Volume-2 Issue-6

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SCHOOL OF ENGINEERING

SOE-BULLETIN

The Official Newsletter of **School of Engineering**

June 2024

www.dsu.edu.in

SCHOOL OF ENGINEERING

Vision

Transform lives through excellence in engineering education, research and innovation with an emphasis on sustainability, inclusive technologies and global needs.

Mission

1. Design and deliver contemporary engineering curricula to address regional and global needs while emphasizing ethics, values, integrity and regional relevance.
2. Carryout high impact academic research, industry projects and innovation activities with active student engagement to advance science and engineering knowledge and state-of-the-art industry practices.
3. Develop regional and national leaders to advance the society and economy.

INDEX

SCHOOL OF
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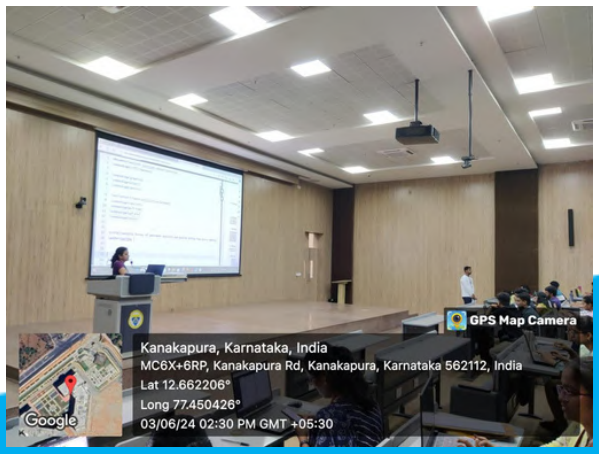
WORKSHOPS / SKILL DEVELOPMENT PROGRAMS

“Workshop on LaTeX Fundamentals: Crafting Research Articles, Presentations and Reports”

The Department of Computer Science and Engineering (CSE) organized a workshop on LaTeX Fundamentals: Crafting Research Articles, Presentations and Reports on 3rd June 2024. This workshop aimed to equip participants with the essential skills to efficiently use LaTeX, a powerful typesetting system widely used for technical and scientific documentation. Dr. Savitha Hiremath, Associate Professor, CSE department, led the workshop as the resource person. With her extensive experience and expertise in LaTeX, Dr. Savitha Hiremath provided comprehensive insights and practical knowledge to the students. Her guidance was instrumental in helping participants understand the intricacies of LaTeX and its applications in academic and professional writing. The workshop was coordinated by Dr. Rajesh T M, Associate Professor, CSE and Prof. Manjusha Kulkarni, Research Scholar, CSE. They both played a crucial role in organizing and overseeing the workshop, ensuring its smooth execution.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“One-Day Workshop on Essential Computing Skills for Research Methodology”

The Department of Computer Science and Engineering, in collaboration with the College of Physiotherapy, organized a one-day workshop titled "Essential Computing Skills for Research Methodology" on 20th June 2024. This workshop aimed to equip participants with vital computing skills necessary for conducting and enhancing research methodologies across various disciplines. The workshop featured two distinguished resource persons Dr. Seema Tharannum, Professor, Department of Biological Sciences and Dr. Savitha Hiremath, Associate Professor, Department of CSE.

The one-day workshop on “Essential Computing Skills for Research Methodology” was a resounding success, providing valuable learning opportunities for students from various disciplines. The collaborative effort between the Department of Computer Science and Engineering and the College of Physiotherapy highlighted the importance of interdisciplinary approaches in enhancing research capabilities. The Department of CSE remains committed to organizing such enriching programs that contribute to the academic and professional growth of its members, fostering a culture of excellence and innovation in research.

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WEBINARS / SEMINARS / TECHNICAL TALKS

“TECH TALK ON SUSTAINABLE ENVIRONMENTAL PRACTICES”

Prof. Abhijith N, Assistant Professor – Department of Mechanical Engineering delivered a talk highlighting efforts/initiatives taken by DSU for sustainable environmental practices in the Harohalli campus to DSU-School of Nursing and Physiotherapy on the occasion of World Environmental Day, June 5th, 2024. He has also highlighted the broad insight into the work done by the Carbon Neutral campus committee and Initiatives taken by DSU-SOE on the occasion of Environmental Day in previous years. Students of Nursing and Physiotherapy were very happy to learn the sustainable environmental practices taken by us and showed keen interest in coordinating with other schools to carry Sustainable practices in the future in a big way.

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EVENTS: PROFESSIONAL SOCIETIES / CLUB ACTIVITIES

“External Audit of the Curriculum - Circuit - Branches, SoE”

A two-day event was planned on how to develop the curriculum. Day 1 event with 4 sessions was organized on 22nd June 2024 at campus 4 and started as per the schedule by welcoming the external resource person Dr. Ashok Rao. A total of 59 faculty across all departments of SOE attended the event.

Dr. Ashok Rao discussed the following points during session 1, 2 & 3

- Overview and Insight into Curriculum Development.
- Importance and impactful aspects of NEP/SEP 2020.
- Structure of a useful and relevant curriculum.
- Discussion on subjects that are currently there and possible alternatives and implications.
- Clarity through interaction with academic and industry experts.
- Teaching Learning Process.
- Horizons of technology disruptions.
- Phases of Learning Competency.
- Education for entrepreneurship and social responsibility.
- ADDIE Model of Curriculum Development

Session 4, interaction with Experts and Clarifications on Curriculum was started as per the schedule and conducted parallel for circuit branches: ECE & CS-clusters. During the session industry experts gave their insights and overview on how the curriculum needs to be designed and what are the factors that need to be considered in framing courses that meet the current/upcoming technology. Followed by experts addressed the issues/questionaries raised by the faculty members. The session concluded by thanking all the resource persons for sharing their thoughts and insights into the curriculum development process and the day 2 event is planned in continuation of this curriculum development to work deeply with the department’s specific curriculum development process.


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Director R&D
Storage Virtualization
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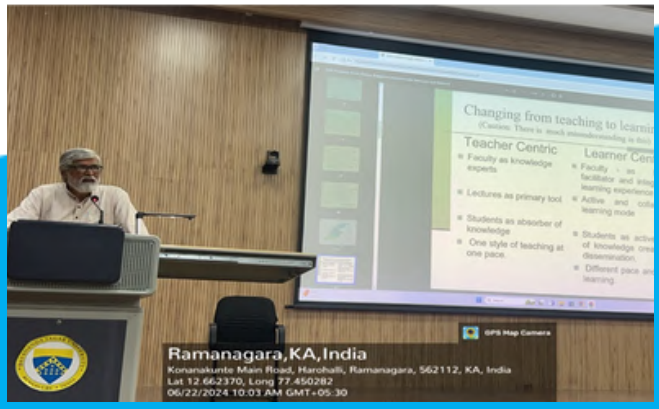
Changing from teaching to learning
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Lectures as primary tool
Students as absorber of knowledge
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DSU: Can we take a Decision now??

“BoS MEETING” – AIML

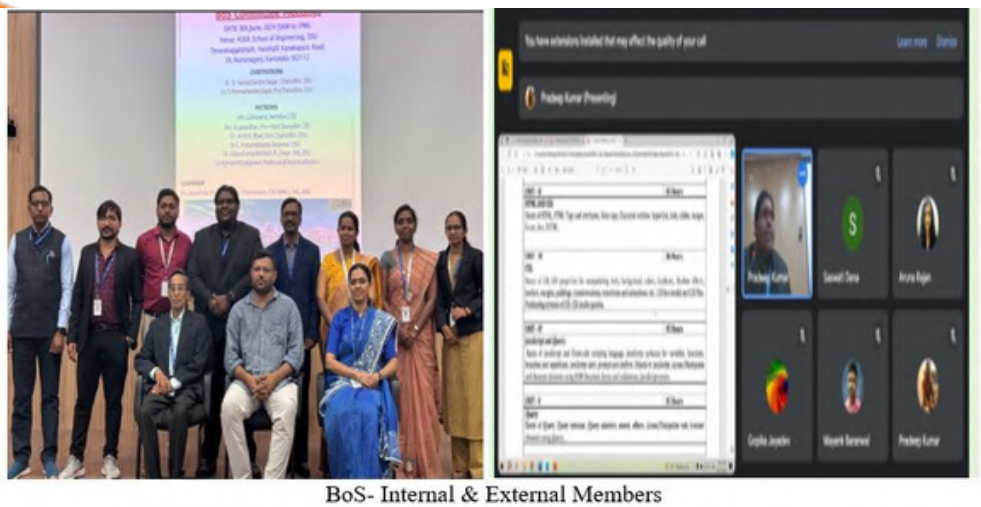
The Board of Studies report for the Department of Computer Science and Engineering (Artificial Intelligence & Machine Learning) for the academic year 2023-2024 provides a comprehensive review of the department's activities, curriculum updates and strategic developments. Significant achievements include the introduction of new AI and Machine Learning courses and successful collaboration with industry partners. The report also identifies key challenges such as the need for more faculty training and enhancement of online learning platforms.

The BoS Meeting started with a welcome speech by Dr. Jayavrinda Vrindavanam, Chairperson of the CSE (AI&ML) Department. She welcomed all the external and internal members of the board of studies, Prof. Pradeep briefly explained the purpose of BoS and the details of the academic years for organizing the BoS. Dr. Joshuva Arockia Dhanaraj started with the presentation of the 2022-2026 Batch (5th to 8th Sem) scheme and syllabus. Prof. Pradeep Kumar started with the presentation of the 2021-2025 Batch (7th & 8th sem) scheme and syllabus. Dr. Vegi Fernando started with the presentation of the 2023-2027 Batch (3rd to 8th Sem) scheme and syllabus. External panel member gave their insights for all the batch syllabus.

Dr. jayavrinda Vrindavanam welcoming all the BoS members

Dr. Udaya Kumar Reddy K.R. Dean SoE attending BoS-AIML

Dr. Jayavrinda Vrindavanam greeting Dr. Ajin Joseph



BoS- Internal & External Members

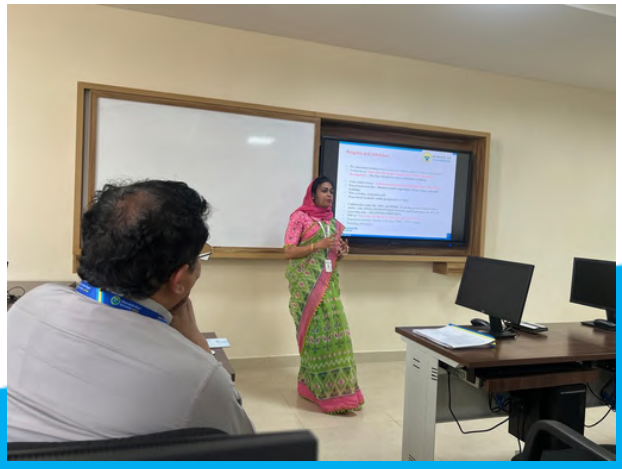
“INAUGURATION CEREMONY OF IEEE RAS and CIS SBC”

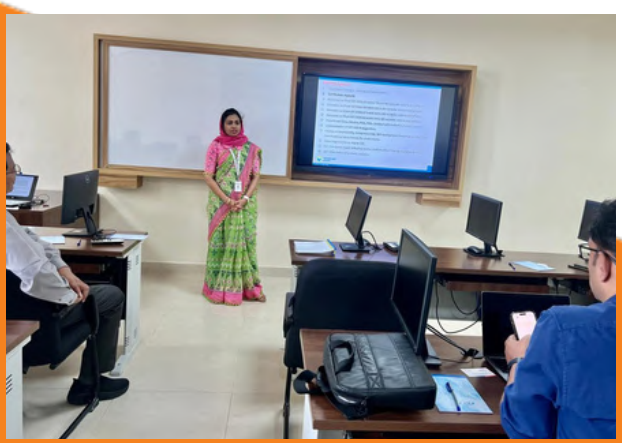
Dayananda Sagar University inaugurated two student chapters on Monday 3rd June 2024 IEEE Computational Intelligence Society (CIS) and IEEE Robotics and Automation Society (RAS), was organized by the department of CSE (AI&ML) in association with the IEEE Student Branch, DSU. Both chapters deal with the most important topic in the world now and will expose students to these topics.

