receives these photons, decodes them, and verifies and decrypts the data using the secure key. The iterative process of sending, receiving, confirming, and error-checking between Router R1 and Router R2 is essential for preserving data integrity. Our results demonstrate the effective application of quantum encryption and optical data transmission, providing a scalable, secure, and efficient solution for contemporary digital communication networks.

Paper ID-891

Canny Edge Filtered VGG Framework for Diamond Cut Classification

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Abstract— Precise diamond cut categorization is essential for value estimation and uniform grading in the field of diamond quality evaluation. Conventional techniques depend on heuristic algorithms and manual examination, which can be error-prone and time-consuming. In this work, we provide a novel method for diamond cut classification by proposing Canny Edge Filtered VGG16 (CEF-VGG16) that has been improved by preprocessing the diamond images with Canny edge recognition. When preprocessing diamond images, the Canny edge filter is used to highlight the edges and structural characteristics that are essential for differentiating various cut levels. The Diamond Cut Dataset having 1600 images with 8 classes of diamond cuts was used for this execution. The Original images are subjected to extract sobel Edge filtered, Otsu threshold Edge filtered and Canny Edge filtered diamond images. These edge filtered images are applied to existing CNN models. The suggested approach improves resistance to changes in illumination and image

quality while simultaneously simplifying the categorization process. The experiment reveals that the proposed CEF-VGG16 model performs well in the diamond cut categorization with a high accuracy of 99.72%.

Paper ID-976

Quantum Antenna Behavioral Analysis Using Quantum Tunneling

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Abstract - This paper explores the impact of quantum tunneling on quantum antenna directivity. Quantum tunneling, where particles traverse barriers classically considered insurmountable, is crucial in technologies such as semiconductor devices and nuclear fusion. This paper investigates how tunneling influences antenna performance using theoretical analysis and practical simulations with the QuTiP library in a Jupyter Notebook. The results reveal the significant effects of quantum tunneling on directivity, emphasizing the importance of quantum principles in designing advanced communication systems. This research paves the way for innovations in quantum antenna technology.

TRACK: NEXT-GENERATION COMMUNICATION SYSTEMS

PAPER ID-119

A Novel Approach to Feature Extraction in MI – Based BCI Systems

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Abstract-Brain-computer interfaces based on motor imagery (MI-BCI) enable communication between the brain and the outside world. It accomplishes this by capturing and examining the EEG data generated when a person visualizes moving a certain limb. Based on this investigation; to enhance categorization precision, we enhance the attribute extraction process. Once the EEG signals have been pre-processed and deconstructed into distinct bands of frequencies, we apply similar spatial algorithms for every sub-band. After that, we use Blind Source Separation (BSS) and spatial filter techniques to extract attributes directly from the sources of the brain instead of only from channels. Ultimately, by choosing the most relevant attributes as inputs for the categorization stage, we distinguish between the envisioned movements. To assess our recommended approach, we utilized data set IVa from the BCI competition III. The outcomes from diverse experiments indicate that the system achieves an average accuracy of 98.8%, with 100% sensitivity across all subjects. These results illustrate that the suggested approach effectively improves MI-based BCI.

PAPER ID-129

Blockchain-Based Communicator with Multicast Transmission

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Abstract- This paper examines the conceptualization and implementation of an instant messaging application, which is decentralized. The proposed work utilizes a blockchain with end-to-end encryption and digital signatures. The need for nodes dedicated to mining has been done away with, by introducing a new consensus mechanism called Proof of Message (PoM). The implementation demonstrates improved security over traditional centralized messaging systems while maintaining usability for small to medium-sized groups (50-100 users). When compared to conventional instant messaging applications which are

centralized, the increase in latency has been found to be minimal, according to performance analysis

PAPER ID-197

Bi-Critical Reinforcement Learning Framework for Bit Rate Reduction and Quality Improvisation

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Abstract— This paper describes bit allocation for frames in H.265 by using a bi-critical Reinforcement Learning (RL) framework. The main aim is to reduce the distortion among the Group of Pictures (GOP) under-rate and distortion constraints. Prior RL-based techniques, provide a solution only to a difficulty with limited optimization that will improve only one reward mechanism that uses rate and distortion parameters. However, these parameters are normally ad-hoc and may not give good results for various encoding circumstances and video clips. We apply the Deep Deterministic Policy Grading (DDPG-RL) algorithm, which employs two critics, to solve this problem, with one for learning for prediction and the other for rate parameters. In normal, to update the agent the distortion critic works by satisfying the rate constraint parameters. In contrast to this, rate critic always makes rate constraints with priority as and when an agent goes over a bit higher. From the experiments, In terms of rate-distortion performance, our solution surpasses the bit allocation over a base module and a single critic while providing fair rate regulation.

PAPER ID-250

Integration of SDN and ML Techniques for Detection and Prevention of DDoS Attacks

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Abstract— With the ongoing evolution of communication and technology, there is a simultaneous evolution of threats. To ensure the security and accurate transfer of data, a substantial improvement of current cybersecurity protocols is essential. This paper explores the process of integrating Software Defined Networking (SDN) and Machine Learning (ML) techniques to prevent the Distributed Denial of Service attacks (DDoS) in a network. The design and simulation of this implementation is performed using the Xilinx Vivado Design Suite and verified using Edge Artix-7 FPGA Development Board.

PAPER ID-261**A Comprehensive Study of Virtual Reality (VR) In Defence Combat Training****¹Prathamesh M Hiremath, ²Prof. Saravanan C****¹² Master of Computer Application RV College of Engineering Bangalore, India****prathameshmh.mca22@rvce.edu.in saravananc@rvce.edu.in**

Abstract—Virtual Reality (VR) technology is revolutionizing combat training by providing immersive, computer-generated environments that allow soldiers to practice and refine their skills in safe, controlled, and repeatable settings. This advanced training method enhances combat readiness and decision-making capabilities by simulating the complexities of modern warfare. VR training offers substantial benefits over traditional training methods, including significant cost reductions, the ability to simulate diverse and complex scenarios, and improved engagement and retention. The global market for virtual training and simulation is poised for significant growth, driven by technological advancements and the increasing demand for customized training solutions. VR's application extends beyond combat training to stress management and Post-Traumatic Stress Disorder (PTSD) treatment, as well as medical training for military medics. The effectiveness of VR in these areas highlights its transformative potential in military preparedness, providing enhanced realism, scalability, flexibility, and immediate feedback through detailed performance metrics

PAPER ID-402**Implementation of Land Registry System using Ethereum Blockchain and IPFS****¹Nithin Chandru, ²Niranjan Savanur, ³Asha G R, ⁴Matam Vijayeshjeevan****¹²⁴ Department of Computer Science and Engineering B.M.S. College of Engineering Bengaluru, India****³Assistant Professor Department of Computer Science and Engineering B.M.S. College of Engineering Bengaluru, India****nithin1271@gmail.com savanurniranjan26@gmail.com asha.cse@bmsce.ac.in****vijayeshjeevan@gmail.com**

Abstract—Frequent changes in property ownership can lead to complex and lengthy records, which may allow fraudulent or incomplete records to go unnoticed. The primary issues stem from incomplete and damaged records caused by different departments storing their own copies, resulting in a lack of comprehensive verification and an increased risk of document forgery. This system proposes a solution using a blockchain-based approach, which creates immutable and transparent records of land ownership by creating an entity to represent land in the blockchain network, making it difficult for unlawful users to forge or modify records. It employs cryptographic methods, consensus protocols, and hashing algorithms to preserve the integrity of the transaction chain. This system proposes an implementation model using Ethereum, and benchmarking shows that the system has a low transaction processing time, making it suitable for practical use. Additionally, the use of the Interplanetary File System (IPFS) for storing all land and user-related documents provides additional security. Cost and performance analysis are carried out based on experiments conducted, demonstrating the system's efficiency and effectiveness. This could streamline the process of land ownership transfer, promote environmental sustainability by minimizing the need for manual paperwork, and reduce the likelihood of disputes and fraud

PAPER ID-419

**Enhancing Q&A Systems with Multilingual Text Conversion and Speech Integration:
Harnessing the Power of LangChain and Large Language Models**

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Abstract— Searching through URLs and PDFs can be tedious and time-consuming because of the unstructured nature of these documents and the challenge of finding accurate and, relevant information. LangChain addressed these issues using advanced natural language processing algorithms to extract pertinent data from URLs and PDFs. With its user-friendly search interface, customizable filters, and efficient indexing and retrieval mechanisms, LangChain significantly enhances the search experience. Users can annotate important sections, store queries, and create bookmarks, making information retrieval from URLs and PDFs more efficient and improving the overall productivity. Traditional text analysis systems often struggle with interactivity, flexibility, and data integration, making it difficult for users to gain meaningful insights from diverse data sources such as websites and PDFs. Our research combines state-of-the-art technologies, including Dash, LangChain, Google Generative AI, and FAISS, to provide a comprehensive solution for extracting, analysing, and interacting with textual data from various sources. This includes handling both PDFs and the data uploaded via URLs. Our research demonstrates significant improvements in the efficiency and accuracy of information retrieval, paving the way for more complex applications such as text summarization and question-answering. Our system is also capable of converting text into speech and translating it into 10 different languages

PAPER ID-442

Multi-objective test case generation and prioritization using generative AI for ASIC verification

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Abstract—Great advancements in ASIC technology have created a need to develop reliable and efficient verification methods. Generative AI can be utilized for multi-objective prioritization and test case generation while verifying ASICs. Approaches that are guided by AI have had huge improvements in the last few years making them viable for dealing with the complexities of ASIC designs. This is really important in handling a large amount of test cases while verifying an ASIC. Although there are several challenges that need to be overcome before this is applied on a large scale. These challenges include dealing with complex structures of ASIC designs and several constraints. AI has the potential to revolutionize the traditional ASIC verification for Multi-objective test cases

PAPER ID-489

DApp for Exploring Blockchain's Utility for Agricultural Data

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Abstract— In this modern era of Digitalisation, smart agriculture is required which also focuses on sustainable development of the farm (i.e. organic and healthy agriculture) along with the use of current technology. The continuous assessment of a farm becomes necessary for producing better yield. Farms can be accurately monitored with the help of IoT devices to know the conditions of crops regularly, to keep a check on the soil's quality, and to monitor the weather conditions affecting the crops. These IoT (Internet of Things) devices when integrated with blockchain technology can have better storage and the blockchain network can also help create a decentralised network for the farmers. The data input from the IoT devices can be stored over the blockchain. This data is evaluated to understand the effects of different methods implemented on the farm over time on the crop. This data can help us find efficient and sustainable methods of farming that can be practiced preventing the use of chemical fertilizers, pesticides, and insecticides for agriculture as these chemicals have been causing a lot of health issues in the current generation. This paper proposes the use of a DApp over blockchain technology to help farmers analyse their crop status and get hands-on assistance.

PAPER ID-517**A Comprehensive Framework for Network Traffic Analysis and Prediction Using Synthetic Data, Machine Learning, and Interactive Visualization****¹Aditya Manjunatha, ² Amogh Athreya, ³Kiran V**¹²*Electronics and Communication RV College of Engineering Bengaluru, India*³*Associate Professor Electronics and Communication RV College of Engineering Bengaluru, India*¹adityamanjunatha100@gmail.com ² amoghjathreya.ec21@rvce.edu.in ³ kiranv@rvce.edu.in

Abstract—This research introduces an approach that merges intelligence (AI) machine learning and interactive visualization to enhance network traffic analysis and forecasting. Initially the framework generates network structures that mimic diverse network scenarios and traffic trends. It then educates sophisticated machine learning algorithms to anticipate network behavior and performance based on these simulations. The setup features a user web interface that allows users to monitor real time network dynamics assess performance metrics and engage with the data through interactive tools to apply practical insights, from these models. With the integration of data, predictive analytics and dynamic visualization network administrators now possess a set of tools for, in depth performance monitoring and proactive network administration.

