

**JULY 2025**

# CYBER GAZETTE

**NEWS LETTER**

**JULY 2025**



**DEPARTMENT OF  
COMPUTER SCIENCE AND ENGINEERING  
(CYBER SECURITY)**



**School of Engineering**

**DAYANANDA SAGAR UNIVERSITY**

**MAIN CAMPUS,  
HAROHALLI, KANAKAPURA - 562112**

# RESEARCH ACCOMPLISHMENTS

## Exploiting Machine Learning for Vulnerable Road Users' Protection of Moving Objects on Trajectory Motion: Dealing with Action Transformation Using AI Agent-Based Technologies

Dr. DilipKumar Jang Bahadur Saini has published his research paper titled "Exploiting Machine Learning for Vulnerable Road Users' Protection of Moving Objects on Trajectory Motion: Dealing with Action Transformation Using AI Agent-Based Technologies" in the Arabian Journal for Science and Engineering, Springer Nature (SCIE Q1 publication)

Link: <https://link.springer.com/article/10.1007/s13369-025-10346-z>.



# RESEARCH ACCOMPLISHMENTS

## Novel Approach for Identification of Ayurveda Plant Using New Age Technology

Dr. DilipKumar Jang Bahadur Saini has published his research paper titled " Novel Approach for Identification of Ayurveda Plant Using New Age Technology" in the Proceedings of Fourth International Conference on Computing and Communication Networks ICCCN 2024, Volume 6

Link: [Novel Approach for Identification of Ayurveda Plant Using New Age Technology.](#) | [SpringerLink](#)



# RESEARCH ACCOMPLISHMENTS

## SCAM-QUAVs: Side Channel Attacks Mitigation and Countermeasures of Quantum-Safe UAVs

Prof. Naveen Kulkarni has successfully presented a research paper titled "SCAM-QUAVs: Side Channel Attacks Mitigation and Countermeasures of Quantum-Safe UAVs" at the IEEE International Conference on Electronics, Computing and Communication Technologies (IEEE CONECCCT 2025), held from July 10–13, 2025 at Sterling Mac Hotel, Bengaluru.

The conference was organized by the IEEE Bangalore Section, and the paper presentation contributes to emerging research in quantum-safe cybersecurity for unmanned aerial vehicles (UAVs).



# **RESEARCH ACCOMPLISHMENTS**

## **FBCA-IoMT: A Federated Binary Contrastive Autoencoder Framework for Anomaly Detection**

Prof. Archita Bhattacharyya has digitally presented a research paper titled “FBCA-IoMT: A Federated Binary Contrastive Autoencoder Framework for Anomaly Detection” at the 10th International Conference on ICT for Sustainable Development (ICT4SD 2025), held virtually from 17–19 July 2025, based in Goa, India.

The presentation was part of a global academic platform focusing on the role of Information and Communication Technologies in achieving sustainable development goals. The event was supported by Springer Nature and several national and international industry partners.



## RESEARCH ACCOMPLISHMENTS

## Personalized Federated Learning for Privacy-Preserving and Scalable IoT-Driven Smart Healthcare

Dr. Dilip Kumar Jang Bahadur Saini has published a conference paper titled “Personalized Federated Learning for Privacy-Preserving and Scalable IoT-Driven Smart Healthcare” at the 3rd International Conference on Inventive Computing and Informatics (ICICI), 2025 in Bangalore.

Date of Conference: 04-06 June 2025

DOI: [10.1109/ICICI65870.2025.11069877](https://doi.org/10.1109/ICICI65870.2025.11069877)



### Personalized Federated Learning for Privacy-Preserving and Scalable IoT-Driven Smart Healthcare

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<sup>5</sup>IC-2025, ICICI, 2025, Bangalore, India, 04-06 June 2025