The ceremony was held in presence of Dr. Sumona Ashok, Chair IEEE CIS Bangalore, Dr. Mangala Gowri S. G., Secretory IEEE RAS Bangalore, Dr. Uday Kumar Reddy K. R., Dean SoE DSU, Dr. Jayavrinda Vrindavanam V., Chairperson CSE (AI&ML) SoE DSU, Dr. Arun Balodi, Chairperson ECE SoE DSU, Dr. Pushpa Mala S., IEEE Student Branch Counsellor DSU and Prof. Subhash Mondal, Faculty Advisor IEEE CIS & RAS SBC, DSU.

“BOARD OF STUDIES MEETING” - CST

The Board of Studies meeting was conducted on 10/06/2024 at the Department of Computer Science & Technology, Dayananda Sagar University. The meeting began on time, using blended mode. Dr. M. Shahina Parveen, Professor and Chairperson of the Department of Computer Science and Technology, started the meeting by welcoming the members of the BoS and the Department Curriculum Committee. Dr. M. Shahina Parveen briefed all attendees on the department's accomplishments. The main agenda was to discuss the scheme and syllabus for the batches 2021-25, 2022-26, 2023-27,2024-28, Department Vision, Mission, PEOs and PSOs. (Inclined with institutional vision, mission), Implementation of NEP, SEP 2020 & suggestions, Courses on Employability, Entrepreneurship, Skill development, Percentage of new courses introduced and MOOC Courses for credit transfer, Minor Degree & Honours degree of CST, List of programs clearly indicating course, credit/elective in the CBCS program structure. Dr. B Surendiran (Associate Professor, School of Computer Science & Engineering, NIT Puducherry, Karaikal), Mr. Neerav Joshipura (Founder Director, SoftN Enterprises, DSU, Bengaluru), Mr. Shivraj (Product Engineer, Juspay Pvt. Ltd, Bengaluru) and internal committee members joined for the meeting and reviewed all the schemes and syllabus and shared their suggestions and comments which will be incorporated in the action taken report based on the minutes recorded during the meeting.



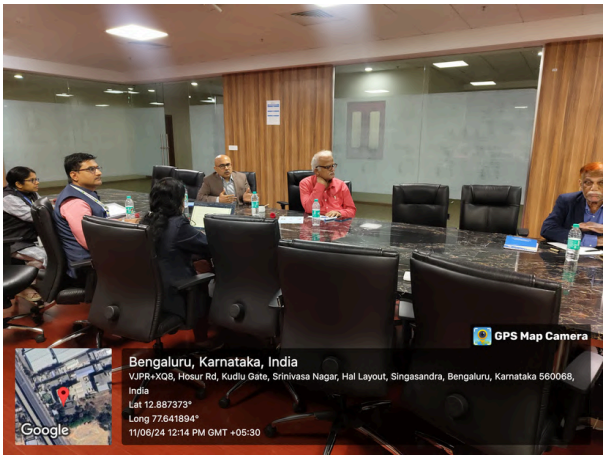


“Collaboration and Discussion with DERBI on Potential Business Startups”

Collaboration and Discussion with DERBI on Potential Business Startups session was conducted by the CST department on 12/06/2024 at Dayananda Sagar University, Kudlu Gate campus. 6th-semester students shared their project work and the fieldwork carried out so far. Mr. Satyanarayana B. V. appreciated the work done by the students so far. He said more customers need to be tested and should refine the business plan as appropriate. He also said to continue the activities and keep the momentum. He should be informed once the Karnataka Elevate Registrations are called for, so he can help the students to process further. He also suggested the cost analysis can be done better. Customer’s acquisition and Value proposition should be clearly reflected.

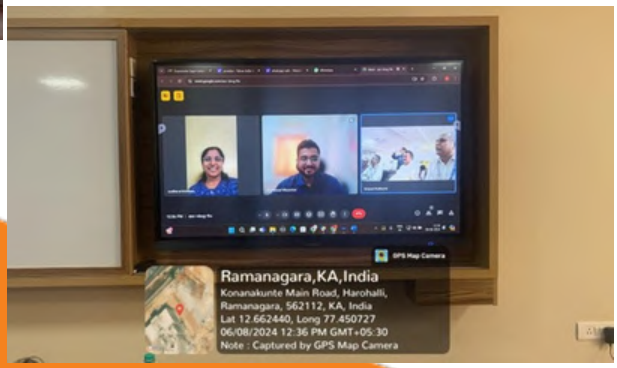
“BoS MEETING” – CYBER SECURITY

The Board of Studies of the Department of CSE (Cyber Security) meeting was held on 11th June 2024 in the Board Room, A Block DSU Innovative Campus. Dr. Uday Kumar Reddy K R, Dean SoE, welcomed BoS members and gave an overall brief of the Curriculum. BoS members, Industry experts Dr. Uday Shankar Puranik, Director, AI & Cyber Security, MGI, USA and Science Writer, Mr.Sajeev Nair, Cyber Incident Response Team (CIRT) Accenture, Bangalore and Dr. Ravimittal S, Former Professor, IITM, Visiting Professor IIT Mandi and IIT Goa were present and suggested their recommendations in the curriculum. BoS conveyor Prof. Ranjima presented the updated curriculum and internal BoS member Prof. Naveen Kulkarni noted the suggestions by external members and explained the interconnections of subjects and total credits and other things related to the curriculum.



“BOARD OF STUDIES MEETING” - AEROSPACE

The Board of Studies meeting was conducted on 8/6/2024 at the Department of Aerospace Engineering, Dayananda Sagar University. The main agenda was to discuss the scheme and syllabus for the batches of 2023-2027,2024-2028 and also for the higher semester for the batches 2021-2025 and 2022-2026.
Dr. K. Balamurugan Principal Scientist & Group Head, Department of Mechanical Systems, Design Group, NGL, Bengaluru, Dr. Sudha Srinivasan Scientist G, Group Director (IV&V-WS)Aeronautical Development Agency, Mr. Rishabsai Jr. Executive CSS-MRO, Lufthansa Technik Services India joined for the meeting and reviewed all the scheme and syllabus & shared their suggestions and comments which will be incorporated in the action taken report based on the minutes recorded during the meeting.



“Inauguration Ceremony of IEEE Computer Society Bangalore Chapter - STUDENT CHAPTER”

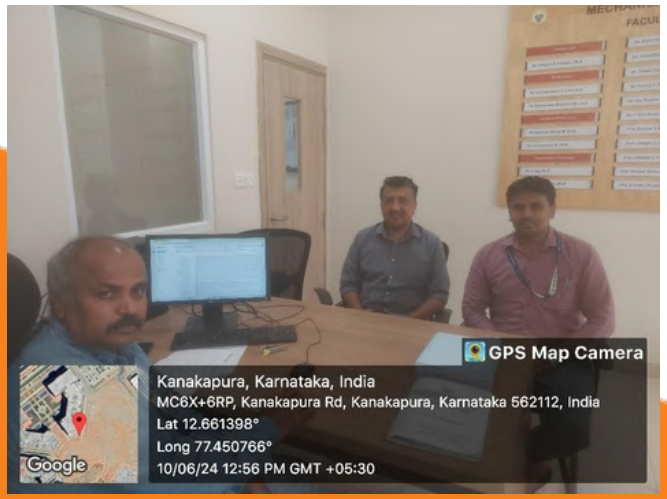
The Department of Computer Science and Engineering at Dayananda Sagar University proudly hosted the inauguration ceremony of the IEEE Computer Society Bangalore Chapter-STUDENT CHAPTER, on 7th June 2024. This significant event marked a milestone in the university’s journey towards fostering a culture of innovation, collaboration and academic excellence among its students and faculty.

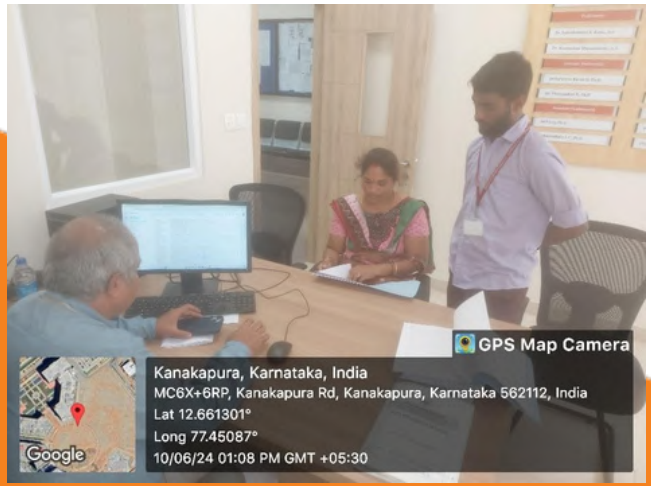
The inauguration ceremony was graced by the presence of the esteemed chief guest, Dr. D N Sujatha, Professor, Department of Computer Applications, BMS College of Engineering, IEEE Chair Computer Society Bangalore Chapter. Dr. Sujatha with her extensive academic and professional experience, shared invaluable insights and inspired the attendees with her words of wisdom. Her presence added immense value to the event, highlighting the importance of such initiatives in the academic community. The Student Branch Faculty Advisor for the newly inaugurated IEEE Computer Society Bangalore Chapter-Student Chapter is Dr. Basavaraj N Hiremath. Dr. Basavaraj N Hiremath, with his dedication and vision, has been instrumental in the establishment of this chapter. His guidance and support are expected to drive the chapter towards achieving its goals and fostering a vibrant community of young professionals and researchers.

“PARENT-TEACHER MEETING FOR 4TH SEMESTER MECHANICAL ENGINEERING STUDENTS”

The Parent-Teacher Meeting (PTM) for the 4th-semester Mechanical Engineering students was successfully held on the 10th of June 2024 at the DSU Main campus, Harohalli. The meeting aimed to provide a platform for interaction between parents and faculty, addressing academic performance, behavioral aspects and overall development of the students. The meeting witnessed active participation from both parents and teachers. Faculty members from all relevant subjects were present, including Mechanical Department chairman Dr. Vinayak Hemadri and 4th-semester class advisor Dr. Rahul Kumar. The academic performance of students in MSE 1 and MSE 2 was presented by individual faculties.

An open forum was conducted where parents could share their concerns and suggestions. Feedback on teaching methods, campus facilities and student support services was collected. Our chairman thanked the parents for their involvement and assured them of continuous efforts to enhance the educational experience.