PAPER ID-528**Comments and Feedback Verification System Using Large Language Model****¹Akshay Kumar Kushwaha, ²Shreya Jadon, ³ Preet Kamal, ⁴ Madan Lal Saini, ⁵ Vijay Mohan Shrimal**¹²³⁴⁵*Department of CSE Apex Institute of Technology Chandigarh University, Punjab, India*¹akshay010175@gmail.com ² jadonshreya01@gmail.com ³Preet.e15857@cumail.in⁴mlsaini@gmail.com ⁵drvijaymshrimal@gmail.com

Abstract— In recent years, the rapid expansion of digital platforms has resulted in a substantial rise in user-generated content, especially comments and feedback. For increasing traffic on website and selling products people uses fake reviews. Verifying the authenticity and relevance of this content is essential for preserving the integrity of online communities and enhancing user experience. This paper introduces an innovative system for verifying comments and feedback using large language models (LLMs). The proposed system employs advanced natural language processing (NLP) techniques and pre-trained LLM models to analyze and verify the content of user comments and feedback. This advance feedback verifier system helps to figure out either comments are real or fake for e-commerce websites. Our experimental results show the effectiveness of the proposed system in various real-world situations, demonstrating its potential to greatly enhance content moderation processes and promote healthier online interactions. This system can also understand personalized recommendations about any product and it could be a great step towards making purchasing decision

PAPER ID-576**Performance Evaluation of Lens types for Scan and Gain Enhancement**¹**Anju G. Chavan, ²Manoj M. Acharya, ³Mahesh A**¹²³*Dept. of ECE RV College of Engineering Bangalore, India*¹anjuchavan17301@gmail.com ²manojmacharya06@gmail.com ³mahesha@rvce.edu.in

Abstract—This paper focuses on the design and performance enhancement of a 4×4 Microstrip Patch Antenna Array (MPAA). The antenna array is constructed by replicating a 1×4 configuration using FR4 epoxy material, characterized by a dielectric constant of 4.4 and a loss tangent of 0.02. The primary objective of this paper is to enhance the antenna's gain and maximize its scanning capability from the boresight. To achieve this, two types of configurations are considered, a full dome lens that covers the entire 4×4 array and an individual dome lens that covers each patch of the array. The performance is evaluated to determine their effectiveness in improving gain and scanning range. The results show that the Individual Lens structure yields the highest gain and provides improved scanning capability with a performance maintained upto 45 degrees. Index Terms—Keywords—Dielectric Lens, Microstrip Patch Antenna Array, Beam Scanning.

PAPER ID-662**Access Point Management Using Java Based Microservice**¹**Manoj Bhat , ² Vishalakshi Prabhu H**¹²*Dept of Computer Science and Engineering, RV College of Engineering Bangalore, India*¹manojbhat5335@gmail.com , ²vishalaprabhu@rvce.edu.in

Abstract – This research paper explores the design and implementation of an event-driven monitoring system for Wi-Fi6 Access Points (APs) using Java-based microservices architecture. WiFi 6's primary advantage over other standards is that it provides maximum speed and accessibility in congested networks. The system aims to enhance network management capabilities by leveraging real-time event processing and Kafka messaging infrastructure. Key components include event listeners for capturing Quality of Experience (QoE) and Trap events via Kafka topics from APs, microservices for event processing, and Kafka topics for interservice communication. The paper discusses the architecture, functionality, and integration of each component, as well as the system's ability to identify and handle various event types, such as ap-info and user reports. Additionally, the paper addresses error handling mechanisms and debugging practices for events with undefined syntax. Overall, the research contributes to the advancement of network monitoring solutions through the utilization of microservices and events-driven architectures.

PAPER ID-669**Design and Development of a Chrono-Controller using Synopsys Verdi Tool**¹**Nidhi R Singh, ² Govinda Raju M**^{1,2}*Department of Electronics and Communication Engineering RV College of Engineering
Bangalore, India*¹nidhirsingh.lvs22@rvce.edu.in ²govindarajum@rvce.edu.in

Abstract— The Chrono Controller is a sophisticated timer and counter system designed for precise timing and event management in control applications. This paper details the operation, verification, and results of a 24-bit Chrono Controller module, which supports advanced counter and compare functionalities. The Chrono Controller facilitates accurate scheduling and synchronization through its counter operations, including overflow and underflow management, and compare operations, which trigger events based on predefined thresholds. The methodology involves capturing and comparing counter values, utilizing event systems for control, and generating synchronized waveforms for applications such as motor control.

PAPER ID-670**Advanced Verification Strategies for Memory block Integration in Processor design**¹**Manjunatha Gowda N, ²Eleena Mohapatra**^{1,2}*Dept. of Electronics & Communication RV college of engineering, Bengaluru, India- 560059*¹manjunathagn.lvs22@rvce.edu.in ²eleenamohapatra@rvce.edu.in

Abstract—This paper introduces a versatile verification architecture designed for Non-Volatile Memory (NVM) blocks with varying data widths—32-bit, 64-bit, 256-bit, and 512-bit. The proposed approach employs the Universal Verification Methodology (UVM) to systematically verify these memory blocks, both at the block level individually and at the top level collectively using multiplexing logic. The verification framework leverages the commonalities among the different memory blocks, allowing for the creation of customizable scoreboards, sequences, stimuli, UVM components, payloads, and test scenarios. Importantly, this UVM flow is not tailored to any specific memory block but is developed in a generalized manner, making it applicable across various memory configurations. By reducing the dependence on extensive macros, methods, and classes, this architecture simplifies the verification process while ensuring high reusability and flexibility, ultimately making it effective for a wide range of memory verification task

PAPER ID-673**Design and Verification of Power Efficient Built-In Self-Test**¹**Shrinivas Anand Kamath M,**² **Sujatha Hiremath**^{1,2}*Dept. of Electronics & Communication RV college of engineering, Bengaluru, India- 560059*¹shrinivasakm.lvs22@rvce.edu.in ²sujathah@rvce.edu.in

Abstract—In IC design, Built-In Self-Test (BIST) integrates testing capabilities into the device, eliminating external test equipment needs and enabling automatic chip testing. BIST is economical and effective for ensuring quality and reliability, offering benefits like expedited testing, lower production costs, improved dependability, higher manufacturing efficiency, and shorter test durations. The project aims to design essential blocks like the Linear Feedback Shift Register (LFSR) and Static RAM (SRAM) as Circuit Under Test (CUT) for comprehensive IC testing, create a Multiple input signature register (MISR) to identify incorrect sequences and validate golden signatures, and focus on identifying Single Stuck at Faults (SSAFs). Power optimization is a key component, targeting efficiency and cost reduction in testing processes. The reversible LFSR-based BIST design with clock gating shows 20% lower total power than the standard LFSR-based BIST. The design is synthesized and further processed through various steps of Physical design and Physical verification using Cadence Innovus Implementation System. Further efficiency gains can be achieved through advanced low-power design techniques and integrating machine learning for dynamic power management and adaptive testing

PAPER ID-674**Advanced ESD Protection Mechanism for a CMOS Low Noise Amplifier**¹**Roriech P A,**² **Ravish Aradhya H V**¹*Student, Department of ECE , R V College of Engineering Bengaluru, Karnataka*²*Professor and HOD Department of ECE R V College of Engineering Bengaluru, Karnataka*

Abstract—Electrostatic Discharge (ESD) presents a significant threat to the integrity and functionality of electronic circuits, necessitating robust protection mechanisms. This paper explores the detrimental effects of ESD on semiconductor devices and evaluates the efficacy of ESD protection circuits, with a focus on diode and Silicon Controlled Rectifier (SCR) based methodologies. Initially, the study delves into the principles and operational characteristics of diode-based ESD protection, highlighting their advantages and limitations. Subsequently, it examines the use of SCRs, noting their superior clamping capabilities and suitability for high-voltage applications. To provide a comprehensive understanding, the research includes the design and implementation of a Low Noise Amplifier (LNA) incorporating both diode and SCR-based ESD protection schemes. The performance of the LNA is rigorously analyzed under Charged Device Model (CDM) and Human Body Model (HBM) ESD stress conditions. The comparative analysis reveals critical insights into the trade-offs between noise performance and ESD robustness for each protection strategy. This study aims to contribute to the development of more resilient and efficient ESD protection techniques in advanced electronic systems.

PAPER ID-695**Advanced SoC-Level Interrupt Verification Utilizing ARM GIC-700**¹Sudhanva V S, ² Kariyappa B S¹² Electronics and Communication Department R V College of Engineering Bengaluru, India¹sudhanvavs.lvs22@rvce.edu.in ²kariyappabs@rvce.edu.in

Abstract—As System on Chip (SoC) designs grow more complex, manual interrupt verification becomes impractical. This paper presents an advanced SoC-level interrupt verification methodology utilizing ARM Generic Interrupt Controller (GIC- 700), with the System Memory Management Unit (SMMU) for efficient handling of virtual and physical addresses. Leveraging SystemC and Universal Verification Methodology (UVM) phases for sequence management, and C language for register interactions, the framework ensures thorough, standardized interrupt verification in ARM core-based SoC designs. Key objectives include analyzing protocols such as Advanced eXtensible Interface (AXI), AXI Stream, and Coherent Hub Interface(CHI), and utilizing ARM GIC and SMMU functionalities for interrupt handling. A comprehensive testbench verifies interrupts at the SoC level and analyzes the interrupt flow. Additionally, TCL wave-script optimizes simulation dump time by enhancing waveform datamanagement which reduces the run time from 9.2hrs to 3.9hrs. This paper aims to provide a robust, efficient framework for interrupt verification, ensuring reliable performance in advanced ARM core-based SoC designs.

PAPER ID-701**Verification of Long ReachSerializer/Deserializer PHY compatible with Fiber Channel and Ethernet Standards**¹Vaishnavi L G, ² Ramavenkateswaran N¹² Electronics and Communication Department, R V College of Engineering Bengaluru, India¹vaishnavilg.lvs22@rvce.edu.in ²ramavenkateshwarann@rvce.edu.in

Abstract—This paper addresses the evolving landscape of highspeed data communication in electronic systems, focusing on the compatibility and implementation of Fibre Channel Protocol (FCP) and Ethernet over High-Speed Serializer/Deserializer (SERDES) interfaces. Traditional parallel data buses face challenges with pin density and timing precision, prompting the adoption of SERDES technology to convert parallel data into efficient serial formats with integrated clock recovery. Meanwhile, FCP and Ethernet protocols cater to distinct networking needs, with FCP excelling in storage area networks (SANs) for reliable SCSI command encapsulation, and Ethernet providing scalable solutions across local area networks (LANs). This study investigates the intricacies of integrating these protocols on SERDES physical layers, crucial for optimizing data transfer efficiency and reliability in modern electronic systems.

PAPER ID-712**Inventory Management via Dynamic Ad-Hoc Network with Synchronized ESP-NOW Protocol**

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Abstract— In the context of modern inventory management, the ability to maintain accurate, real-time data across a distributed network is essential for efficient supply chain operations. This paper presents the design and implementation of an inventory management system utilizing a dynamic ad-hoc network based on the ESP-NOW protocol, a lightweight, peer-to-peer communication protocol that operates without the need for traditional Wi-Fi infrastructure. The system is built using ESP32 microcontrollers, which form a decentralized mesh network to monitor and manage inventory levels across various nodes within a warehouse or retail environment. A significant contribution of this paper is the introduction of a novel synchronization method tailored to the ESP-NOW protocol stack. Traditional synchronization mechanisms often face challenges in dynamic ad-hoc networks due to the lack of a central coordinator and the variability in node communication . To address this, the proposed method uses a time-stamped data packet exchange system, where nodes periodically broadcast their inventory data along with a synchronization token. Neighboring nodes receive these packets, adjust their internal clocks, and synchronize their inventory data based on the latest available information. This method ensures consistency across the network while minimizing the risk of data conflicts and reducing latency. The proposed system's architecture is designed to be highly scalable and flexible, accommodating the addition or removal of nodes without disrupting network functionality.

