International Conferenc on Recent Advances in Artificial Intelligence, Communication, and Electronic Systems
RAICE-2025

ORGANISED BY
Department of Electronics and Communication Engineering
& Research and Development cell
Bharati Vidyapeeth's College of Engineering, New Delhi
5th – 7th February 2025

********** CALL FOR SPECIAL SESSION **********

SPECIAL SESSION ON: Advances in Deep Learning Methods for Cognitive Applications using IoT

SESSION ORGANIZERS:

Session Member 1: Dr. Geetanjali Sharma, Assistant Professor, MSIT, gsharma@msit.in
Session Member 2: Dr. Sonika Malik, Assistant Professor, MSIT, sonika.malik@msit,in

RECOMMENDED TOPICS:
The special session will include but not limited to

1. Enhancing Disease Diagnosis Accuracy through Deep Learning and IoT
2. Data Security and Privacy Concerns in IoT-enabled Cognitive Applications
3. Remote Patient Monitoring with IoT and Deep Learning
4. Future Trends and Innovations Cognitive Applications
5. Improving Cognitive Healthcare Accessibility in Remote Areas
6. Fusion of Deep Learning and Machine Learning Algorithms for Cognitive Data Analysis

SESSION DESCRIPTION:

The convergence of deep learning and the Internet of Things (IoT) has ushered in a new era of cognitive applications, transforming how devices interact, learn, and make decisions. As IoT devices proliferate, generating vast amounts of data, the need for advanced analytical methods becomes paramount. Deep learning, a subset of machine learning characterized by neural networks with multiple layers, has emerged as a powerful tool for extracting insights from this data, enabling smarter and more autonomous systems. One of the most significant advances in deep learning for cognitive applications is the development of more sophisticated neural network architectures. Convolutional Neural Networks (CNNs) have revolutionized image processing tasks, allowing IoT devices equipped with cameras to perform real-time object detection and recognition. This capability is crucial in various applications, from smart surveillance systems to autonomous vehicles, where understanding the environment is essential for decision-making. Similarly, Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks have enhanced the processing of sequential data, making them ideal for applications such as predictive maintenance in industrial IoT, where time-

series data from sensors can be analyzed to forecast equipment failures.

Another notable advancement is the integration of transfer learning techniques, which allow models trained on large datasets to be fine-tuned for specific tasks with limited data. This is particularly beneficial in IoT scenarios where collecting extensive labeled datasets can be challenging. By leveraging pre-trained models, developers can significantly reduce the time and resources required to deploy deep learning solutions in cognitive applications, enhancing the scalability of IoT systems. Moreover, the advent of edge computing has transformed how deep learning models are deployed in IoT environments. Instead of relying solely on centralized cloud servers, edge computing enables data processing closer to the source, reducing latency and bandwidth usage. This is particularly important for real-time applications, such as smart healthcare monitoring systems, where immediate responses can be critical. By implementing lightweight deep learning models on edge devices, such as smartphones or IoT gateways, organizations can achieve faster decision-making while maintaining data privacy and security.

The fusion of deep learning with IoT also facilitates the development of more intelligent and adaptive systems. For instance, reinforcement learning, a branch of deep learning, allows IoT devices to learn optimal behaviors through trial and error. This approach is being applied in smart home systems, where devices can learn user preferences over time and adjust their operations accordingly, enhancing user experience and energy efficiency. Furthermore, advances in explainable AI (XAI) are addressing the transparency and interpretability of deep learning models, which is crucial for cognitive applications in sensitive domains like healthcare and finance. By providing insights into how models make decisions, XAI fosters trust among users and stakeholders, enabling broader adoption of AI-driven IoT solutions.

SUBMISSION PROCEDURE:

Researchers and practitioners are invited to submit papers for the special session on **[Hybrid Artificial Intelligence implementation using IoT in Smart Healthcare] on or before [15th September 2024]**.
All submissions must be original and may not be under review by any another publication. INTERESTED AUTHORS SHOULD FOLLOW THE CONFERENCE'S GUIDELINES FOR MANUSCRIPT SUBMISSIONS.
All submitted papers will be reviewed on a double-blind, peer review basis.

NOTE: While submitting a paper in the special session, please specify [**Advances in Deep Learning Methods for Cognitive Applications using IoT**] at the top (above paper title) of the first page of your paper.