“Inauguration of IEEE Student Society Chapters”

Dayananda Sagar University in Bengaluru proudly celebrated the successful inauguration of the following IEEE Student Society Chapters on June 7, 2024:

1. IEEE Communication Society
2. IEEE Signal Processing Society
3. IEEE Microwave Theory and Technology Society
4. IEEE Computer Society

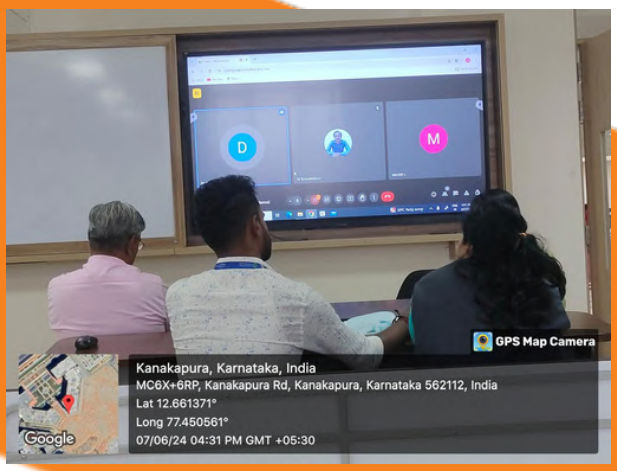
This event marks a significant achievement for the university, enhancing opportunities for students to engage in cutting-edge research, professional development and interdisciplinary collaboration in the fields of communication, signal processing, microwave technology and computer science.

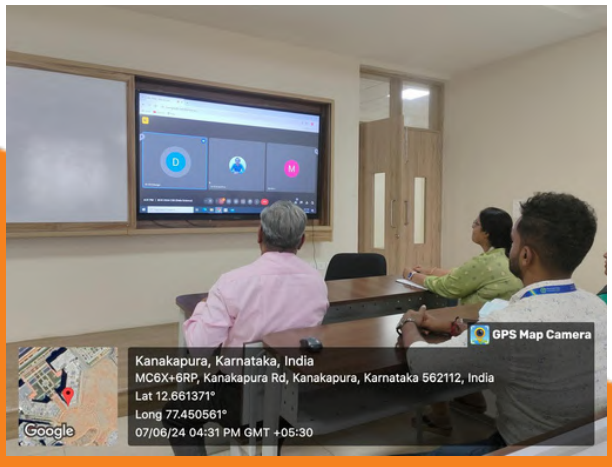
“Board of Studies Meeting” – Data Science

The BoS Members are discussed as follows:

1. Vision and Mission of Computer Science and Engineering (Data Science)
2. Program Educational Objectives (PEOs)
3. Program Specific Outcomes (PSOs)
4. Stakeholder feedback on curriculum (students, faculty, parents)
5. Review and discussion of the 2022 scheme and Choice Based Credit System (CBCS) syllabus for the 5th - 8th semester of B.Tech in Computer Science and Engineering (Data Science)
6. Review and discussion of the 2023 scheme and CBCS syllabus for the 3rd - 8th semester of BTech in Computer Science and Engineering (Data Science)
7. Review and discussion of the 2023 scheme and CBCS syllabus for the 1st - 2nd semester of BTech in Computer Science and Engineering (Data Science)
8. Overall recommendations and guidance
9. Concluding remarks

These discussions and reviews are essential for ensuring the quality and relevance of the department, the recommendations and guidance provided will help in enhancing the educational experience for students and aligning the curriculum with industry standards and best practices.



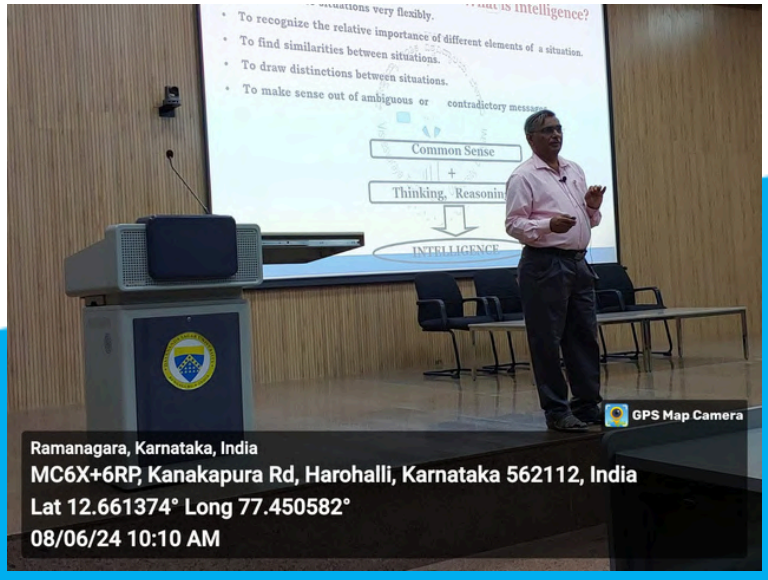


Expert Talk On
“Beginner's Guide to Machine Learning and Neural Networks”

The DataScience@DSU Club, the Department of CSE (Data Science) organized a Workshop on “Beginner's Guide to Machine Learning and Neural Networks” held on 8th June 2024 at 9:00 AM- 1:00 PM organized by Dr. Shaila S G, Professor and Chairperson (DS), Prof. Shivamma D, Assistant Professor, Dept. of CSE (Data Science) and Prof. Monish L, Assistant Professor, Dept. of CSE (Data Science). More than 40+ students have been registered for the event.

The event began with an overview of AI and neural networks, emphasizing their ability to simulate brain function with billions of interconnected nerve cells. Key topics included Static Neural Networks, their structure and the role of threshold and activation functions in processing inputs. The seminar also covered Artificial Neural Networks (ANN), explaining their architecture and training processes.

Participants learned about the perceptron model and the importance of multilayer neural networks in capturing complex data patterns. Interactive workshop sessions provided practical experience, enhancing participants' understanding of neural network applications in machine learning.


To recognize the relative importance of different elements of a situation.
To find similarities between situations.
To draw distinctions between situations.
To make sense out of ambiguous or
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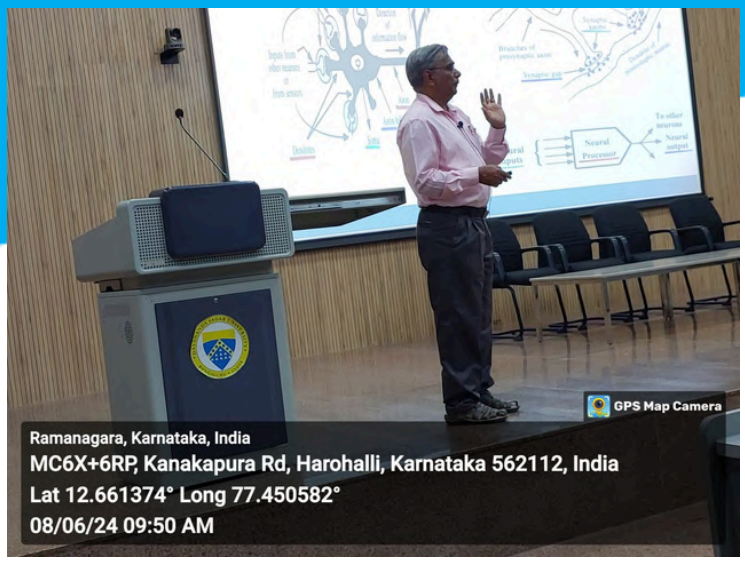
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INDUSTRIAL VISITS

Industrial Visit to “GTTC”

On the occasion of World Environment Day (05/06/2024), our department had the opportunity to visit the Government Tool Room and Training Centre (GTTC) in Rajajinagar. The visit commenced with a warm welcome from Dr. Gagnadhar, the Head of the Department at GTTC. He provided an insightful overview of the institution’s branches, its origins and the impressive placement packages of its students. This introductory session set the stage for a day filled with learning and exploration.

During our visit, we toured GTTC’s advanced infrastructure, including cutting-edge laboratories and workshops equipped with precision tools. This provided us with practical exposure to the latest machinery and hands-on training in various technical skills. Interaction with experienced industry experts enriched our knowledge of current industrial practices and emerging technologies. The visit emphasized the significance of continuous learning and adaptability, showcasing the critical role that institutions like GTTC play in bridging the gap between theoretical education and practical application in the industrial sector.


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Dayananda Sagar University

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FACULTY ACHIEVEMENTS

Dr. Bhavana Rikhari
Assistant Professor
Department of Chemistry

- Dr. Bhavana Rikhari has published a book chapter titled “Progress in Nano-hybrid Smart Coatings for Aerospace Applications” in the book Nano-hybrid Smart Coatings: Advancements in Industrial Efficiency and Corrosion Resistance, published by the American Chemical Society (ACS).

Chapter 12

Progress Nano-hybrid Smart Coatings for Aerospace Applications

Gururaj Kudur Jayaprakash,[1,*] Bhavana Rikhari,[2,*] and Praveen Naik[1]

[1]Department of Chemistry, Nitte Meenakshi Institute of Technology, Bangalore, Karnataka, 560064, India

[2]Department of Chemistry, School of Engineering, Dayananda Sagar University, Harohalli, Ramanagara - 562112, Karnataka, India

* E-mail: rajguru97@gmail.com and 28rikharibhavana@gmail.com
G.K.J. and B.R. contributed equally

Aluminium and its alloys are indispensable in aerospace for its exceptional weight-to-strength ratio, corrosion resistance, and versatility. Various coatings, including anodizing, paint, and self-healing options, safeguard aluminium and its alloys against corrosion, wear, and environmental factors. Nanocoatings, which are made of composite, metallic, and ceramic elements, offer a strong protective layer against corrosion. While aluminium faces corrosion challenges such as pitting, intergranular, and exfoliation corrosion, its role in the aerospace industry remains pivotal. Advances in nanocoatings, particularly self-healing varieties, offer promise for even greater protection, ensuring the longevity and reliability of aluminium components.

Prof. Ayain John
Assistant Professor
Department of CSE(AIML)

- Prof. Ayain John has published a research article titled “Enhancing Customer Retention through Feature Selection and XGBoost Classification for Churn Prediction” at the International Conference on Smart Systems for Applications in Electrical Sciences (ICSSES) in June 2024.

IEEE BANGALORE SECTION

SIDDAGANGA INSTITUTE OF TECHNOLOGY
(AN AUTONOMOUS INSTITUTE AFFILIATED TO VTU, BELAGAVI
APPROVED BY AICTE, NEW DELHI, ACCREDITED BY NAAC WITH 'A++' GRADE
AND ISO 9001:2015 CERTIFIED)
TUMAKURU, KARNATAKA - 572103

INTERNATIONAL CONFERENCE ON
SMART SYSTEMS FOR APPLICATIONS IN ELECTRICAL SCIENCES
[ICSSES-2024]

CERTIFICATE OF PARTICIPATION

THIS CERTIFICATE IS PRESENTED TO

Mr/Ms/Dr Ayain john
of Dayananda Sagar University for presenting the paper titled
Enhancing Customer Retention through Feature Selection and XGBoost Classification for Churn Prediction
in the International Conference on Smart Systems for Applications in Electrical Sciences - 2024 held at SIT, Tumakuru on 3rd and 4th MAY 2024

Dr. G R Kiranmayi
Technical Chair, ICSSES-2024
Associate Professor, Dept. of EIE, SIT, Tumakuru

Dr. H K E Latha
Organizing Chair, ICSSES-2024
Professor and Head, Dept. of EIE, SIT, Tumakuru

Dr. S V Dinesh
General Chair, ICSSES-2024
Principal
SIT, Tumakuru

BEUMERGROUP · em electronix private limited Bangalore · RKCPL

- Prof. Ayain John has participated in one week of FDP on “Advanced Computer Vision for Image & Video Analysis and Applications” organized by the Department of CS&E at the Indian Institute of Information Technology, Kottayam from 17th to 21st June 2024.