<sup>6</sup>ICICI, 2025, Bangalore, India, 04-06 June 2025

<sup>7</sup>ICICI, 2025, Bangalore, India, 04-06 June 2025

10.1109/ICICI65870.2025.11069877

**Abstract**—The rapid expansion of Internet of Things (IoT) in smart healthcare has facilitated remote monitoring of patients, predictive diagnosis, and timely decision-making. However, conventional machine learning methods, lacking privacy-preserving capabilities in data privacy, confidentiality, and scalability, present significant challenges in this context. This paper proposes a Personalized Federated Learning (PFL) platform for IoT-driven smart healthcare, which addresses the challenges of ensuring secure communication, efficient privacy, and optimization of communication resources. The PFL-Net framework is proposed here, which uses federated learning to learn a personalized model while ensuring encrypted knowledge, protecting the personal data of each IoT device. To improve the accuracy of the model, we propose a new optimization method based on gradient descent and a new communication efficiency for IoT devices. The PFL-Net framework is evaluated using a dataset of IoT devices. The results show that the PFL-Net framework outperforms other methods in terms of accuracy, efficiency, and scalability. The proposed PFL-Net framework can be used to improve the accuracy of the model and the efficiency of the communication resources in IoT-driven smart healthcare.

**Keywords**—Personalized Federated Learning (PFL), Smart Healthcare, IoT-Driven Smart Healthcare, Privacy-Preserving Machine Learning, Edge Intelligence, and Scalable Smart Healthcare.

#### 1. INTRODUCTION

The exponential growth of the Internet of Things (IoT) in the healthcare sector has introduced various challenges, such as data privacy, confidentiality, and scalability. Federated learning (FL) is a machine learning paradigm that allows multiple devices to collaboratively learn a model without sharing their local data. However, conventional FL methods face significant challenges in terms of data privacy, confidentiality, and scalability. This paper proposes a Personalized Federated Learning (PFL) platform for IoT-driven smart healthcare, which addresses the challenges of ensuring secure communication, efficient privacy, and optimization of communication resources.

**Challenges in Personalized Federated Learning (PFL)**—The rapid expansion of IoT in smart healthcare has facilitated remote monitoring of patients, predictive diagnosis, and timely decision-making. However, conventional machine learning methods, lacking privacy-preserving capabilities in data privacy, confidentiality, and scalability, present significant challenges in this context. This paper proposes a Personalized Federated Learning (PFL) platform for IoT-driven smart healthcare, which addresses the challenges of ensuring secure communication, efficient privacy, and optimization of communication resources.

**Through learning to transfer, individual FL is played by**

- (1) **Personalized Data Distribution**—Medical data is different across patients because of varied demographics, clinical history, and environmental factors [1].
- (2) **Challenges in Personalization**—A global model trained on FL might not be well generalized to the specific needs of individual patients, limiting predictive performance [4].
- (3) **Security and Privacy Issues**—Federated learning is susceptible to adversarial attacks, model inversion, and malicious attacks that can leak sensitive medical information [5].

To address these challenges, this work introduces Personalized Federated Learning for Privacy-Preserving and Scalable IoT-Driven Smart Healthcare (PFL-Net). The primary contributions of PFL-Net are as follows:

- **Adaptive Model Personalization**—Each device trains a personalized model that adaptively adjusts to patient-specific features based on data clustering and local fine-tuning [2].
- **Privacy-Preserving Secure Aggregation**—We utilize differential privacy and homomorphic encryption to ensure the safe privacy leakage during federated updates [3].
- **Scalable and Efficient Communication**—A lightweight communication protocol minimizes bandwidth usage, decreasing convergence time and reducing storage efficiency for edge devices [6].

In contrast to traditional FL models that learn a one-size-fits-all global model, PFL-Net presents a hybrid personalization framework that allows clients to retain patient-specific model parameters to accurately study their own patients but provide global knowledge sharing. This allows for each patient's model to learn from the data of the large population without losing its personalized predictive accuracy. PFL-Net also addresses

# **RESEARCH ACCOMPLISHMENTS**

**REVIEWER for the 11th International Conference on Electronics, Computing and Communication Technologies, IEEE CONECCT (July 10-13,2025) organized by IEEE Bangalore section**

Dr.Dilip Kumar Jung Bahadur Saini acted as REVIEWER for the 11th International Conference on Electronics, Computing and Communication Technologies, IEEE CONECCT (July 10-13,2025) organized by IEEE Bangalore section at Sterling's Mac Hotel, Bangalore.



# FACULTY ACCOMPLISHMENTS

## Session chair for the International Conference on Emerging Technologies in Computing and Communication (ETCC)

Dr. Durbadal Chattaraj has contributed as a session chair for the International Conference on Emerging Technologies in Computing and Communication (ETCC) held on June 26<sup>th</sup> – 27<sup>th</sup> 2025 organized by PES University EC Campus, Bangalore.