PAPER ID-732**Robust and Efficient Implementation of Design for Testability in Integrated Circuits**

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Abstract—Design for Testability (DFT) is essential in modern Integrated Circuit (IC) design, particularly as transistor sizes shrink and the complexity of IC's increases. Ensuring reliable testing methodologies becomes paramount to maintaining chip reliability amidst escalating fault densities. The paper focuses on implementing DFT techniques to enhance testing efficiency and effectiveness. Key components like JTAG compliant Registers, IJTAG-controlled Segment Bits, Memory Built-in Self-Test , Memory repair modules, and Boundary Scan mechanisms are strategically integrated into the design. Automatic Test Pattern Generation (ATPG) and thorough simulations validate the effectiveness of these DFT strategies. The research emphasizes the importance of the requirement and design of the security feature for the IJTAG network to provide protection against unauthorized access of the network ensuring the improvement in robustness of the Integrated Circuit.

PAPER ID-748

Optimizing Energy Efficiency in 5G Networks: Integrating Multi-Packet Reception with Reinforcement Learning and Genetic Algorithms

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Abstract— The rapidly expanding data demand and the explosion of connected devices require energy-efficient answers in 5G networks. This study proposes a three-pronged solution that integrates Multi-Packet Reception (MPR), Reinforcement Learning (RL), and Genetic Algorithms (GA) to improve energy efficiency in 5G networks. MPR allows base stations to process incoming data more efficiently by receiving multiple packets at once. This not only helps the base station "talk" more efficiently with the devices that are supposed to be connected to it at any moment (which obviously is more inefficient under 5G, the way that MPR can help be more efficient, makes it the prime candidate for meeting the challenge at hand) but also allows the incoming data to be processed at the same rate it could under the old conditions of processing one packet at a time.

PAPER ID-778

Design And Verification of 1x3 Router by UVM

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Abstract— The router is designed to manage the efficient routing of data from a single input to one of three outputs, making it a critical component in various communication systems. The architecture of the router includes essential modules such as a register, three FIFO buffers, a synchronizer, and a finite state machine (FSM). A significant enhancement in this design is the implementation of clock gating in the FSM module. This technique minimizes power dissipation by approximately 9.4% by selectively disabling the clock signal when the FSM is idle, making the design highly energy-efficient. To ensure the robustness of the design, the project undergoes extensive verification using Universal Verification Methodology. UVM enables thorough functional testing, helping to identify and correct potential issues at an early stage.

PAPER ID-779**Design and Testing of Low Power Cache Memory****¹Sudeep Kumar Shetty, ²Eleena Mohapatra***¹²Dept. of Electronics & Communication RV college of engineering, Bengaluru, India- 560059**[1sudeepkumars.lvs22@rvce.edu.in](mailto:sudeepkumars.lvs22@rvce.edu.in) [2eleenamohapatra@rvce.edu.in](mailto:eleenamohapatra@rvce.edu.in)*

Abstract—In Integrated Circuit (IC) design, low-power cache memory with DFT and scan chain techniques is essential for ensuring efficient and reliable operation. These techniques integrate testing capabilities directly into the cache memory, eliminating the need for external test equipment and enabling automatic testing. This approach is cost-effective and crucial for maintaining the quality and reliability of ICs throughout production and their operational lifespan. The benefits of using DFT and scan chains include faster testing, reduced production costs, improved product reliability, and enhanced manufacturing efficiency. The implementation of low-power techniques, including clock gating, resulted in a significant power reduction. The total power of the proposed Low Power Cache Memory design is 20% less than the standard Cache Memory Design. Simulations and synthesis were conducted using Cadence Genus, with physical design and verification completed using Cadence Innovus. Further efficiency gains could be achieved by adopting advanced low-power design methods and integrating machine learning for dynamic power management and adaptive testing in the cache memory.

PAPER ID-815**PRIVACY PRESERVING WEARABLE DATA PUBLISHING USING INTER CLOUD INFRASTRUCTURE****¹Veena Gadad, ²Sowmyarani C N, ³Sindhu Rajendhran, ⁴ Ramakanth Kumar P***¹²³⁴ Dept. of CSE, RV College of Engineering, Bangalore, India**[1veenagadad@rvce.edu.in](mailto:veenagadad@rvce.edu.in) [2sowmyaranicn@rvce.edu.in](mailto:sowmyaranicn@rvce.edu.in) [3sindhur@rvce.edu.in](mailto:sindhur@rvce.edu.in)**[4ramakanthkp@rvce.edu.in](mailto:ramakanthkp@rvce.edu.in)*

Abstract—Monitoring health fitness is important to enjoy healthier life. Fitness trackers are wearable devices that use sensors to track body movements. The wearable device collect the data, converts it into steps, calories, sleep quality and general activity that one performs throughout the day. Apart from the health related data the devices also collect multiple sensitive attribute information like health history, GPS tracking and blood oxygen levels. This collected data is published for various reasons like carrying out analysis on the data, for the purpose of the research, to learn stress levels, habits, and wellbeing, sleep and exercise patterns and to train the model. Among the constructive usage of the published data there may be an intruder who sells the data for monetary purpose. This causes privacy threats to the data owners. The device data is stored in cloud that causes different types of threats. Therefore, it is very much essential to anonymize the data using privacy preserving algorithms and then publish the data for the third party usage. In this paper the privacy

threats associated with wearable devices is discussed. We also propose privacy preserving data publishing algorithm that is based on anatomy to preserve privacy on the data collected by wearables. The proposed algorithm takes 70% less time when compared to existing methods.

PAPER ID-818

An Enhanced Deadlock Detection Methodology using Tarjan's Algorithm

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Abstract—The reliability and performance of concurrency are severely affected by deadlocks in concurrent systems. An efficient deadlock detection algorithm is needed to ensure that any deadlock cases can be pre-empted. The paper introduces a novel algorithm based on Tarjan's method for detecting deadlocks. The algorithm identifies strongly connected components in a directed graph and accurately tracks dependencies among processes using a wait-for graph, enabling precise deadlock detection in concurrent systems. Its implementation is described hereby and its performance is evaluated through extensive experiments on various scenarios. Therefore, this research has shown how important it is to detect deadlocks in these concurrent systems which improves their stability as well as reliability. The results demonstrate that the proposed deadlock detection algorithm performs its task efficiently, which is crucial for enhancing the consistency and stability of concurrent systems. This work makes a significant contribution to the development of deadlock detection techniques and offers valuable insights into their application. It is aimed at preventing deadlocks in real-world scenarios.

PAPER ID-900

Securing Supply Chains: Ethical Hacking in Logistics and Distribution

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Abstract—Today, we have digitalization of all the processes in the supply-chain management, and it is therefore paramount to have robust security measures. This paper looks into the security of logistics and distribution systems by putting ethical hacking techniques to work. This study emphasizes phishing attacks. A fake Facebook login page that

mimics the original one is a chosen platform where different vulnerabilities can be spotted and necessary measures at the moment of ensuring are taken into account. This study evaluates the ability to detect and simulate attacks, the strength of the current security systems and the proposed solutions for those weaknesses. Some solutions contain implementing multi-factor authentication and training users to be cautious in the process of using the network. Proactively targeting vulnerabilities is arguably the most basic approach to placemaking which makes the supply chain systems strong to withstand cyber threats.

PAPER ID-931

Software-Defined Radio with Integrated 4×4 Antenna Array for Wireless Communication

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Abstract—In this paper, wireless communication is demonstrated using a Software-Defined Radio (SDR) integrated with a 4×4 Microstrip Patch Antenna Array (MPAA) operating at 1.8 GHz. The antenna features an inset-fed configuration, achieved by replicating a 1×4 array constructed with FR4 epoxy substrate, which has a dielectric constant of 4.4 and loss tangent of 0.02 in ANSYS HFSS. The fabricated 4×4 antenna array exhibits a return loss of 30.5 dB and a gain of 11.2 dBi. The SDR is used to excite the 4×4 antenna array. The antenna is rotated to various angles to check the maximum scan capability. The study includes the analysis of two modulation schemes: Quadrature Phase Shift Keying (QPSK) and 16-Quadrature Amplitude Modulation (QAM). Performance observations are conducted for transmission

distances of 5 meters and 10 meters. The results demonstrate the effectiveness of the antenna in practical wireless communication scenarios and provide insights into its performance across different angles and distances.

PAPER ID-946

FPGA based Multi-functional and Multidimensional Smart Network Routing Processor

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Abstract— Data traffic is recurring and increasing issue of the network when multiple users wants to use the limited bandwidth of the communication system. Handling the data is important so that the there can be efficient delivery of data by routers. Routers now are either hybrid Routers or software routers which are mostly dependent of operating system of the server. Many research has been done, claimed and evaluated to optimize software routing algorithms that are used to find the nearest or best forwarding path for the data to

be routed in a topology of the network. Usually, Data plane operates at high speed and are implemented on Hardware and control plane that processes router functionalities are at slower pace , implemented using softwares and need a processor to execute them. We propose a model of router architecture where both data plane and control plane operates on hardware and is CPU-independent. This proposed router is multi-functional,multi-dimensional, multi-protocol support. System. This plug and play network router is an intelligent to analyse the data and route accordingly. The proposed router is implemented on FPGA so that the router can be made scalable and reprogrammable for design re-use. We claim that the router performance will improve compared to software- algorithm based routers.

PAPER ID-984

Design and Power Optimization of a 64-Bit SIMD Processor with Efficient Carry-Bit Handling

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Abstract—In the rapidly evolving field of digital processing, the demand for high-performance yet energy-efficient computing systems is ever- increasing. The paper focuses on the design and implementation of a 64-bit Single Instruction, Multiple Data (SIMD) processor capable of operating in four distinct modes: 8x8 bits, 4x16 bits, 2x32 bits, and 1x64 bits. The processor is developed using Verilog hardware description language, enabling flexibility and scalability in various applications. To further enhance the processor's efficiency, a novel low-power SIMD architecture is proposed, with an emphasis on optimized carry-bit handling. This architecture aims to reduce power consumption without compromising processing speed or functionality. A comprehensive power analysis is conducted to compare the energy efficiency of the standard SIMD design with the proposed low- power variant. The results demonstrate the effectiveness of the carrybit optimization in reducing power usage, contributing to the solution for high-performance computing.

PAPER ID-1017

Design of Lens Based Circular Polarized Antenna Array for C Band Applications

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Abstract— Circular polarized (CP) antenna is popular in wireless communication due to its advantages in polarization. This paper presents the design and development of a lens-based circularly polarized antenna array for C-band applications. The antenna is designed by etching a square patch, with diagonal squares, to achieve two orthogonal modes and an axial ratio of less than 3 dB is maintained. The single circularly polarized patch antenna is

scaled into a 4x4 array to enhance gain and directivity. The 4x4 array has four 2x2 subarray with T junction power divider. To further increase the gain of the array a sandwiched hemispherical lens antenna with shell is optimized for its dimension and separation distance. The simulation and optimization is carried out in EM Flow solver ANSYS HFSS.

PAPER ID-1039

Design and Performance Analysis of Slotted Vivaldi Antennae in X-Band

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Abstract—The Vivaldi Antenna has gained significant popularity and importance in radar systems, due to its wide bandwidth, fairly high gain and radiation features. The modifications in the structure of Vivaldi Antenna performance within the X-band are discussed in this paper. The paper discusses two modified Vivaldi designs, their plotted characteristic features and observations made on them. The Conventional Coplanar Vivaldi Antenna has two peripheral slots added, which help reduce the back lobes and improve the return loss. The Modified Vivaldi Antenna includes the addition of a circular slot line cavity, multiple rectangular slots along its periphery, and an unconventional antenna base, with the width being longer than the length. The addition of the rectangular slots decreases the presence of back lobes, while simultaneously providing lower return loss, peaking at a minimum of 39.59dB. Additionally, a circular slot line cavity is shown to provide increased overall gain, with a peak of 7.91Db in this study.