Prof. Suryanarayana GK
Professor
Department of Aerospace

- Prof. Suryanarayana GK, Mr. Buddhadeb Nath, Mr. N Srinivasan, Mr. K, N Murugan, Mr. T Arunkumar, Mr. Y Gireesh, Mr. M Prasath have published a research article titled “Alleviation of SWBLI over the Payload of a Launch Vehicle by Change of Nose Shape” in Journal of Aerospace Science and Technology, Elsevier Publications.

Prof. Suvika K V
Assistant Professor
Department of CSE

Prof. Arpita Paria
Assistant Professor
Department of CSE

- Prof Suvika K V and Prof. Arpita Paria, Assistant Professors have successfully attended a one-week National Level online Workshop on “Next-gen Web Tech Intensive: React, Angular JS, Kubernetes, Docker, MongoDB” organized by the Dept. of ISE in association with Start-Up EduCast, CMR Institute of Technology, Bangalore from 27/05/2024 to 31/05/2024.

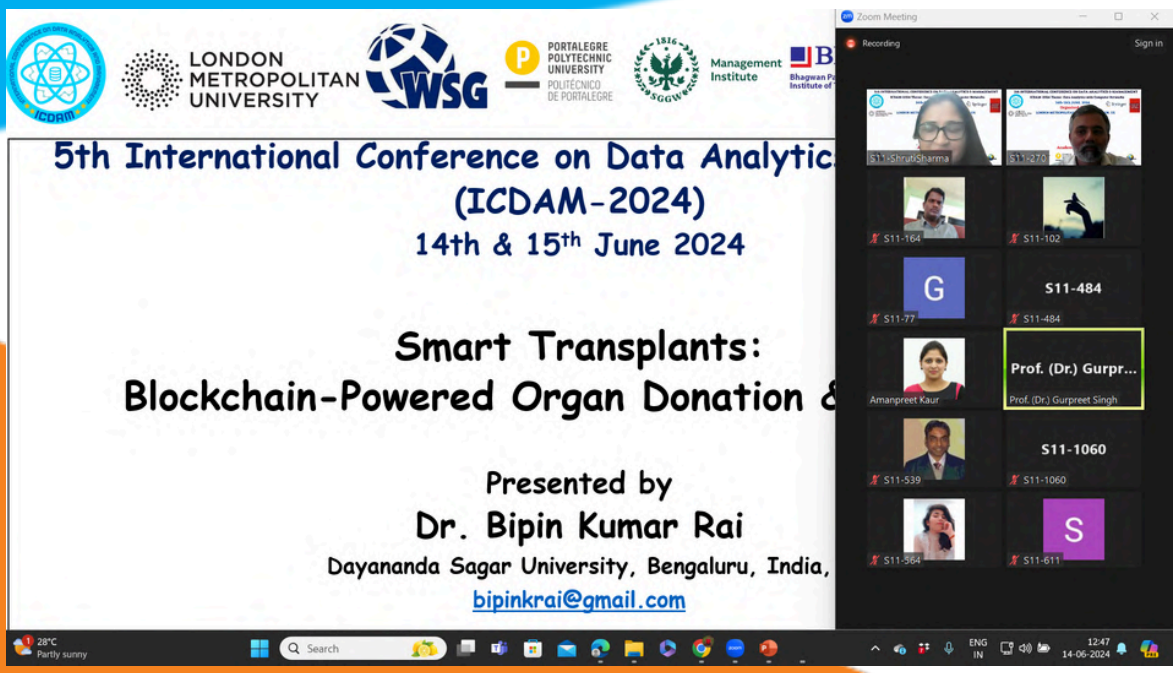
Dr. J. S. Nixon
Professor
Department of CSE

Prof. Priyanka S Marellavar
Assistant Professor
Department of CSE

- Dr. J. S. Nixon, Professor and Prof Priyanka S Marellavar, Assistant Professor have successfully participated one-week online FDP on the topic “Cyber-Physical System Design and Data Analytics” (CSDA-2024) given by Dr. Sudip, IIT Roorkee, Uttarakhand, organized by AGKS Pvt. Ltd from 3rd June to 8th June 2024.

Dr. Bipin Kumar Rai
Professor
Department of CSE

- Dr. Bipin Kumar Rai, Professor, Dept of CSE has presented a research paper entitled "Smart Transplants: Blockchain Powered Organ Donation & Analytics" at the 5th International Conference on Data Analytics & Management (ICDAM-2024) Organized By London Metropolitan University, London, UK and BPIT New Delhi on 14th June 2024.



- Dr. Bipin Kumar Rai, Professor, Dept of CSE extended his service as a Paper Reviewer at the 2nd International Conference on Computer, Electronics and Electrical Engineering and their Applications (IC2E3-2024), held from 6th and 7th June 2024 at NIT Uttarakhand, (IEEE, Scopus).

IEEE UP SECTION (INDIA)

IAS IEEE INDUSTRY APPLICATIONS SOCIETY

National Institute of Technology, Uttarakhand

AN INTERNATIONAL CONFERENCE ON COMPUTER, ELECTRONICS AND ELECTRICAL ENGINEERING AND THEIR APPLICATIONS (IC2E3-2024)

(June 6th – 7th, 2024)

Certificate of Appreciation

This is to certify that BIPIN KUMAR RAI from DAYANANDA SAGAR UNIVERSITY, INDIA has contributed as *Reviewer* in the *2nd International Conference on Computer, Electronics and Electrical Engineering and their Applications (IC2E3-2024)*, held from 6th to 7th June, 2024 at *National Institute of Technology Uttarakhand*, India.

Prof. Vivek Shrivastava
Organizing Chair, IC2E3-2024

Dr. Sourav Bose
Organizing Chair, IC2E3-2024

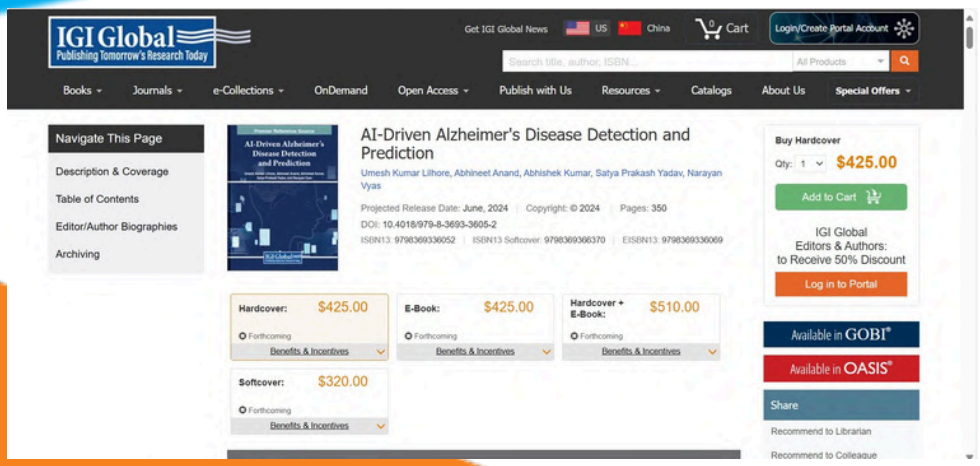
NITUK/IC2E3/24/REV/NGC02

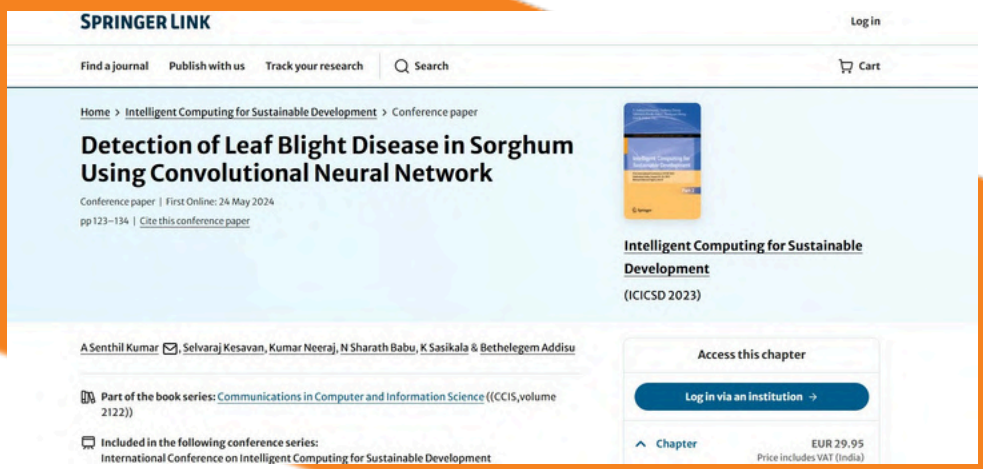
Prof. Shilpa Sudheendran
Assistant Professor
Department of CSE

- Prof. Shilpa Sudheendran, Assistant Professor, Department of CSE has successfully completed the following online courses on Coursera.
- i) Exploratory Data Analysis for Machine Learning, an online non-credit course authorized by IBM and offered through Coursera on Jun 14, 2024.
- ii)Foundations: Data, Data, Everywhere an online non-credit course authorized by Google and offered through Coursera on Jun 20, 2024.
- iii)Ask Questions to Make Data-Driven Decisions, an online non-credit course authorized by Google and offered through Coursera on Jun 20, 2024.

Dr. Senthil Kumar
Professor
Department of CSE

- Dr. Senthil Kumar, Professor, Dept of CSE has published a book chapter with the name “AI-Driven Alzheimer's Disease Detection and Prediction”, by the publisher IGI Global Publishing with the volume no chapter 13 and ISBN 9798369336052 in June 2024.
- Dr. Senthil Kumar, Professor, Dept of CSE has presented and published a paper with the title “Detection of Leaf Blight Disease in Sorghum Using Convolutional Neural Network” and ISSN NO CCIS, volume 2122-page no 123-134 by the Springer Conference Intelligent Computing for Sustainable Development during 1st June 2024.