# **FACULTY ACCOMPLISHMENTS**

**5-Days Faculty development program on “Cyber Security” organized by the department of Computer Studies, Haribhai V.Desai College of Arts and Commerce, Pune, Maharashtra in association with Pencil Bitz**

Dr.Devi Priya V S has actively participated in the 5-Days Faculty development program on “Cyber Security” organized by the department of Computer Studies, Haribhai V.Desai College of Arts and Commerce, Pune, Maharashtra in association with Pencil Bitz, from 14<sup>th</sup> July to 18<sup>th</sup> July 2025.



# **STUDENT ACCOMPLISHMENTS**

Pratiksha Guggari (ECE), Rahul (CSE), and Sachin Pujappa Baluragi- ENG22CY0020(Cybersecurity) — has secured the 2nd Runner-Up position at the prestigious Agentic Ethereum Hackathon India, held at Scaler School of Technology on 12–13 July 2025.

Their innovative project addressed the theme "DeFi + Financial Inclusion Agents", showcasing their technical excellence and creativity in blockchain-based financial solutions.

Their remarkable performance earned them a \$1000 cash prize and a place among the top minds in Ethereum development!



# STUDENT ACCOMPLISHMENTS

Prajwal N Halvi(ENG22CY0037) has successfully completed the UI/UX Course offered by Tutedude on 15th July 2025. Course covered essential aspects of user interface and user experience design.  
Certificate ID: TD-PRAJ-UI-1609



# **STUDENT ACCOMPLISHMENTS**

Prajwal N Halvi(ENG22CY0037) has successfully completed the Figma Bootcamp organized by LetsUpgrade EdTech Pvt. Ltd. from 17th July 2025 to 19th July 2025. The 3-day intensive bootcamp focused on practical skills and design fundamentals using Figma, a leading interface design tool.

The bootcamp was conducted in collaboration with:

NSDC – National Skill Development Corporation

ITM Edutech Training Pvt. Ltd.

GDG MAD

Date of Issue: 19 July 2025

Certificate No.: LUEFGJUL125180



# STUDENT ACCOMPLISHMENTS

Mr. Adeesh Lokesh Poojary (USN: ENG22CY0025) has successfully completed one-month internship at the MAHE-ISAC Centre of Excellence for Cybersecurity, Manipal Academy of Higher Education, from 25th June to 25th July 2025.

Under the mentorship of Dr. Srikanth Prabhu, Professor at the School of Computer Engineering, he made significant contributions in the domain of resume classification and extraction—a vital area in cybersecurity automation and data handling.



# **STUDENT ACCOMPLISHMENTS**

Mr.Manish Jaju(ENG23CY0105)has successfully achieved student level credential for completing the course titled "Introduction to Cybersecurity" and "Networking Basics" by CISCO Networking academy on July 9,2025 and July 19,2025.



# **STUDENT ACCOMPLISHMENTS**

Mr.Manish Jaju(ENG23CY0105) has successfully completed the online non-credit course “Connect and Protect: Networks and Network Security”, authorized by Google and offered through Coursera. The course was completed on July 24, 2025, highlights his commitment to strengthening expertise in network infrastructure and cybersecurity principles.



# **STUDENT ACCOMPLISHMENTS**

Mr.Prateep P(ENG23CY0027) has successfully earned the prestigious (ISC)<sup>2</sup> Certified in Cybersecurity (CC) credential. This globally recognized certification, issued on 13th July 2025, validates his foundational knowledge and commitment to cybersecurity principles and best practices.





# **STUDENT ACCOMPLISHMENTS**

Mr.Manish Jaju(ENG23CY0105) has successfully completed the online non-credit course “Play It Safe: Manage Security Risks”, authorized by Google and delivered through Coursera, on July 26, 2025. This course strengthens his understanding of security risk management, data protection strategies, and cybersecurity best practices. Verified by Coursera, the certification affirms his proactive approach to professional development in the field of cybersecurity.



# **STUDENT ACCOMPLISHMENTS**

Mr.Kishan.G.A(ENG23CY0020) has received certificate of completion for the course titled "Cybersecurity Analyst Job Simulation" by Forge(Inspiring and empowering future professionals" on July 28,2025. Over the period of July 2025, Kishan G A has completed practical tasks in: Identity and access management (IAM) fundamentals, IAM strategy assessment, Crafting custom IAM solutions, Platform integration.