PAPER ID-1040

Design and Analysis of a 2x1 Circular Patch MIMO Antenna with Defected Ground Structure for WiMAX in UWB Applications

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Abstract - In the present research, 2x1 circular patch MIMO antennas with a DGS are designed and analyzed for WiMAX applications in the Ultra-Wideband system. The suggested antenna is found to have much higher radiation efficiency and isolation bandwidth. Simulations conducted in HFSS have demonstrated a notable improvement in the antenna's overall performance, mutual coupling, and return loss. Through the UWB band of 3.1–10.6 GHz, the antenna exhibits a return loss (S11) of less than -10 dB and an isolation (S21) of less than -20 dB. With an efficiency above 85% and a peak gain of 5.8 dBi, the radiation patterns are omnidirectional. The DGS is appropriate for contemporary

wireless communication systems that will need ultra-high data rates and great dependability because it effectively reduced mutual coupling and increased impedance bandwidth. This antenna operates between 3.3 and 3.6 GHz and between 5.3 and 5.5 GHz.

PAPER ID-1048

Adaptive caching of routes on LEO Satellite Networks

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Abstract — Low Earth Orbit (LEO) satellite networks are becoming increasingly significant in global communications due to their potential for providing high-speed internet access across remote and underserved regions. However, these networks face substantial challenges related to latency, bandwidth limitations, and frequent handovers due to the rapid movement of satellites. Caching emerges as a critical solution to mitigate these challenges, particularly in microservice architectures. By strategically storing frequently used routing paths within the network, caching reduces the need for repeated route calculations and data retrieval from distant sources, thus minimizing latency and alleviating bandwidth congestion. Additionally, effective caching strategies can enhance the overall quality of service by ensuring that optimal routes are readily available even during satellite handovers or network disruptions. This study explores the imperative role of caching the network paths in optimizing LEO satellite networks, highlighting its benefits in improving data routing efficiency, reducing latency, and enhancing user experience in the rapidly evolving landscape of global satellite communications

TRACK: AUTONOMOUS VEHICLES NAVIGATION AND CONTROL SYSTEMS

Paper ID - 109

A NOVEL APPROACH TO ADVANCING DROWSINESS DETECTION USING HEAD ANGLE AND EYE-ASPECT RATIO

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Abstract— Drowsiness is a significant risk factor for accidents, particularly in situations requiring sustained attention, such as driving or operating machinery. This research proposes an innovative methodology for detecting driver drowsiness using advanced computer vision algorithms and techniques. Our system employs a shapeshift predictor and face-tracking algorithms to monitor the driver's facial features and head movements. Specifically, it detects three distinct indicators of drowsiness: excessive head tilting to the right or left, significant drooping of the chin, and prolonged eye closure (defined as eyes remaining closed for more than 24 consecutive frames). When any of these conditions are met, an alarm is triggered, alerting the driver to their potentially hazardous state. The proposed system offers a robust and non-intrusive solution for real-time drowsiness monitoring, with potential applications in various fields where vigilance is critical for safety.

Paper ID - 276

Optimizing Spatial Efficiency through Velocity-Responsive Controller in Vehicle Platooning

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Abstract—Vehicle platooning offers significant potential for improving traffic flow and fuel efficiency. However, maintaining a safe and efficient distance between vehicles (inter-vehicle spacing) is crucial. This paper explores the concept of optimizing spatial efficiency within platoons using velocity-responsive controllers. We proposed a novel control strategy where the spacing between vehicles dynamically adjusts based on their relative velocities. This approach aims to maximize throughput while maintaining safety by considering factors like reaction times and braking distances at different speeds. The paper's contribution lies in

investigating how velocity-responsive control can optimize spatial efficiency in vehicle platooning. This potentially leads to increased road capacity, reduced fuel consumption, and improved overall traffic flow.

Paper ID - 477

Secure Boot Implementation in Automotive Electronic Control Unit

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Abstract— Estimations show that modern cars have about 100 million lines of code. By 2030, this number is expected to quadruple. To put this in perspective, an operating system for a PC can include up to 40 million lines of code, but a passenger airplane typically contains roughly 15 million lines. The exponential rise in complexity of automotive software highlights the urgent need for improved cybersecurity solutions to reduce the danger of cyberattacks and guarantee the security of drivers and passengers. To resolve this issue there are few of the cryptographic algorithms used such as Advanced Encryption Algorithm (AES) for the faster and reliable execution multiple iterations are done in the paper we will look into the process and outcomes of AES in automotive secure boot.

Paper ID - 520

Development of Data Security Algorithms in V2V Communication

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Abstract— In the context of vehicular communication, data security is a critical concern. This paper presents an improved version of the LED (Lightweight Encryption and Decryption) block cipher, specifically designed to enhance security in resourceconstrained environments. Our modifications introduce additional encryption rounds and a refined key management scheme, increasing the complexity and difficulty of unauthorized data tampering. These enhancements significantly bolster the cipher's resilience against cryptographic attacks while maintaining the lightweight characteristics necessary for vehicular applications. Comparative analysis with the standard LED cipher demonstrates that our approach offers improved security and performance, making it suitable for secure data transmission in automotive systems. Memory.

Paper ID - 683

Modeling and Simulation of Helicopter Swashplate Collective Control Response in UAV Applications

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Abstract — Unmanned Aerial Vehicles (UAVs), particularly quadcopters and rotorcraft, have become indispensable in various sectors due to their versatility and capability in tasks ranging from surveillance to payload transport. This paper presents a mathematical model for simulating the collective control of a helicopter's swashplate mechanism, crucial for optimizing rotorcraft UAV performance. The model integrates a flybarless swashplate system with a high-performance brushless DC motor and servo actuators, implemented and analyzed using MATLAB Simulink. By developing and testing control responses through PID tuning, the study aims to enhance the maneuverability and efficiency of rotorcraft UAVs. The key findings suggest that adjusting rotor speed provides a more responsive control method than traditional blade pitch adjustments, highlighting the benefits of high-power BLDC motors. The results provide valuable insights into improving UAV flight precision and operational effectiveness, addressing gaps in existing research and contributing to the advancement of UAV technology.

Paper ID - 941

Adaptive Traffic Signal Timing: Leveraging YOLOv10 and Computer Vision for Real-Time Optimization

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Abstract — Traffic congestion poses a significant challenge in modern urban environments, particularly in densely populated cities. Traditional traffic signals, which operate on fixed timings, often require manual adjustments to respond to varying traffic densities, leading to inefficient traffic flow. This issue arises because fixed intervals do not account for the dynamic nature of traffic patterns throughout the day. While developing intelligent systems

that adjust signal durations dynamically offers a potential solution, such systems involve substantial financial investment and extended implementation timelines. This paper proposes a method to optimize green light durations by analyzing footage collected from a traffic junction in Bengaluru. This analysis can be performed using existing CCTV footage or manually gathered data. Even limited sample sizes can provide valuable insights for preliminary adjustments. The approach utilizes YOLOv10, a state-of-the-art computer vision algorithm, to extract relevant traffic data. The data is processed by an algorithm designed to reallocate green light durations, which are then compared with the original timings. An experimental setup involved recording one-minute videos over three days at the selected junction and applying the proposed algorithm to assess and refine signal durations. The results demonstrate the feasibility of using such algorithms to improve traffic signal management effectively.

Paper ID - 970

Optimal Design of Vedic Multiplier for Computation in Memory Applications

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Abstract — The increasing demand for computational efficiency and power management in VLSI systems highlights the need for innovative architectural solutions. Traditional designs often face challenges in balancing speed, power consumption, and area efficiency due to inefficiencies in data movement between processing units and memory. Computation in Memory (CIM) techniques address the memory wall problem, where data transfer limitations between processing and memory units hinder performance. CIM enables computations to occur directly within memory arrays, significantly reducing data movement and improving both speed and power efficiency. To address these issues, a novel architecture integrates CIM with a 16x16 Vedic Multiplier, incorporating a 2x2 Vedic Multiplier within 8T SRAM memory arrays and using latch-type sense amplifiers for inmemory computation. This integration reduces data movement, latency, and power consumption. Post-routing analysis further demonstrates a power decrease from 615 μ W to 595 μ W. Detailed parasitic extraction and simulation using Standard Parasitic Exchange Format (SPEF) files reveal a 15% reduction in power consumption and a 9% reduction in slack compared to traditional multipliers. This CIM-based approach enhances computational efficiency and sets a robust foundation for future advancements in VLSI design, addressing critical challenges in modern highperformance computing systems

Paper ID - 1018

Implementation of Multi target detection in Automotive Radar with Low SNR

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Abstract — In radar Applications, target detection is challenging due to dynamic background clutter and noise , impacting image quality and further processing tasks. This paper focuses on Wavelet Transform Adaptive Signal Detection (WTASD) technique for automotive radar to enhance target detection in minimal signal to noise ratio. Utilizing the Discrete Wavelet Transform (DWT) with Daubechies wavelet 'db1' for a five-level decomposition, the WTASD suppresses noise while enhancing the target signals. Adaptive thresholding is implemented to estimate identifies velocity and distance of target detection. Simulations demonstrate the WTASD's ability to detect two targets with SNR as low as -30 dB.

Paper ID - 1027

UAV Tracking using 5G

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Abstract — This paper presents an approach for vehicle tracking in Urban Air Mobility (UAM) using 5G Position Reference Signals (PRS). UAM represents the future of urban transportation, where aerial vehicles will be used to ferry passengers and cargo within cityscapes. The reliability of such systems heavily depends on the precision of tracking these vehicles in real-time, especially in densely populated urban areas where traditional GPS might falter. Our proposed method leverages the unprecedented capabilities of 5G networks—particularly the PRS feature—to provide highly accurate and low-latency tracking of UAM vehicles. Our approach enhances efficiency by reducing latency and computational overhead, achieving a sub-meter positional accuracy through 5G PRS. Simulations show that our system improves tracking precision by over 30% compared to conventional GPS-based methods, ensuring robust real-time tracking in dense urban environments.

TRACK: DIGITAL TRANSFORMATION IN VARIOUS SECTORS OF ECONOMY

Paper ID-10

Ethical and Privacy Implications of Augmented Reality

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Abstract — The development of augmented reality (AR) technology has led to a new era of innovation, which holds the potential to completely change the way we perceive and engage with the world. Though there is excitement about the possible uses of augmented reality, important privacy and ethical issues require attention. Informed permission, digital manipulation, monitoring, and facial recognition are just a few of the topics covered in this paper's exploration of augmented reality's ethical and privacy concerns. We look at the difficulties presented by augmented reality technology in getting users' meaningful consent, negotiating the complexities of digital manipulation and deception, and defending peoples' right to privacy in an age of ubiquitous data collecting and surveillance. We offer tactics for encouraging ethical innovation in AR and reducing the dangers connected with its application, building on the ethical principles and guidelines already in place. This study aims to provide a deeper awareness of the intricate ethical concerns at hand and aid in the creation of augmented reality systems that emphasize human well-being and respect for individual privacy by critically assessing the ethical aspects of AR.

Paper ID-26

TripleACrypt: Cryptography and Steganography for the Preservation of Ancient Discoveries

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Abstract—"Steganocryptic Repositories" is an idea that incorporates cryptographic techniques with steganographic ones to preserve India's manuscript heritage in the digital age. Ancient manuscripts are encrypted with the AES technique, guaranteeing their security. An additional degree of protection is added by using the RSA technique to encrypt the key used in the AES encryption process. Additionally, this combination requires encoding the colors of high-resolution digital scans with the RSA encryption key including the encrypted manuscript, which is accomplished by hiding detailed metadata related to the manuscripts using the Least Significant Bit (LSB) approach. Use of Streamlit and ngrok allow for safe and easy to use frontend for the application. While Streamlit creates an interactive Graphical

User Interface (GUI) for the application, ngrok ensures secure access to it. This method preserves and makes available the vast cultural knowledge contained in India's manuscripts by giving researchers and scholars access to decryption keys, ensuring secure access. This also preserves and reveals the mysteries of India's literary and historical heritage for the benefit of future generations.