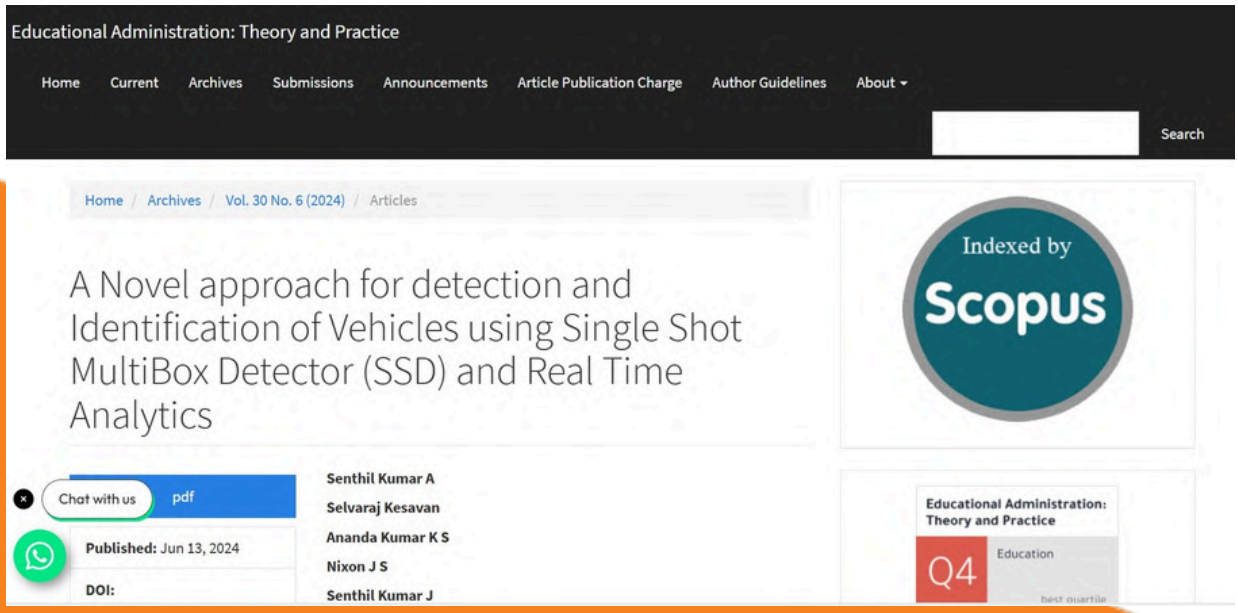




Dr. Senthil Kumar
Professor
Department of CSE

Dr. J. S. Nixon
Professor
Department of CSE

- Dr. Senthil Kumar and Dr. Nixon J S, Professors, Dept of CSE have published a paper with the title “A Novel Approach for Detection and Identification of Vehicles using Single Shot MultiBox Detector (SSD) and Real Time Analytics” on 13th June 2024 by Scopus journal Q4, Educational Administration: Theory and Practice, with DOI https://doi.org/10.53555/kuey.v30i6.5892 ISSN: 2148-2403, Vol. 30 No. 6 (2024).



Dr. Bondu Venkateswarlu
Associate Professor
Department of CSE

- Dr. Bondu Venkateswarlu, Associate Professor, has published a research article in the International Journal of Intelligent Systems and Applications in Engineering with the title “A Novel Data Stream High Utility Itemset Miner with the Batch Transaction Processing Model”, indexed in Scopus with ISSN NO 21476799, volume no 12 and page no 1675–1686 during June 2024.

Prof. Shreekant Salotagi
Assistant Professor
Department of CSE

- Prof. Shreekant Salotagi, Assistant Professor, Department of CSE has successfully completed his Final Ph.D Viva Voice on the Thesis entitled "Optimization of Resource Allocation in Internet of Things (IoT) Applications'' under the guidance of Dr. Jayshree D. Mallapur Professor & Head, BEC. Bagalkote, (VTU Belagavi). The defense panel consisted of Dr. Gopalkrishna Hegde, Professor, IISc Bangalore and Dr. Shashidhar G. Koolgudi, Professor, Dept. of CSE, NITK Surathkal on 21/06/2024.

Prof. Suvika K V
Assistant Professor
Department of CSE

- Prof Suvika K V, Assistant Professor, has successfully completed the online course on Infosys Springboard titled “Machine Learning & Deep Learning Tools in the Cloud” on June 19, 2024.

Infosys
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COURSE COMPLETION CERTIFICATE

The certificate is awarded to

Suvika K V

for successfully completing the course

Machine Learning & Deep Learning Tools in the Cloud

on June 19, 2024

Infosys | Springboard

Congratulations! You make us proud!

Issued on: Wednesday, June 26, 2024
To verify, scan the QR code at https://verify.onwingspan.com

Thirumala Arohi
Executive Vice President and Global Head
Education, Training & Assessment (ETA)
Infosys Limited

Prof. Suvika K V
Assistant Professor
Department of CSE

Prof. Mala B A
Assistant Professor
Department of CSE

- Prof Suvika K V and Prof Mala B A, Assistant Professors presented and published a paper in Scopus indexed conference “International Conference on Emerging Technologies in Science and Engineering-ICETSE-2024” with the title “A Survey on Application of Analytics in Legal Profession” during June 2024 organized by Akshaya Institute of Technology, Tumkur.

GRENZE Scientific Society

Grenze International Journal of Engineering and Technology, June Issue

A Survey on Application of Analytics in Legal Profession

Suvika K V[1], Mala B A[2], Lavanya K[3] and Lakshmi Sravani Grande[4]
[1,2]Assistant Professor, Dept. of CSE, School of Engineering, Dayananda Sagar University
Email: kvsuvika@gmail.com, malaba.gowda@gmail.com
[3,4]Assistant Professor, Dept. of AI&ML, Vemana Institute of Technology
Email: lavanyaa960@gmail.com, sravanisathya.p@gmail.com

***Abstract*—The advancements made in different areas using machine learning, computation, artificial intelligence for the betterment of functionalities is increasing day-by-day. The research topics like Siri, Alexa are now just a commercially available equipments. The application of technology in legal profession is a diligent step as it depends on past cases, judgements, articles, sections etc. According to the released data from the Supreme court and National Judicial data grid, 3.9 crore cases are pending district and session courts, around 59 lakhs cases are pending in the various high courts. There are many people who are suffering emotionally and financially as they are completely dependent on advocate's advice which is taking a long time. This paper discusses various methods to improve the services given to the citizens from advocates and also changes the way of practicing legal profession.**

***Index Terms*— Machine Learning, Data Analytics, Legal Profession, Legal Prediction.**

I. Introduction

Many organizations are seeking for innovative ideas and ways in order to examine the results, success rate, failure rate with the help of data analytics which helps to achieve better results. To examine the future or existing data is easy when compared to past data - which is what required in legal profession. Since, every judgement in legal profession depends on the existing and already decided case laws it is very much required to apply the technology to save time and lives of thousands of people. In the last few years India has become more digitized due to various reasons. This helps to take forward and witness the digitization in terms of previous case laws. And it can be achieved because of Artificial Intelligence backed systems which are getting smarter, efficient, and accessible day by day. We can apply web data mining on gigantically available user communication in the web sources and achieve our goals with clever and efficient IoT devices.

Lawyers will have a social responsibility to steer society towards justice and well-being. The legal profession will play a key role in defining the country's ordinance and maintaining it. These powers come with great responsibility, So the Lawyers should always be equipped with adequate knowledge about the cases they handle and analyze them efficiently. In recent days, this skill set achieved with the usage of technology and Indian Legal database providers.

Legal vocation expects a detailed understanding of the law and how to apply them selectively in an appropriate situation. Hence lawyers are required to upskill regularly to be ready for the legal battlefield. It is not less than diamond processing like extracting the proof from the enormous source of information, transforming, analysing

Grenze ID: 01.GIJET.10.2.788

Prof. Soubhagyalakshmi
Assistant Professor
Department of CSE

- Prof Soubhagyalakshmi, Assistant Professor, Department of CSE has successfully completed Final Ph.D Viva Voice on 28th June 2024 Under Visvesvaraya Technological University (VTU) Belagavi.

Dr. Arun Balodi
Chairman & Professor
Department of ECE

- Dr. Arun Balodi successfully concluded the 5-Day Faculty Development Programme on 'Recent Advances in Electrical, Electronics & Communication Engineering (REECE 2024).

GALGOTIAS UNIVERSITY

NAAC GRADE A+ Accredited University

CERTIFICATE OF PARTICIPATION

This is to certify that

Dr. Arun Balodi

OF

Dayananda Sagar University, Bangalore

has successfully completed a five-day Faculty Development Programme on "Recent Advances in Electrical, Electronics & Communication Engineering" (REECE-2024) organized by the Department of Electrical, Electronics & Communication Engineering, Galgotias University from 6th-10th May 2024.

Prof. Sudhir Singh
Dean SoE

Prof. Meenakshi Awasthi
Head, DEECE

Dr. Komal Agrawal
Convenor

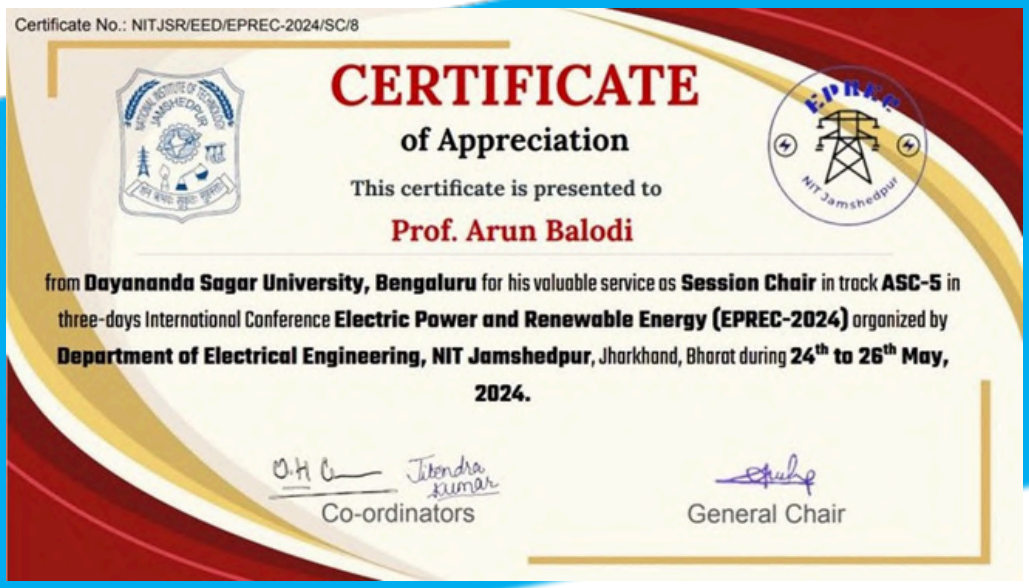
Dr. Prabhakar Agarwal
Convenor

Dr. Kumar Prashant
Coordinator

Dr. Neeraj Jain
Coordinator

REECE 2024

- Dr. Arun Balodi received the Certificate of appreciation as Session Chair in track ASC-5 in the three-day International Conference Electric Power and Renewable Energy (EPREC-2024: https://www.eprec.co.in/) organized by the Department of Electrical Engineering, NIT Jamshedpur, Jharkhand, Bharat from 24th to 26th May 2024.


Certificate No.: NITJSR/EED/EPREC-2024/SC/8

CERTIFICATE

of Appreciation

This certificate is presented to

Prof. Arun Balodi

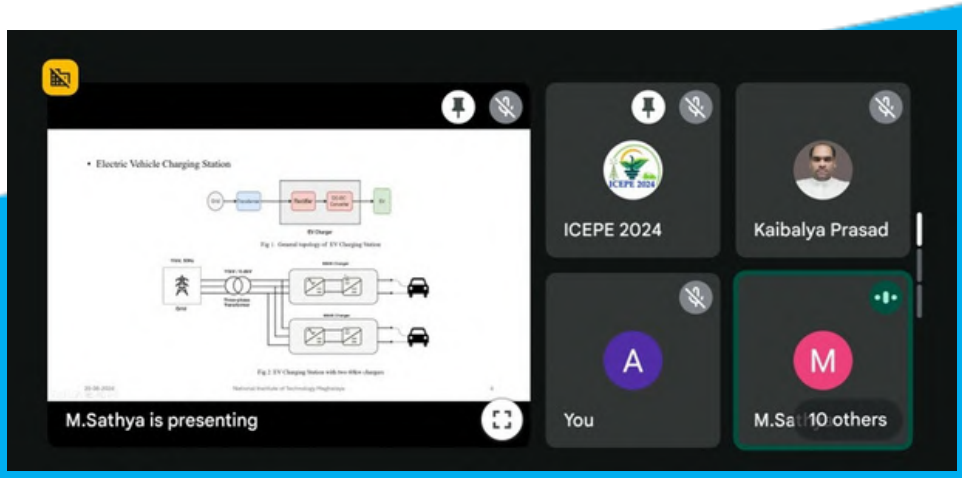
from **Dayananda Sagar University, Bengaluru** for his valuable service as **Session Chair** in track **ASC-5** in three-days International Conference **Electric Power and Renewable Energy (EPREC-2024)** organized by **Department of Electrical Engineering, NIT Jamshedpur**, Jharkhand, Bharat during **24th to 26th May, 2024.**

Co-ordinators

General Chair

- Dr. Arun Balodi delivered the session in a highly informative Authors Workshop conducted as part of the ICASSP2025 satellite events on 14 June 2024 at BNMIT, Bangalore.

- Dr. Arun Balodi served as Session Chair for Track: E-Mobility, at the 6th International Conference on Energy, Power and Environment (ICEPE 2024).



- Dr. Arun Balodi participated in the IEEE Conference Quality and Management Workshop (CQMW) titled 'Planning and Execution of IEEE Conferences' held at Dayananda Sagar Institutions on Saturday, June 22nd, 2024.

- Dr. Arun Balodi participated as a reviewer in the 8th edition of the 2024 IEEE Students Conference on Engineering and Systems (SCES-2024), organized by the Department of Electrical Engineering, MNNIT Allahabad.

2024 IEEE Students Conference on Engineering and Systems (SCES-2024)

Theme: Interdisciplinary Technologies for Sustainable Future

June 21-23, 2024

Organized by

Department of Electrical Engineering

Motilal Nehru National Institute of Technology Allahabad, Prayagraj (U.P.)-211004, India

IEEE UP SECTION (INDIA)

Certificate of Appreciation

This is to certify that

Dr. Arun Balodi

Has served as a reviewer in the conference "2024 IEEE Students Conference on Engineering and Systems (SCES-2024)", June 21-23, 2024, organized by Department of Electrical Engineering, Motilal Nehru National Institute of Technology Allahabad, Prayagraj, India

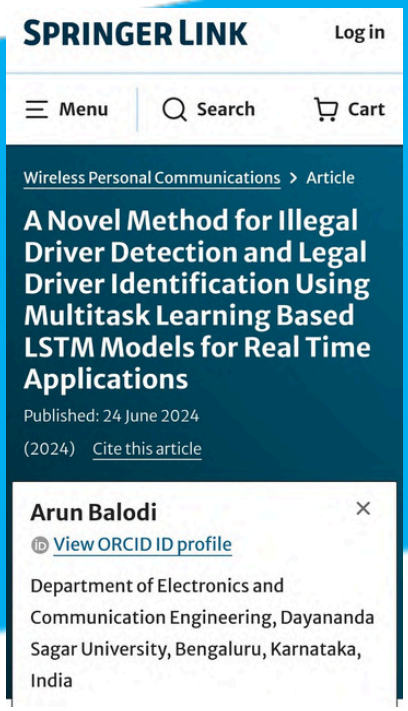
Dr. Prashant Kumar Tiwari
Conference Chair
SCES 2024

Dr. Saumendra Sarangi
Conference Chair
SCES 2024

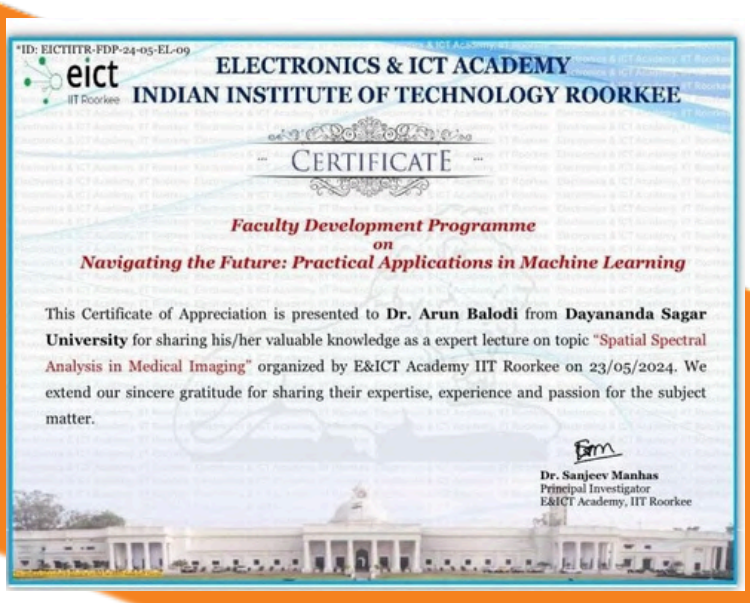
Prof. Richa Negi
General Chair
SCES 2024

- Dr. Arun Balodi delivered a talk on "Predictive Analytics in Healthcare: Forecasting Patient Outcomes with Machine Learning," at the Signal Synergy Conclave on June 22, 2024. This event, a collaboration between the IEEE AIT SPS & MTT-S Student Branch Chapters and the IEEE SPS Bangalore Chapter, as part of the ICASSP2025 satellite event was held at the Atria Institute of Technology Institute of Technology, Bangalore.

- Dr. Arun Balodi published a paper “A Novel Method for Illegal Driver Detection and Legal Driver Identification Using Multitask Learning Based LSTM Models for Real-Time Applications Wireless Personal Communications (SCIE Indexed, Impact Factor: 1.9) (2024). https://link.springer.com/article/10.1007/s11277-024-11368-w



- Dr. Arun Balodi from Dayananda Sagar University was awarded a Certificate of Appreciation for his/her valuable contribution as an expert lecturer on the topic “Spatial Spectral Analysis in Medical Imaging.” The lecture was organized by the E&ICT Academy at IIT Roorkee on May 23, 2024.



Prof. Divyashree H B
Assistant Professor
Department of ECE

- Prof. Divyashree H B presented a paper titled “QOS Aware Secure Cluster Based Routing for Wireless Sensor Networks Using a Multi Objective-Trust Centric Artificial Algae Algorithm” at the Scopus-indexed Springer International Conference on Wireless Communication and Internet of Everything (ICWCIE-2024), held on June 21st and 22nd, 2024.

Springer

Sri Siddhartha Institute of Technology, Tumakuru

(A Constituent College of Sri Siddhartha Academy of Higher Education)

Certificate of Participation

This Certificate is presented to Dr./Prof./Mr./Mrs.

Divyashree H B

For His/Her Paper Titled

QOS Aware Secure Cluster Based Routing for Wireless Sensor Networks Using a Multi Objective-Trust Centric Artificial Algae Algorithm

in the **International Conference on Wireless Communication and Internet of Everything (ICWCIE - 2024)** organized by the Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumakuru on 21st- 22nd June, 2024.

Dr. M.N. Eshwarappa
Professor & Head,
Dept. of ECE, SSIT, Tumakuru

Dr. M. S. Raviprakasha
Principal
SSIT, Tumakuru

Dr. Deepthi Chamkur V
Assistant Professor
Department of ECE

- Dr. Deepthi Chamkur V, Assistant Professor in the ECE Department at Dayananda Sagar University, participated in a one-day faculty development program on “AI Tools for Teaching,” organized by the Star International Foundation for Research and Education on June 22, 2024.

STAR INTERNATIONAL
Foundation for Research and Education
(Registered Under Indian Trust Act, ISO Certified and 12AA & 80G Approved Organisation)
Tiruchengode-637211, Namakkal-Dt, Tamil Nadu, India

e-Certificate of Recognition

This is to certify that Prof/Dr/Mr/Ms Dr.Deepthi Chamkur V , Assistant professor, Electronics and communication Engineering, Dayananda Sagar of university , has actively participated in “ONE DAY ONLINE FACULTY DEVELOPMENT PROGRAM ON AI TOOLS FOR TEACHING” organized by Star International Foundation for Research and Education on 22.06.2024

Dr.S. Sekar
Founder / Managing Trustee

Certificate ID HW0BAE-CE001788

Prof. Shivamma D
Assistant Professor
Department of CSE(DS)

- Prof. Shivamma has participated in a week FDP on “Integration of Artificial Intelligence and IoT in Agriculture” organized by the Department of CSE held at Alliance University, Bengaluru from June 18th to 22nd, 2024.

ALLIANCE UNIVERSITY

CERTIFICATE OF EXCELLENCE

This is to certify that

SHIVAMMA - D

DAYANANDA SAGAR UNIVERSITY, BENGALURU

has actively participated in all sessions of the SERB Sponsored **'Five Days National Workshop on Integration of Artificial Intelligence and IoT in Agriculture'**, 18th to 22nd June 2024, organized by Centre for Research and School of Advanced Computing, Alliance University, Bengaluru Karnataka, India.

Dr. Tina Babu
Convenor
ASAC, Alliance University

Dr. Reeba Korah
Professor and Interim Dean
Alliance College of Engineering and Design

Dr. B. Priestly Shan
Pro Vice-Chancellor (Academic Affairs)
Alliance University

- Prof. Shivamma, Assistant Professor nominated and Completed the Faculty Enablement Program on Artificial Intelligence organized by Infosys's Springboard from 24th June to 28th June 2024.

- Prof. Shivamma completed the courses on Introduction to Data Science, Introduction to Artificial Intelligence, Introduction to Natural Language Processing, Introduction to Deep Learning, Introduction to Robotic Process Automation and Computer Vision as part of the Faculty Enablement program on Artificial Intelligence organized by Infosys's Springboard from 24th June to 28th June 2024.

- Prof. Shivamma completed the certification on Artificial Intelligence Foundation Certification on 27th June 2024 and Artificial Intelligence Primer Certification on 28th June 2024 organized by Infosys's Springboard.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CERTIFICATE OF ACHIEVEMENT

The certificate is awarded to

Shivamma D

for successfully completing

Artificial Intelligence Foundation Certification

on June 27, 2024

Infosys | Springboard

Congratulations! You make us proud!

Thirumala Arohi
Executive Vice President and Global Head
Education, Training & Assessment (ETA)
Infosys Limited

Issued on: Thursday, June 27, 2024
To verify, scan the QR code at https://verify.onwingspan.com


Infosys
Navigate your next

CERTIFICATE OF ACHIEVEMENT

The certificate is awarded to

Shivamma D

for successfully completing

Artificial Intelligence Primer Certification

on June 28, 2024

Infosys | Springboard

Congratulations! You make us proud!