Paper ID-84

Blockchain Technology in Agriculture

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Abstract— The work addresses challenges in the agricultural sector by leveraging blockchain technology to assist farmers in generating revenue and enhancing the economy. Using Solidity, the team has developed smart contracts to facilitate secure transactions among farmers, distributors, retailers, and consumers, ensuring fair remuneration for farmers and fostering balanced profit distribution across the supply chain. Front-end development utilizing React has provided an engaging user interface. Integration with a testnet allows for real-world operation simulations, essential for validating the functionality of the blockchain framework. The system's implementation introduces unprecedented transparency and security, enabling complete traceability of agricultural products from origin to consumer. This enhances product integrity and fosters trust among stakeholders, thereby optimizing the agricultural supply chain.

Paper ID-101

Finance-In-Focus: Mastering Financial Basics through Online Learning

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Abstract—In our daily lives, finance plays a vital role, influencing the decisions we take to shape our future. This means that, interpreting the basic elements of finance is vital for an individual to make an informed choice especially in fields such as budgeting, investing and debt management. Keeping the importance of financial literacy in mind, our goal is to create an online learning platform that helps users to understand the basics of finance. The platform is designed to provide the users a level wise content which will help the user to understand the flow of data provided and build the interest to learn further more on the concept. Recognizing the absence of an online learning platform for financial literacy, the platform involves a proper exploration of the fundamentals. The learning repository for the

platform is based on a systematic literature review, ensuring that it is accurate and reliable for the user. In order to provide a comfortable experience for the user, the platform is designed in a way that provides a range of topics that are arranged based on popular choice. Also, to ensure the data flow of the content, the levels get unlocked on completion of the topics provided in each level. In addition to the qualitative approach, the platform focuses on data analytics to understand user engagement and preferences, thus enhancing the experience. Along with the above features, the user would also be provided with a dashboard page where the progress is shown. The ongoing project adapts to user feedback potentially improving financial literacy on a broader scale. The website's aim is to provide a reliable source of information with a user friendly and dynamic experience which will enhance their financial understanding. As we continue to evolve, we expect an even greater impact on finance, thus contributing to a more financially informed society.

Paper ID-133

Emporium: A second hand product marketplace assistant mobile application with shop reliability check, shop search, product swap, helpdesk facilities

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Abstract—The popularity of the second-hand product marketplace is increasing due to the availability of second-hand shops, lower product costs, the reuse of manufacturing products, and economic and environmental concerns. Previous research on second-hand marketplaces did not create an automated system for both buyers and sellers that included second-hand shop search, product search, and shop reliability check, taking into account product quality, location, specifications, shop rating, shop owner behavior, price, warranty, and replacement policy. They also did not provide a second-hand assistant online application with features such as product swapping, donation, fund raising, helpdesk, chat with seller, seller rating, best deal search, blog post access, or law enforcement report. To outperform these limitations, this paper develops a second hand product market place assistant mobile application with second hand shop reliability check, second hand shop search, product search, law officer reporting about seller, seller rating, helpdesk with query posting and response, second hand product donation, fund raising, blog posting, online product order, chat with sellers, and app rating. The app supremacy analysis revealed that over 68% of examiners praised our second-hand market place assistant mobile app features for their usefulness and positive impact on people's lives.

Paper ID-134**Labour Care: A Garment Worker Assistance Mobile Application with Work Environment Checking, Employment, Leave Apply, Legal Aid Facilities**

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Abstract—Garment industry is important to many south asian countries' economies because it generates significant export revenue and employs a large number of workers. In many countries, garment workers face a number of challenges, including low wages, poverty, job insecurity, harassment, a hazardous working environment, and a lack of medical, financial, and legal aid. Previous garment worker-related projects did not include an automated system for garment worker assistance with work environment checks, employment searches, work schedule checks, leave applications, legal aid, reporting, and medical help application features. To overwhelm the previous limitations, this article yields a garment worker assistance-based labor care mobile application that includes employment search, job application, leave application, medical help, financial and legal aid application, reporting, query application, daily work schedule search, attendance update, friend contact, and work environment checking features. Over 54% of workers provided positive feedback on the proposed labor care app's features, development process, and necessity.

Paper ID-139**DESIGN AND DEVELOPMENT OF IOT BASED SMART SERICULTURE PLANT**

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Abstract— Sericulture refers to the practice of raising silkworms and extracting silk from them. India stands as the world's second-largest producer of raw silk, with approximately 9.76 million individuals engaged in employment within the Indian silk industry. The sector does, however, confront numerous difficulties, such as the volatility of raw silk prices and competition from synthetic fibers. Silkworms usually employed in sericulture are the caterpillars of the domestic silk moth, also known as 'Bombyx Mori'. One of the finest methods to make a solid living is through sericulture, which offers superior returns on investment as well as self employment opportunities. In this procedure, silkworm larvae are provided with mulberry leaves for sustenance. Upon reaching their fourth moult, they ascend a nearby twig to commence the spinning of their silk cocoons. There are numerous

ways to improve the silkworm rearing methods now in use. The silk worm, however, must go through numerous stages in order to change from a larva to a silk worm. The farmer's biggest task during each stage is monitoring the silkworms.

This paper includes design and development of an automated sericulture system approach based on IoT utilizing Raspberry Pi in this study. It deals with controlling weather factors like humidity and temperature on farms. This method uses automated actuators and sensors to regulate the environment in the sericulture using heating and cooling system. It also includes the vibration sensor, which identifies and reacts quickly to any disruptions in the system and is indicated through automated alert system i.e. Buzzer. The incorporation of a serial camera with the Raspberry Pi, which undergoes image processing to offer visual status updates through texture analysis and sprinkler which acts as feeder system provides adequate nutrition to the silkworms for the optimal and healthy growth. Through Blynk, the end user will receive the data wirelessly from these sensors. Each of these factors helps to accelerate the silkworms' growth rate, which in turn raises the amount of silk produced.

Paper ID-183

A Sustainable Smart Irrigation and Crop Protection System For Bangladesh

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Abstract— Bangladesh's most crucial sector for development is agriculture. Rainfall has been irregular in recent years due to climate change. In our country, the untimely rain and hailstorms harm crops and vegetables, especially winter vegetables. Surface water is mainly used for agriculture, but its availability constantly declines. Our current key challenge is to save surface water while protecting crops from rain and hail. IoT is cutting-edge technology in many applications, such as smart homes, smart cities, and intelligent traffic management. The IoT may be implemented in so many different industries and sectors. This research work is about smart irrigation with crop protection systems in agriculture. The system's primary parts are the sensors, water pump, servo motors, embedded systems, and internet

connectivity. IoT sensors like soil moisture sensors and rain sensors are used in the suggested methodology. The fields of crops have received water from a pump. A motor has covered the crops. The proposed solution is a straightforward Internet of Things setup that sends data to the Arduino after detecting rainfall and soil moisture levels. Depending on the sensor data, the Arduino sends signals to the motor and pump to irrigate the crops and cover crops as necessary, revealing the crops after rain. The system is constructed economically using bamboo, and poly and plastic nets have been utilized to protect the crops from rain and fog. The system's primary effects are increased productivity, decreased crop damage rate, and saved surface water.

Paper ID-219

Predictive Analytics and AI in Logistics: Driving Operational Excellence and Cost Reduction

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Abstract— In today's tough business world, logistics are under lots of pressure to work better and cost less. Predictive analytics and AI are big deals in making logistics run smoother. This study looks into how predictive analytics and AI can be used logistics to make things work better and save. By using old data and what's happening right now, analytics help to make smart decisions ahead of time, plan out routes, manage stock, and use resources the right way. AI takes it up a notch by doing things automatically, figuring out what people want before they even know it, and risks. Real-life examples show how predictive analytics and AI help logistics run better, offer more reliable service, and save lots of money. This research talks about how predictive analytics and AI are changing logistics for the better in practical ways and looks at what might happen in the future. It shows how important they are in making logistics more efficient and profitable down the road.

Paper ID-220

Digital Transformation in Banking and Financial Sector – a comprehensive Analysis

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Abstract- Rapid technological breakthroughs are driving a fundamental upheaval in the banking and finance sector. This study explores the effects of digital technology on the sector, looking at how organizations are changing to keep up with changing consumer demands and intense competition. This research examines the major forces, obstacles, and

possibilities influencing the development of banking and finance in the future, from the emergence of fintech to the application of AI and blockchain. It examines how the industry's digital transformation is changing business models, boosting customer experiences, increasing operational effectiveness, and lowering risks. However, the rapid adoption of these technologies also introduces performance issues, such as system scalability and cybersecurity threats, which need to be addressed to ensure sustainable growth.

Paper ID-226

Whistle Blower: An insurance awareness mobile application with insurance policy selection, fraud detection, critical help, complaint features

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Abstract—Insurance is a contract between a client and an insurance company in which the insurer provides the policyholder with financial protection to reduce risk. The existing insurance assistance literature did not present any ICT-based digital system for searching for a suitable insurance policy and company while taking rating, company type, financial condition, premium, insurance growth rate, and policy type into consideration. Existing literary works lack an automated insurance assistance system with features such as insurance lawyer search, insurance claim failure prediction, insurance tips, insurance company quality detection, time critical help posting, insurance complaint submission, and general insurance information accessibility. To resolve these issues, this paper yields an insurance awareness assistance mobile application that includes insurance claim fraud prediction, appropriate insurance policy and company search, contact with insurance companies, complaint submission, expert suggestion, company quality detection, insurance lawyer search, time critical help post, app rating submission, and insurance tip access features. The app qualification test results revealed that at least 60% of clients dispatched the foremost quality remarks regarding the insurance app's feature suitability.

Paper ID-234

Search Listing Prioritization: Ordering Search Results Based on User Ratings

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Abstract— This paper discusses creating a system that ranks search result using user-provided ratings and comments to improve the quality of search experiences. In this application, users can rate websites on a scale of 1 to 5 and leave comments that will be shown alongside each search result. The cumulative ratings determine the ranking of each website, with higher-rated websites appearing at the top. Only the top three comments are displayed, and they are randomized to ensure a diverse range of perspectives. Users can like or dislike a comment. Additionally, there is a dual feedback system that allows users to express their satisfaction or dissatisfaction with a website. This comprehensive feedback mechanism helps users make more informed choices and improve overall satisfaction by providing a better understanding of website quality.

Paper ID-279

STUDENT EXCHANGE EMPORIUM: PROMOTING SUSTAINABILITY AND COMMUNITY COLLABORATION

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Abstract— This paper reviews the Student Exchange Emporium, a web-based platform created using the MERN stack, designed to facilitate the buying and selling of books and other necessary items among college students. The platform aims to promote sustainability by reducing waste and providing a cost-effective solution for students to acquire needed resources. It also offers a marketplace for skill exchange and service offerings, enhancing the student community's collaborative spirit. The user experience is straightforward, with fast page loads and seamless transitions, while sensitive information about users is safeguarded through security measures including HTTPS encryption and password hashing. Users can easily perform all required tasks, including listing items, updating and managing listings, buying and selling items, and communicating through a chat system. Overall, the Student Exchange Emporium created with the MERN stack is a valuable addition to college student resources, incorporating essential features and reliable functionality to create a sustainable and interconnected student environment. This platform exemplifies how the MERN stack can provide a secure and streamlined marketplace experience.