Thirumala Arohi
Executive Vice President and Global Head
Education, Training & Assessment (ETA)
Infosys Limited

Issued on: Friday, June 28, 2024
To verify, scan the QR code at https://verify.onwingspan.com

Dr. Sandhya Madhuri
Assistant Professor
Department of CA

Mrs. Sumana S G
Assistant Professor
Department of CA

Ms. Vaishnavi K C
Assistant Professor
Department of CA

- Dr. Sandhya Madhuri, Ms. Sumana and Ms. Vaishnavi has participated in one week FDP on “Integration of Artificial Intelligence and IoT in Agriculture” organized by the Department of CSE held at Alliance University, Bengaluru from June 18th to 22nd, 2024.

SCHOOL OF
ENGINEERING

STUDENT ACHIEVEMENTS

- Mr. Mohamed Faizal(ENG21CT0025) and Ms. Lavanya (ENG21CT0018) of 6th semester CST were selected in SISA Information Security Systems Pvt. Ltd., Campus Placement Drive organized by the Department of Training and Placement on 24th and 25th June 2024.

- Mr. Chunduru Narsimha Satwik (ENG21CY0012) and Ms. Swati Sanjay Kokare (ENG21CY0045) of 6th semester CSE (Cyber Security) got selected in SISA Information Security Systems Pvt. Ltd., Campus Placement Drive organized by Department of Training and Placement on 24th and 25th June 2024.

- Mr. Mohamed Faizan Khan, 4th Semester participated online event on "How to Become a Data Analyst at Amazon" organized by WsCUBE TECH on June 16th, 2024.

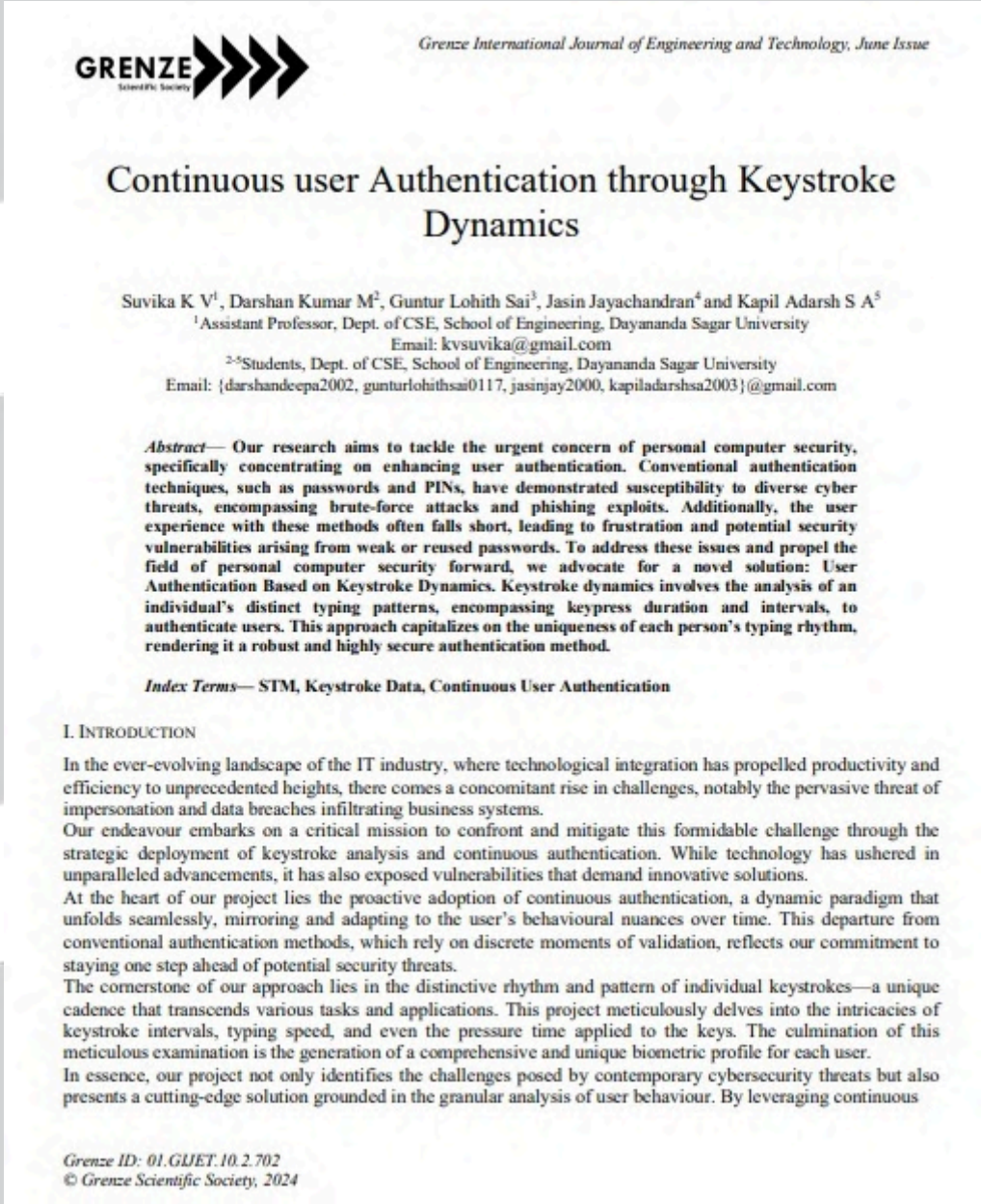
- Ms. Sayli Pankaj Bande (ENG21AM0112), Mr. Bharath Sharma (ENG22AM3005) and Ms. Sakshi Archana (ENG21AM0107) of 6th-semester AIML Students were among the 12 finalists who presented at GE Healthcare's Bangalore office. Their innovative project on an interactive oncology information resource for patients and caregivers earned them a well-deserved prize of 1 lakh rupees.

- Alumni Ms. Subhra of the 2021 batch currently doing MS in Carnegie Mellon University PA in the USA donated a Textbook to the CSE department library on 21st June 2024 to Dr. Girisha and Dr Rajesh receiving with Thanks.

- Mr. Pavanananda K S (ENG21CS0293) of 6th semester CSE Won 3rd place under the AI/ML category in the pre-final year project exhibition Srishti 2024 Avishkar (State-level project expo) held at Atria Institute of Technology, Bengaluru on 24th May 2024.

- Ms. Moni Shree S (ENG22CS0372) of 4th semester CSE has participated in the LaTeX Workshop on Technical Writing organized by the Department of Computer Science and Engineering, SOE, Dayananda Sagar University on June 3rd, 2024.

- Mr. Darshan Kumar M (ENG20CS0081), Mr. Guntur Lohith Sai (ENG20CS0106), Mr. Jasin Jayachandran (ENG20CS0131) and Mr. Kapil Adarsh S A (ENG20CS0143) of 8th semester CSE under the Guidance of Prof. Suvika K V, Assistant professor, presented and published a project paper in Scopus indexed conference "International Conference on Emerging Technologies in Science and Engineering-ICETSE-2024" with the title "Continuous user Authentication through Keystroke Dynamics" during June 2024 organized by Akshaya Institute of Technology, Tumkur.



GRENZE Scientific Society

Grenze International Journal of Engineering and Technology, June Issue

Continuous user Authentication through Keystroke Dynamics

Suvika K V[1], Darshan Kumar M[2], Guntur Lohith Sai[3], Jasin Jayachandran[4] and Kapil Adarsh S A[5]
[1]Assistant Professor, Dept. of CSE, School of Engineering, Dayananda Sagar University
Email: kvsuvika@gmail.com
[2-5]Students, Dept. of CSE, School of Engineering, Dayananda Sagar University
Email: {darshandeepa2002, gunturlohithsai0117, jasinjay2000, kapiladarshsa2003}@gmail.com

***Abstract*— Our research aims to tackle the urgent concern of personal computer security, specifically concentrating on enhancing user authentication. Conventional authentication techniques, such as passwords and PINs, have demonstrated susceptibility to diverse cyber threats, encompassing brute-force attacks and phishing exploits. Additionally, the user experience with these methods often falls short, leading to frustration and potential security vulnerabilities arising from weak or reused passwords. To address these issues and propel the field of personal computer security forward, we advocate for a novel solution: User Authentication Based on Keystroke Dynamics. Keystroke dynamics involves the analysis of an individual's distinct typing patterns, encompassing keypress duration and intervals, to authenticate users. This approach capitalizes on the uniqueness of each person's typing rhythm, rendering it a robust and highly secure authentication method.**

***Index Terms*— STM, Keystroke Data, Continuous User Authentication**

I. Introduction

In the ever-evolving landscape of the IT industry, where technological integration has propelled productivity and efficiency to unprecedented heights, there comes a concomitant rise in challenges, notably the pervasive threat of impersonation and data breaches infiltrating business systems.

Our endeavour embarks on a critical mission to confront and mitigate this formidable challenge through the strategic deployment of keystroke analysis and continuous authentication. While technology has ushered in unparalleled advancements, it has also exposed vulnerabilities that demand innovative solutions.

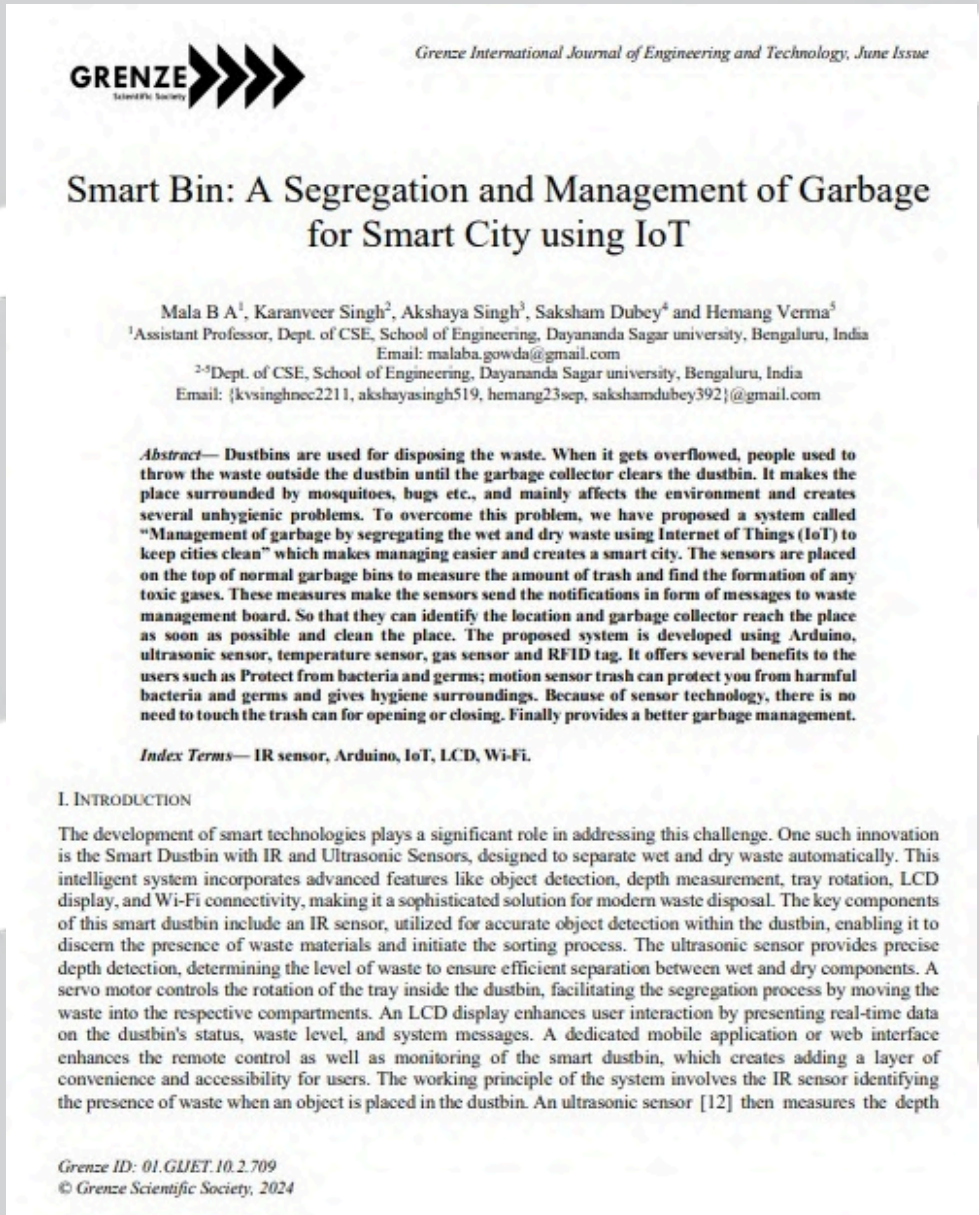
At the heart of our project lies the proactive adoption of continuous authentication, a dynamic paradigm that unfolds seamlessly, mirroring and adapting to the user's behavioural nuances over time. This departure from conventional authentication methods, which rely on discrete moments of validation, reflects our commitment to staying one step ahead of potential security threats.