Paper ID-282

An Approach to Intelligent Information Extraction and Utilization from Diverse Documents

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Abstract: In this study, an innovative tool called DOCUFYme is introduced, designed to transform how interactions with and insights from various documents are handled. Leveraging advanced NLP methodologies and the Retrieval-Augmented Generation (RAG) framework, DOCUFYme facilitates efficient and precise information extraction across different fields such as engineering, science, medicine, and agriculture. Unlike conventional NLP systems that depend on predefined rules, this system employs existing metrics (like BLEU) and Large Language Models (LLMs) to achieve a deeper semantic understanding. Additionally, the architecture supports seamless integration of new features and domain-specific modules, enhancing the adaptability and relevance across different document types. The effectiveness of DOCUFYme is validated through multiple case studies and assessments based on real-world applications, including research, corporate knowledge management, healthcare, and education. This positions DOCUFYme as a pivotal tool for intelligent information extraction, bridging knowledge gaps and facilitating access to global knowledge.

Paper ID-327

Optimizing Data Extraction with UiPath: A Web Scraping Conclusion

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Abstract—The article elaborates on Web scraping , which involves extracting data from websites, is essential for automation and data-driven decision-making. UiPath, a leading RPA software, empowers organizations to automate this process efficiently and reliably. Using UiPath Studio, we can create automation workflows called robots that navigate through web pages, interact with elements, and extract structured data. We have applied the concept for product data analysis involves using specialized tools and techniques to systematically gather information from e-commerce sites, manufacturer websites, and other online sources. We navigate websites, interact with product listings, and extract pertinent information such as prices, specifications, customer reviews, and availability, finally the efficient management of student receipt data is critical for educational institutions to track finances, analyse spending patterns, and ensure compliance the application of web scraping in reading and processing student receipt data, emphasizing its implementation and benefits.

Paper ID-349**Resume Parser and Job Description Matcher****¹Spandana Anilkumar Kamkar, ²Srushti Sanjay, ³Vaishnavi P S, ⁴Chaitra M****^{1,2,3,4}Dept. of Computer Science and Engineering, BNM Institute of Technology, Affiliated to
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Abstract—Resume Parser and Job Description Matcher is an innovative project aimed at enhancing the efficiency and accuracy of job candidate screening and matching processes. Leveraging natural language processing (NLP) techniques, particularly using SpaCy and machine learning models, the system parses resumes and job descriptions to extract relevant skills, experience, and qualifications. By analyzing textual data and applying advanced algorithms, such as Support Vector Machines (SVM), the system learns to match candidates with job postings based on keyword relevance and contextual understanding. Our paper demonstrates improved matching results compared to traditional methods, facilitating streamlined recruitment processes, and enhancing workforce management strategies.

Paper ID-438**Youtube comment summarizer and post content analysis****¹Aneesh Adiga S, ²Anish S, ³Chaithanya Ganesh, ⁴Abhin Divakar, ⁵ B M Sagar, ⁶ Kavitha S N****^{1,2,3,4,5,6}RV College of Engineering**

Abstract: This paper presents a unified approach to analyzing online discourse by leveraging advanced natural language processing techniques, focusing on both YouTube comments and Amazon reviews. We introduce a YouTube Comment Analyzer and an Amazon Review Summarizer, both employing bag-of-words analysis to unveil sentiment trends, topic dynamics, and actionable insights within user-generated content. Through the utilization of state-of-the-art machine learning algorithms, our tools categorize comments and reviews, extract key sentiments, and identify prevalent topics. By synthesizing salient features from both platforms, we offer a comprehensive understanding of user engagement, content reception, and product performance. Our findings contribute to a deeper comprehension of online discourse dynamics and provide valuable insights for content creators, marketers, businesses, and platform administrators in navigating the digital landscape effectively.

Paper ID-446

Development of Digital Twin Framework for Design of Channapatna Handicraft Toys in the Digital Era

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Abstract— The digital transformation era, emphasized by Industry 4.0, have transformed and globalized industries. This transformation is important for increasing the efficiency, traceability, and market reach, particularly in handicraft sectors. The COVID-19 pandemic further extends the need for innovative digital approaches signifying the limitations of conventional methods. This paper explores the digital integration in the handicraft toy manufacturing industry, particularly discussing on the design and implementation of digital twin. Despite the sector's rich cultural heritage and the increasing global market demand for Indian handicrafts, traditional artisanal methods face challenges from worldwide competition and continuously changing consumer requirements. Digital transformation, distinctively through digital twin, provides a solution by creating virtual representations of physical products that enable enhanced simulation, analysis, and optimization of design processes. The study features a tailored approach to digital twin framework for implementation in Channapatna's toy design process, which includes virtual modeling, data processing, and real-time interaction between physical and digital environments. The proposed framework aims to improve efficiency, enhance market responsiveness and preserve cultural heritage. Future recommendations include development of digital infrastructure in rural areas, implementing comprehensive continuous training programs for upskill, and fostering collaboration between artisans, designers, technologists, and policymakers. This research emphasizes the potential of digital transformation to drive sustainable growth and global competitiveness in the handicraft toy industry.

Paper ID-496

Decentralized document storage with NFT Authentication using Blockchain technology

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Abstract—This research introduces a solution to escalating data security and privacy concerns by utilizing Ethereum-based blockchain technologies, like Polygon, and NFTs for decentralized document storage and authentication. Unique NFTs associated with each document are cryptographic proofs, minted and recorded on the blockchain to ensure resilience and tamper resistance. This research experiments with the use of Solidity based

smart contract along with a decentralized file storage protocol, IPFS, to enhance flexibility and scalability

Paper ID-511

Development of an Integrated Framework for Quality & Reliability across the Supply Chain

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Abstract—This paper proposes an integrated framework for enhancing supply chain quality and reliability using data analytics. It covers key components like aligning quality objectives, standardizing practices, and fostering collaboration. Implementation strategies include Six-Sigma metrics and multi-criteria decision-making. The study also explores blockchain and IoT for field recall traceability, and examines data analytics, big data, and machine learning for predicting disruptions and improving reliability. Additionally, it addresses the impact of asset residual value and predictive reliability methods. This framework aims to advance effective and sustainable supply chain management.

Paper ID-527

Integrating Digital Technology to Improve Quality in a Packaged Drinking Water Unit: A Case Study

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Abstract—In the competitive landscape of water bottle manufacturing, enhancing operational efficiency while adhering to quality standards is crucial. This study explores the application of digital solutions, specifically IoT technologies, to address key inefficiencies in the manufacturing and filling processes. The research employs the DMAIC (Define, Measure, Analyse, Improve, Control) framework to identify and rectify issues such as high defect rates, water wastage, and delays in the packing stage. By integrating advanced IoT solutions like fill level sensors, weight sensors, and realtime feedback systems, the study demonstrates how

these digital tools effectively mitigate identified problems. The findings show that digital solutions significantly reduce defect rates and water wastage, leading to improved product quality and operational efficiency. This research highlights the transformative potential of IoT in manufacturing and offers practical insights for implementing similar technologies to enhance process efficiency and quality.

Paper ID-563

REAL-TIME OPERATING SYSTEM FOR SMART HOME AUTOMATION

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Abstract— Real-Time Operating System (RTOS) is a specialized operating system designed to manage hardware resources and run applications that require precise timing and predictable responses. Real-Time Operating Systems have become integral to applications where precise timing and immediate response are critical, particularly in embedded systems, industrial automation, automotive control, and aerospace. Research in Real-Time Operating Systems has made significant progress, but several gaps and challenges still exist such as real-time data handling and analytics, scalability and flexibility in multicore systems and improved task isolation. This research aims to design and implement a Real-Time Operating System for smart home automation. We aim to address critical response time requirements of domestic applications to ensure predictable task execution and optimal resource management. Through this research, we aim to address and provide a solution for task isolation in a real-time operating system through the use of semaphores and ensure that no task interferes with the execution of other tasks. This ensures systematic execution of all tasks without any interruption and without any compromise in the system performance. This system can be extended to a range of devices including lighting systems and door locks providing a user-friendly interface for users to control and monitor their smart homes efficiently.

Paper ID-569

Big Data Integration & Transformation: A Comparative Analysis of SnapLogic and AWS Glue

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Abstract— Enterprise-level cloud databases pertinent to enterprises can be imported either through files or through an Application Programming Interface (API). Information that is stored in a document, before it can become an updated piece of data that is accessible in the database, must go through a process. Some of the document processing covers actions such as, or are, business actions like; reading files, parsing input data, data validation, an API call, as well as the generation of a final report indicating records that have been imported from the document. Each time there is a new document to import; the previous procedures

must be done all over again. To process the document various tools has to be used, for instance, AWS glue and Snaplogic are available in the market. These tools are predominantly used to integrate processes of data transfer between different applications and different data sources as well as to perform ETL or ELT depending on a specific scenario. Both the applications are nearly similar in having ETL and ELT facilities but the utilization of this type of application is different from one another depending on the client's requirement. This paper conducts the comparison between snaplogic and AWS glue based on all the relative characteristics such as the domain where it can be applied, flow, connector, difficulty level of using snaplogic and AWS glue and finally the major distinctions between the two platforms

Paper ID-606

Digitalization of Lean Tools and Techniques: Enhancing Efficiency and Quality in Modern Industries

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Abstract—This paper delves into the digitalization of traditional lean tools and techniques, focusing on how the adoption of advanced technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and automation is revolutionizing lean practices. It provides an in-depth examination of how these digital advancements are enhancing core lean methodologies—including Value Stream Mapping (VSM), Heijunka, Kanban, Gemba, Jidoka, Hoshin Kanri, Poka-Yoke, 5S, Maynard Operation Sequence Technique (MOST), Spaghetti Diagrams, Standard Work Combination Table (SWCT), Shojinka, Single-Minute Exchange of Dies (SMED), and Kanban Blitz—by significantly improving process efficiency, reducing waste, and bolstering quality control. The paper incorporates detailed case studies from leading companies such as Toyota, Ford, Amazon, Boeing, Boston Medical Center, Starbucks, Honda, Nestlé, General Electric, Intel, Kaiser Permanente, and Mayo Clinic. These case studies illustrate how digital tools and techniques have been practically applied to transform traditional lean methodologies, showcasing the tangible benefits and performance improvements achieved across various sectors. By providing a comprehensive analysis of these advancements, the paper aims to offer valuable insights into the evolving landscape of lean manufacturing in the digital age.

Paper ID-628

Decoding Big Data: The Essential Elements Shaping Business Intelligence

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Abstract - In today's Business Intelligence (BI) world, Big Data Analytics integration has become critical, transforming company strategy and decision-making processes. This study investigates the complex influence of Big Data on business intelligence, focusing on important drivers of this transition. It investigates how Big Data's improved data processing capabilities, integration of advanced analytics techniques such as machine learning, and real-time data insights enable businesses to make more informed decisions and achieve a competitive advantage. Furthermore, the paper emphasizes the importance of personalized consumer insights, operational savings, and strategic benefits obtained from predictive analytics when adopting Big Data for BI.

Paper ID-637

Artificial Intelligence driven e-Commerce Platform for Handicraft Toy Industries

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Abstract— The Indian handicraft sector is the foundation of the nation's cultural heritage and economic development, providing employment opportunities to numerous artisans. However, it faces several challenges such as low market access, inadequate marketing skills and lack of digital literacy and infrastructure. These barriers lead to low visibility in the global market and dependence on local market channels. The industry subsequently shows inefficiencies and increased operational costs due to fragmented supply chains. However, e-commerce integration provides a transformative opportunity for the handicraft sector, especially for the well-known Channapatna handicraft toy manufacturing industry. This paper recommends an Artificial Intelligence driven e-commerce platform tailored to Channapatna's Handicraft Toy Manufacturing Industries. It aims to expand their market reach by connecting them directly with local and global customers, thereby avoiding mediators which reduces costs. The framework consists of key components which includes vendors who are toy manufacturers, a cloud-based server and customers, creating a seamless digital marketplace. The proposed platform improves supply chain management, increases product visibility and facilitates better customer engagement through application

of digital tools. With the integration of AI, the platform personalizes shopping experiences, forecasts sales trends, and manages inventory effectively. The conclusion outlines future innovative advancements such as augmented reality and virtual reality features to further enhance the online shopping experience. Overall, this AI-driven e-commerce platform can increase competitiveness, operational efficiency, and sustainable economic growth, empowering artisans to preserve their cultural heritage while meeting global market demands.

Paper ID-704

EXPLORING ZERO TRUST ARCHITECTURE IN INTERVIEW BOTS: Mechanisms and Challenges

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Abstract- As organizations have become increasingly dependent on interview bots for recruitment processes, there is a necessity for robust security measures for protecting sensitive information of the candidates and maintaining the integrity of the recruitment processes. This paper discusses the implementation of Zero Trust Architecture in interview bots, highlighting a paradigm shift from conventional perimeter-based security approach to a robust and identity focused model. This method of approach uses principles like least privileged access, constant authentication and precise policy enforcement to ensure that the interaction with the bot is done only by authorized entities to reduce the risk of data breaches and other threats by securing communication channels. The case study that follows will provide an example of how ZTA will further enhance security posture for interview bots and provide a framework to protect recruitment processes for organizations from the increasingly digital and threat-prone environments. Our contributions, therefore, note an in-depth analysis underline some best practice recommendations.

Paper ID-720

Digital Transformation in Various Sectors of the Indian Economy

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Abstract—Digital transformation is rapidly reshaping various sectors of the Indian economy, fostering innovation, enhancing efficiency, and driving growth. This paper delves into the impact of digital technologies such as artificial intelligence (AI), the Internet of Things (IoT), big data, and cloud computing across key sectors including healthcare, finance, education,

manufacturing, and retail. By examining case studies of top unicorns in their respective industries, this study highlights how these companies have leveraged digital transformation to revolutionize their operations, achieve substantial market share, and redefine industry standards within a short period. The findings underscore the critical role of digital innovation in propelling India's economic development and offer insights into strategies for successful digital integration.

Paper ID-742

Tokenizing Real Estate in India Using Blockchain Technology

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Abstract—Tokenization of real estate represents a significant opportunity to revolutionize the Indian real estate market by enhancing liquidity, improving transparency, and reducing transaction costs. This paper proposes a detailed, technical solution utilizing the Polygon blockchain to implement a scalable, secure, and compliant platform for real estate tokenization. The approach addresses regulatory challenges, stakeholder misalignment, and technological adoption barriers.

Paper ID-765

Hierarchical Data Storage Model Representation in MongoDB for a Resume Ranking Application

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Abstract—Introducing an innovative resume ranking website, representing Hierarchical Data Storage in MongoDB. By allowing candidates to fill out job-specific forms, the project assesses their skills against customized criteria set by each company. Each skill criteria is stored in MongoDB in parent-child node formation making it easy for retrieval with minimum time complexity. Utilizing a point-based system, primary, secondary, and least priority skills are prioritized tailored to the requirements of each job opening. The goal is to make candidate

selection, ensuring that the most qualified individuals rise to the top, facilitating efficient and effective hiring decisions for businesses.

Paper ID-777

Optimizing Customer Segmentation: A Comparative Analysis of Clustering Algorithms Using Evaluation Metrics

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Abstract—Customer segmentation is the route to data-driven decisions within organizations serving a wide variety of customer needs. This research explores customer segmentation with the utilization of K-means, hierarchical clustering, fuzzy C-means, along with DBSCAN to behavioural and demographic data. These algorithms are measured against each other using their silhouette score, Davies-Bouldin index, and cluster cohesion value. These results highlight that clustering can reveal meaningful patterns in customer data for improving personalized marketing strategies, customer retention, and profitability.

Paper ID-789

Optimizing Judicial Efficiency- A Software solution for Case Listing with Customized Case Flow Management

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Abstract—The most significant disadvantage of the administration of justice in India today is delay. The Indian judiciary has always struggled with delays and pending cases. Over the past five decades, India's judiciary proposed several solutions to address delays and pending cases. In the legal domain, a dynamic balance between automation and people is required. And also due to the increased complexity and volume of legal cases, there is a critical demand for improving efficiency, accuracy, and responsiveness in the judicial process. Artificial Intelligent(AI) is used to automate the process in the legal environment to make system operations more agile. The proposed framework will optimize the case organization and prioritize the development of user-friendly software integrated with Natural Language Processing(NLP) algorithms. The main objective is to develop a web application with differentiated case flow management. Implement AI algorithms for precise case categorization, fostering a seamless user experience, and ensuring adaptability across

diverse legal environments. The result of the proposed system improves case management processes with enhanced user experience, and more effective decision-making through prioritized case listings. Also support a transparent judicial system, ultimately supporting societal well-being by fostering a more responsive legal environment.

Paper ID-808

Advanced Techniques for Daily Gold Price Forecasting in India through Statistical Analysis and Predictive Modeling

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Abstract—Gold, a crucial asset in the Indian economy, is influenced by numerous factors, including economic indicators and market volatility. The methodology adopted in this study encompasses a comprehensive preprocessing framework tailored for the TFT model, effectively addressing challenges such as missing timesteps and incorporating key variables like the Consumer Price Index (CPI), USD to INR exchange rate, and other macroeconomic indicators that influence gold prices. The study involved conducting a thorough statistical analysis to understand the impact of these variables on gold prices, enabling the careful selection of features suitable for the model. A meticulous tuning of model parameters, including the learning rate, dropout rates, and hidden size, was carried out through a series of experimental trials aimed at optimizing performance. Each trial was evaluated based on several metrics, including Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE), and Root Mean Squared Error (RMSE), leading to significant improvements in the model's predictive capabilities. Additionally, various baseline models such as ARIMA, Linear Regression, and LSTM were benchmarked against the TFT model using a dataset spanning from 2011 to September 2024. The findings reveal that the TFT model not only surpasses traditional forecasting methods but also provides an efficient framework for understanding the impact of economic fluctuations on gold prices. The study also emphasizes the importance of interpretability in forecasting models, utilizing techniques like attention mechanisms and variable importance analysis to offer deeper insights into the model's decision-making process.

Paper ID-831

Product Authenticity Checker

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Abstract-Our research presents an innovative solution for authenticating products and combating counterfeiting using blockchain technology and QR code integration. The system establishes a decentralized platform that empowers manufacturers to register products with encrypted information on an Ethereum blockchain, generating QR codes to be affixed to each product. Consumers can verify product authenticity by scanning these QR codes, with

the platform providing real-time validation against the blockchain database. This approach ensures a high level of security, transparency, and efficiency in identifying genuine products and flagging counterfeits. The research demonstrates a significant advancement in supply chain management by offering a reliable and user-friendly method for authenticating products, ultimately fostering greater consumer trust and safeguarding brand integrity across various industries.

Paper ID-947

Unraveling Customer Sentiment in Indian Fashion E-Commerce: A BERT-Based Approach

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Abstract—With the surge of e-commerce growth in India, it has become very necessary for brands to understand the sentiments of customers so that they can improve their offerings and remain in competition. In this study, the transformer-based model, namely BERT is used for conducting sentiment analysis of customer reviews related to famous Indian clothing brands such as Mynta, Ajio and Tata Cliq. Our research utilizes BERT contextual embeddings for the capture of opinions and emotions in customer feedback. In this paper, we will look to prove the efficiency of BERT in sentiment classification regarding Indian fashion e-commerce by analyzing a large corpus of reviews from these popular platforms, as well as compare its accuracy to DistilBERT. The study will identify how this approach extracts meaningful insights from unstructured text data that turn very useful to the brands for understanding customer satisfaction and improvement areas. Sentiment analysis of online cloth industry is one of the rarely explored field and our paper introduces this idea, specifically for the Indian demographic. Our results contribute to the developing literature of sentiment analysis in the Indian e-commerce domain and illustrate some of the many ways in which state-of-the-art natural language processing techniques are put to work in retail.

Paper ID-959

Enhancing Operational Efficiency by Implementation of an ERP System in Engineering Institution - A Case Study

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Abstract—SAP (Systems, Applications and Products) is implemented in several business organizations to automate processes and have benefited from that. In recent past, educational institute enrollments count to several thousand and hence, an ERP is a necessity. Using SAP in educational institutions brings significant improvement in managing complex academic and administrative processes. In this application-oriented paper, the benefits of SAP implementation in an engineering institution have been studied. The study focused on four modules of SAP: finance, human resources, material management, and student life cycle management. It has been explored how SAP has helped to streamline routine operational activities and enhanced data accuracy. These improvements lead to better decision-making, benefiting stakeholders and reducing operational time, allowing them more time to focus on innovative activities. Budgeting and finance-related reporting have been optimized to a great extent by the implementation of the finance module. HR module facilitates payroll processes and staff management in an efficient way. Procurement processes and inventory management have been improved because of the Material Management module. Academic tracking has become easy as a result of the implementation of the student life cycle management module.

Paper ID-961

Deep Learning model for Option Pricing – Review

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Abstract— The Indian options market and in particular, the National Stock Exchange (NSE) segment of this marketspace poses a number of challenges when it comes to pricing option trades under high volatility regimes, low liquidity environments as driven by retail volume traders/ long positions and also rapidly changing regulatory ecosystems amongst others. These dynamics are often not captured by traditional pricing models such as the Black-Scholes model, therefore leading to inefficiencies in their prices. Deep learning, which can capture the non-linearities in data and handle quite a large set of features backed by parallel processing power promises to fill that void. There are several factors that any valid pricing model will have to take into account. These factors are underlying asset, strike price, time to expiration, volatility, interest rates, expected dividends and still there is a lot need in order to be able simulate option prices. which then encompass their significance when pricing an option. Furthermore, given their ability to integrate real-time market data (incorporating the India VIX), liquidity measures and economic indicators, these models can tackle some of the shortcomings that plague conventional methodologies. The other ultimate tools to achieve this goal are Option Greeks which plays a very important role in Options Pricing & Risk Management. This paper presents a detailed literature review of latest deep learning

architectures applied on option pricing. This study addresses these issues while also bringing novel contributions to an important area of research that has not received attention yet, e.g., marketspecific models nuanced with the Indian scenario and necessity for a hybrid deep learning approach combining state-of-the-art volatility forecasting alongside datadriven methods.

Paper ID-988

A Study on Application of Explainable AI for Credit Risk Management of an Individual

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Abstract— This study investigates the potential of Explainable AI (XAI) to enhance credit risk assessment. By employing machine learning models like Logistic Regression and Decision Tree, coupled with XAI techniques LIME and SHAP, the study aim to identify key factors influencing loan default risk. Our analysis, based on both primary and secondary datasets, reveals that XAI can provide valuable insights into model predictions, leading to more transparent and equitable decision-making in the credit lending process. The study's findings highlight the effectiveness of XAI in improving the reliability and interpretability of credit risk assessments.

Paper ID-1034

Stochastic Profit Optimization in Agile Supply Chains Using Monte Carlo Simulations and Markov Decision Processes

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Abstract— Our paper presents a stochastic multi-objective optimization model {minimize cost, maximize profits} designed to manage supply and demand uncertainties in a two-tier supply chain. The model optimizes supplier selection and order allocation by incorporating

key parameters such as defective rates, buyback agreements, and quantity discounts. Through Monte Carlo simulations and sensitivity analysis, the model evaluates the impacts of these parameters on supply chain performance, offering a resilient framework for making informed decisions. The research provides actionable strategies for enhancing operational efficiency, profitability, and customer satisfaction amidst supply chain uncertainties.