The cornerstone of our approach lies in the distinctive rhythm and pattern of individual keystrokes—a unique cadence that transcends various tasks and applications. This project meticulously delves into the intricacies of keystroke intervals, typing speed, and even the pressure time applied to the keys. The culmination of this meticulous examination is the generation of a comprehensive and unique biometric profile for each user.

In essence, our project not only identifies the challenges posed by contemporary cybersecurity threats but also presents a cutting-edge solution grounded in the granular analysis of user behaviour. By leveraging continuous

Grenze ID: 01.GIJET.10.2.702

- Mr. Karanveer Singh (ENG21CS1027), Ms. Akshaya Singh (ENG20CS0022), Mr. Saksham Dubey (ENG20CS0310) and Mr. Hemang Verma (ENG19CS0119) of 8th semester CSE under the Guidance of Prof. Mala B A Assistant professor, presented and published a project paper in Scopus indexed conference "International Conference on Emerging Technologies in Science and Engineering-ICETSE-2024" with the title "Smart Bin: A Segregation and Management of Garbage for Smart City using IoT" during June 2024 organized by Akshaya Institute of Technology, Tumkur.



GRENZE Scientific Society

Grenze International Journal of Engineering and Technology, June Issue

Smart Bin: A Segregation and Management of Garbage for Smart City using IoT

Mala B A[1], Karanveer Singh[2], Akshaya Singh[3], Saksham Dubey[4] and Hemang Verma[5]
[1]Assistant Professor, Dept. of CSE, School of Engineering, Dayananda Sagar university, Bengaluru, India
Email: malaba.gowda@gmail.com
[2-5]Dept. of CSE, School of Engineering, Dayananda Sagar university, Bengaluru, India
Email: {kvsinghnec2211, akshayasingh519, hemang23sep, sakshamdubey392}@gmail.com

***Abstract*— Dustbins are used for disposing the waste. When it gets overflowed, people used to throw the waste outside the dustbin until the garbage collector clears the dustbin. It makes the place surrounded by mosquitoes, bugs etc., and mainly affects the environment and creates several unhygienic problems. To overcome this problem, we have proposed a system called "Management of garbage by segregating the wet and dry waste using Internet of Things (IoT) to keep cities clean" which makes managing easier and creates a smart city. The sensors are placed on the top of normal garbage bins to measure the amount of trash and find the formation of any toxic gases. These measures make the sensors send the notifications in form of messages to waste management board. So that they can identify the location and garbage collector reach the place as soon as possible and clean the place. The proposed system is developed using Arduino, ultrasonic sensor, temperature sensor, gas sensor and RFID tag. It offers several benefits to the users such as Protect from bacteria and germs; motion sensor trash can protect you from harmful bacteria and germs and gives hygiene surroundings. Because of sensor technology, there is no need to touch the trash can for opening or closing. Finally provides a better garbage management.**

***Index Terms*— IR sensor, Arduino, IoT, LCD, Wi-Fi.**

I. Introduction

The development of smart technologies plays a significant role in addressing this challenge. One such innovation is the Smart Dustbin with IR and Ultrasonic Sensors, designed to separate wet and dry waste automatically. This intelligent system incorporates advanced features like object detection, depth measurement, tray rotation, LCD display, and Wi-Fi connectivity, making it a sophisticated solution for modern waste disposal. The key components of this smart dustbin include an IR sensor, utilized for accurate object detection within the dustbin, enabling it to discern the presence of waste materials and initiate the sorting process. The ultrasonic sensor provides precise depth detection, determining the level of waste to ensure efficient separation between wet and dry components. A servo motor controls the rotation of the tray inside the dustbin, facilitating the segregation process by moving the waste into the respective compartments. An LCD display enhances user interaction by presenting real-time data on the dustbin's status, waste level, and system messages. A dedicated mobile application or web interface enhances the remote control as well as monitoring of the smart dustbin, which creates adding a layer of convenience and accessibility for users. The working principle of the system involves the IR sensor identifying the presence of waste when an object is placed in the dustbin. An ultrasonic sensor [12] then measures the depth

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- Mr. Ashwin J (ENG20EC0016), Mr. Banu Prasad (ENG20EC0018), Mr. Mamillapalli Punith Vinay Rao (ENG20EC0050) and Mr. Muheez (ENG20EC0055) published a paper titled “An Affordable Airborne Weather Observation” in the Manipal Journal of Science and Technology under the guidance of Dr. Saara K, Professor of the ECE Department.

J et al.: An Affordable Airborne Weather Observation Platform

Research Article

An Affordable Airborne Weather Observation Platform

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Abstract

This paper presents the culmination of the "Low-Cost Weather Forecasting Blimp" study, focusing on the design, development, and evaluation of a low-cost weather monitoring blimp tailored for agricultural applications. With accurate and localized weather forecasting being crucial for sustainable farming practices, especially in remote and developing regions, the Low-Cost Weather Forecasting Blimp system aims to address this challenge by providing real-time atmospheric data at an affordable price point. The Low-Cost Weather Forecasting Blimp system is designed as a multirotor aerial platform equipped with a customized sensor array to measure essential weather parameters such as temperature, humidity, wind speed, and precipitation. Leveraging IoT technology, the blimp transmits the collected sensor data via cellular networks to a ground station for real-time analysis using machine learning algorithms. These algorithms are specifically tailored to detect trends, anomalies, patterns in the data, enabling the generation of precise short-term forecasts relevant to farmer's needs.

Keywords: Agricultural Viability, IoT, Low-cost, multirotor aerial platform, Sensor Array, weather forecasting

I. Introduction

In today's connected world, with the proliferation of high-speed internet, the Internet of Things (IoT) has become a revolutionary force that transforms non-human interactions for the better, but there is also communication between electronic devices. As the price of Wi-Fi-enabled devices continues to drop, adoption of the IoT will accelerate, enabling unprecedented connectivity and data availability. The principle behind the IoT is to connect various electronic devices over the internet to collect and share data generated by sensors. This data can be sent to a cloud service such as IBM Bluemix or ThingSpeak for analysis and processing. The potential of IoT spans many sectors, including transportation, logistics, energy, healthcare, and agriculture.

In the energy sector, the IoT is changing the process by creating intelligent plans that can respond to changes in energy consumption patterns. The IoT holds great promise in many areas besides energy, including smart homes, technology, and connected healthcare. The market is expected to grow exponentially as global electronics giants such as Intel, Rockwell Automation, Siemens, Cisco, and General Electric invest heavily in IoT infrastructure. Analysts predict that the number of connected devices worldwide will reach 26 billion, or four devices per person, and the economic value should reach $19 trillion.

However, with the emergence of this new technology, managers faced great difficulties and began to use their management and the large amount of data produced by IoT products. The integration of Aerial Robots is designed to meet

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- Mr. Markov Vladimir (ENGRU01), Mr. Skobelev Maksim (ENGRU01) and Neeraj Patil (ENG21EC0071) published a paper titled “Detection of Tuberculosis Using 2-D Photonic Crystal-Based Biosensor” in the Manipal Journal of Science and Technology under the guidance of Dr. Saara K, Professor of the ECE Department.

Research Article

Detection of tuberculosis using 2-D photonic crystal-based biosensor

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Abstract

While there has been a significant increase in healthcare demands and the need for precise clinical judgment, it is important to note that the performance enhancement of photonic crystal sensors is not solely attributed to this surge in demand. Instead, photonic crystal-based biosensors have demonstrated improved performance over conventional biosensors. In this study, a 2-D photonic crystal-based biosensor with a square lattice structure, measuring 6 x 6 µm in length and width respectively, was proposed. The biosensor utilizes Titanium Dioxide (TiO2) as a sensing material, where TiO2 is employed to attract target molecules present in the sample. The proposed biosensor was designed and simulated using the Finite-Difference Time-Domain (FDTD) method. In the simulation framework, the immobilization of target molecules on TiO2 was explicitly modelled, including the definition of TiO2's optical properties, implementation of absorption mechanisms related to immobilization, and consideration of surface functionalization processes. Simulation results confirm the detection of target molecules, showing a significant wavelength shift with a sensitivity of more than 80 nm/RIU and a quality factor of 5000.

Keywords: Biosensor, FDTD, Photonic Crystal, Titanium dioxide, Tuberculosis

I. Introduction

Tuberculosis (TB) continues to pose a significant global health challenge, with millions of new cases and fatalities reported annually by the World Health Organization (WHO) [1]. Timely and accurate diagnosis is critical for effective TB management, especially in regions with limited healthcare infrastructure. However, conventional diagnostic methods such as sputum smear microscopy and culture-based techniques have limitations in terms of sensitivity and speed [2]. Hence, there is a pressing need for innovative diagnostic approaches to improve TB detection, particularly in resource-constrained settings. In recent years, biosensor technology has emerged as a promising tool for the rapid and sensitive detection of infectious diseases, including TB. Biosensors offer several advantages, including real-time monitoring, simplicity, portability, and potential for point-of-care applications [3, 4].

Among biosensor platforms, photonic crystal-based biosensors are gaining attention due to their sensitivity, label-free detection, and compatibility with microfluidic systems. Photonic crystals, nanostructures that manipulate light, provide a unique platform for capturing biomolecular interactions with high specificity, and sensitivity [5].

Photonic crystals are periodic nanostructures that manipulate light propagation through

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- Ms. Alisha Aric Fernandes (ENG21CS0021) and Ms. Bhat Dhanvi (ENG21CS0074) of 6th sem Attended the Q-Karyashala Workshop held on the 24th and 25th of June 2024 at the Indian Institute of Science, Bangalore. In this workshop. The knowledge gained is across various quantum computing concepts presented by professors from IIT and IISc. Additionally, they also participated in a hands-on workshop on ADS Quantum Pro and had a lab session on the Mach-Zehnder Interferometer.

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