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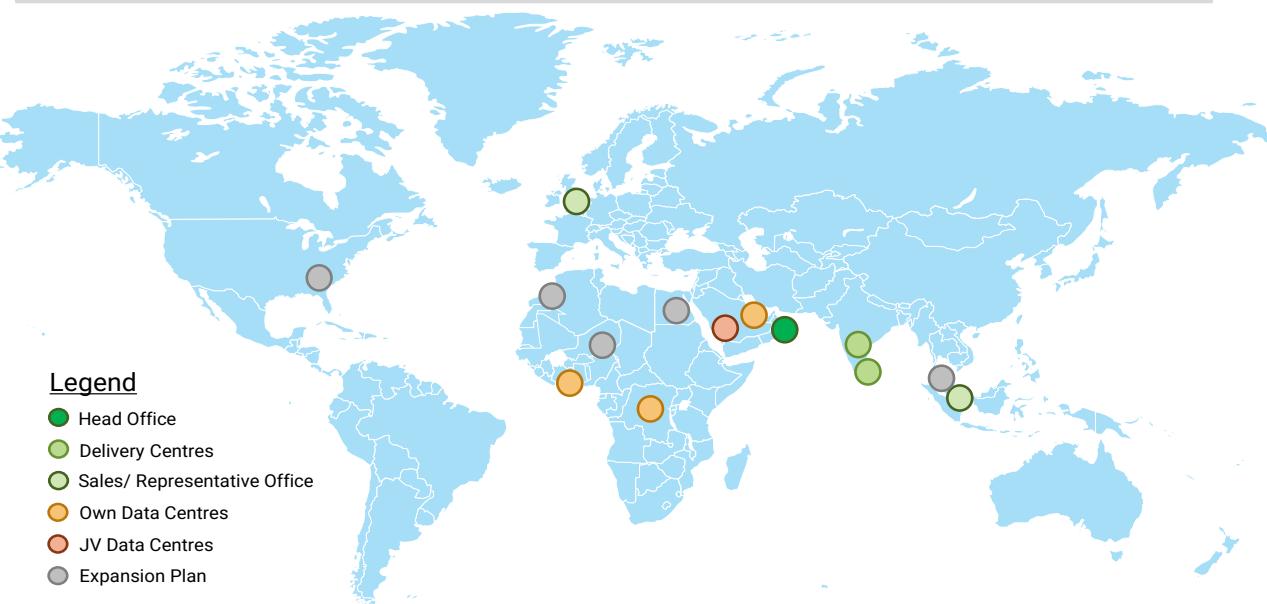


ATDXT is a fast-growing digital transformation and an innovative in-country datacentre and cloud solutions company. Headquartered in Dubai (UAE), ATDXT has a global footprint with a strong business focus on the emerging economies in Middle East, Africa, LATAM & Asia Pacific. Currently, expanding into US, UKI, EU & ANZ

ATDXT specializes in offering smart, secure and sustainable in-country data centre and cloud technologies that aim to revolutionize the end-to-end adoption of digital transformation strategies and solutions through cutting-edge niche technologies across GovTech & FinTech industry verticals.

ATDXT adopted a partnership business model providing human and technical capital investment whilst engaging with multiple technology partners to create bespoke solutions; local partners for infrastructure and on the ground presence & to de-risk contracts.

Obopay - "We are an RBI Regulated Fintech Company in India, powering 11% of the Global Mobile Money transactions. We are currently issuing 7Mn cards annually in association with Mastercard"



"ATDXT provides an open architecture technology platform"



Infrastructure Management



Cyber Security Services



E-Gov Services



FinTech Services



HealthTech Services



E-Learning & Dev

"ATDXT developed rich eco-system of customers & partners"



DigitalX

Microsoft



Hewlett Packard Enterprise

channels by stc

infor

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NOKIA

UiPath™

ORACLE CLOUD

DELL

KOFAX

Siemens

ABB

ORACLE

UiPath™

ORACLE CLOUD

DELL

SERVICES & SOLUTIONS

- **Fintech Solutions:** ATDXT's Indy solution offers a comprehensive fintech solution to its clients including but not limited to mobile money, digital wallet, youth banking, digital banking, travel tourism and fare collection, digital lending and leasing.
- **DxT solutions:** An end to end GovTech & Fintech solutions currently driving several Govts and Banks (Both Fiat & Digital). Horizontal solutions including, Artificial Intelligence; Block Chain; E-commerce; Business Intelligence; Data Warehousing; Big Data and Analytics; Server-less Computing; Micro Service Applications; Internet of Things/Everything; has significant focus too
- **Data centre solutions:** Cloud Services; Managed Services; Backup and Data Recovery; Colocation Services; Data Centre Services; Infrastructure-As-A-Service; Static VMs/VPS Hosting; Disaster Recovery; DevOps; Business Continuity Planning amongst others
- **Digital Security/ Others:** Digital security solutions (SOC-as-a-service; NOC-as-a-service; Security insight service); White labelled partnerships for (Renewable energy; Switchyards, Transmission lines; Rural electrification; Airport automation; Healthcare solutions etc.)
- **ATAL**, the AT Auto Launcher is an end to end in-house built ATDXT IP, that scales IT infrastructure utilisation to zero. It seamlessly launches itself across 36 locations (and more – WIP) upon access (load).
- **Developed in-house** is an AI based software to study IT systems that manages, detects and prevents routine system failures.

VALUE PROPOSITION

- **Attractive market dynamics:** ATDXT operates in the high growth markets, focusing on cloud driven digital transformation with minimal competition and high demand.
- **Business model:** Capex light highly scalable business model that places an emphasis on technology & human capital.
- **Global Partnership:** ATDXT has entered into Global Partnership with global leaders in IT sectors towards setting up hi-tech and sustainable infrastructure
- **Unparalleled Fintech prowess:** An RBI regulated entity, OBOPAY (fully owned ATDXT subsidy), offers globally acknowledged and tested fintech products. It's powered by patented technology to drive 5 billion+ transactions till date with zero variance cases with strong have presence in 4 out of the 5 leading money markets in the world.
- **Significant Achievements:** The company has secured large contracts which include but not limited to:
 - (a) Infrastructure partner to the **Arab League** with focus on 22 Arab countries.
 - (b) Host 2 data centers for **TCS** in APAC (6 more in progress)
 - (c) Built **23 data centers** in KSA for a large Govt entity in **KSA**
 - (d) **Digital Nova** - ATDXT Digital Bank in Republic of Congo
 - (e) Digi Transformation project in **Democratic Republic of Congo**;
 - (f) Robotic process automation for a large GCC utility company;
 - (g) Digital Payment project in **Indonesia** using proprietary **AT Pay**;
 - (h) **Digital Wallets** and other Fintech engagements with leading Banks and Telecommunication companies in **Sri Lanka**

- **Founder & management team:** Founded in 2018 by Dr GS Murthy, a Visionary with 26+ years of track record of founding, developing and nurturing robust business from inception. Dr. Murthy brings deep proficiency in transforming traditional IT and driving innovations through Data Centres and Cloud, Big data, AI, IOT and Emerging Technologies. ATDXT boasts of a strong management team comprising of industry experts and veterans from Hewlett Packard, ORACLE, IBM, TCS, etc. who in a short span have made ATDXT a leading name in data centre and digital transformation solutions across industry verticals.



CtrlS Group enables digital transformation for their customers worldwide by taking care of their mission-critical workloads. The AI and cloud-ready entity is a frontrunner in offering cutting-edge, sustainable digital infrastructure solutions.

CtrlS Datacenters, which began its operations in 2007, operates 15 datacenters across eight key markets and is set to have over 600MW of datacenter capacity by 2029, from over 250MW now. The company is leading the charge on embracing renewable energy for a sustainable future. CtrlS has announced its plans to explore new overseas markets in Southeast Asia and Middle East, with Thailand being the first international market foray.



Arcadis: Designing a Sustainable Future Together

Arcadis is a global leader in sustainable design, engineering, digital, and consultancy solutions for natural and built assets. Founded in 1888 in the Netherlands, we have over 136 years of expertise, a network of 36,000 professionals, and a presence in 70+ countries. Our team—ranging from architects and data analysts to engineers and sustainability experts—is united by a passion for enhancing quality of life.

With core competencies in architecture, urban design, engineering, smart city initiatives, and environmental services, Arcadis builds the resilient cities, communities, and spaces of tomorrow. We bring together world-class talent to solve today's most pressing urban challenges with a commitment to sustainability, inclusivity, and innovation.

What We Offer:

- Architecture & Urban Design: Creating spaces that are innovative, functional, and community-focused.
- Engineering & Planning: Delivering sustainable solutions in transportation, civil engineering, and environmental planning.
- Smart Cities & Digital: Harnessing data-driven solutions to enhance urban life through digital infrastructure.
- Environmental Services: Providing consulting and remediation to protect our planet.

Transforming Indian Cities with Innovation

Our work in India spans Intelligent Transportation Systems (ITS), Information and Communications Technology (ICT), urban planning, and more. Notable projects include:

- **Adaptive Traffic Signal Control (ATSC) for Bengaluru and Hyderabad**
- **Integrated Traffic Management Systems (ITMS) for Hyderabad and Cyberabad**
- **Smart City Projects in Bhubaneswar and AURIC-Shendra**
- **BharatNet Projects across India as program management consultants**
- **ASTraM – AI-driven Big Data Analytics for Bengaluru Traffic Police, enabling data-driven decisions in urban traffic management***

Our projects are making Indian cities more accessible, safer, and sustainable. As an industry leader, Arcadis is committed to shaping the future and advancing national development goals through collaboration, innovation, and community engagement.

Join Us

At Arcadis, students will find opportunities to contribute to impactful projects in urban design, traffic management, and digital solutions, gaining hands-on experience with cutting-edge technology. We invite the college to collaborate with us on research and technical projects to advance industry-leading solutions for a sustainable future.

**Products: Sugar , Power , Alcohol , Biocompost****Production Units****K M Doddi**

As the primary location of our company's operations, the unit at K.M Doddi in Mandya district is the largest. Its Sugar division has a crushing capacity of 10 Lakh tonnes per annum. Meanwhile, our Distillery division is capable of producing ENA 50,000 litres per day. Since April 2008, we have also had a Co-Generation power plant with a capacity of 26 MW.

Hemavathi

Acquired in November 2007, our unit at Hemavathi in Hassan district has a crushing capacity of 1250 TCD. We are in the process of expanding this capacity to 3500 TCD complete with an 18 MW Co-Generation Power plant to cater to our power requirements.

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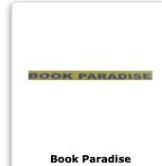
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Institution Profile

RV College of Engineering (RVCE) is a prestigious self-financing engineering college established in 1963. It is affiliated with Visvesvaraya Technological University (VTU) Belagavi and operated by Rashtreeya Sikshana Samithi Trust (RSST). RVCE offers 15 Bachelor's and 14 Master's programs with research centers in all departments. The institution's vision emphasizes quality technical education, interdisciplinary research, innovation and sustainable technology.

RVCE has recently achieved several notable milestones.

- Secured the **99th rank** in the National Institutional Ranking Framework (NIRF) 2024.
- Globally, it was placed in the **1501+ bracket** in the prestigious **Times Higher Education World University Rankings 2024**, and ranked **601+ in the Asia University Rankings 2024**.
- RVCE got "**AAA**" rating for its NPTEL (Local Chapter) performance, earning it the top spot in Karnataka for the Jan-Apr 2024 term.

RVCE has an impressive publication record with over 1500 national and international journal and conference publications. It has filed 70 patents, published 69 patents, and been granted 39 patents. The institution has completed sponsored research and consultancy projects worth -16.0 crores in the last three years. Additionally, RVCE has established 4 Centers of Competence and 21 Centers of Excellence in various domains. The department of Biotechnology, Electronics and Communication, Mechanical Engineering, Computer Science Engineering, and the Master's programs were accredited for 6 years under the Tier 1 category, showcasing the institution's commitment to high-quality education.

RVCE actively collaborates with prestigious international universities to enhance academic and research initiatives. These partnerships include institutions such as the Technical University of Applied Sciences Würzburg-Schweinfurt (THWS), Germany; Florida International University, Miami, USA; RWTH Aachen University, Germany; and the University of Applied Sciences Rosenheim, Germany. These collaborations foster global exchange, joint research projects, and academic growth, providing students and faculty with valuable international exposure.

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