

ECAI 2022- 14th Edition INTERNATIONAL CONFERENCE on Electronics, Computers and Artificial Intelligence, 30 June - 01 July 2022

Keynote Address

Title: Internet of Things: Concepts, Recent Trends and Key Challenges

Abstract: Internet of Things (IoT) or Internet of Everything (IoE) is a new technological paradigm that can enable seamless interconnection of different types of diverse intelligent devices or smart sensors and smart computing systems (Edge, Mist/Fog or Cloud) by using different kinds of wireless technologies through an internet for providing innovative solutions to various challenges and issues related to the real-time accurate and reliable event detection, classification or recognition and prediction tasks in the application domains of smart healthcare, smart building, environment monitoring, surveillance, energy management and smart grid, industry automation, smart city, smart agriculture and farm, autonomous vehicles, transportation, AR/VR and so on. There are still many open research challenges and constraints that need to be addressed to alleviate major problems such as energy efficiency of connected devices, device and data security, interoperability, and communication failure and network coverage to achieve the full potential of IoT/IoE by considering resource constraints.

This talk presents the concept of IoT/IoE, basic IoT architecture (IoT reference model), and different kinds of wireless technologies that can be used for implementation of IoT enabled event monitoring system and then presents current state of research on the IoT by identifying current trends and key challenges addressed in the literature. The second part of the presentation includes the recent trends and challenges in Edge, Fog/ Mist and Cloud computing in IoT paradigms. Finally, with reference to internet of medical things (IoMT), it presents different energy reduction strategies for improving energy efficiency of IoT-Edge health monitoring systems (i.e. maximizing lifetime of battery operated devices) and also energy harvesting techniques for enabling long-term continuous monitoring of events in real-time.

Keynote Speaker: Dr. M. Sabarimalai Manikandan, Indian Institute of Technology Palakkad, INDIA

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Short-Bio

M. Sabarimalai Manikandan received the B.E. degree in ECE from Bharathiar University, India, the M.E. degree in Microwave and Optical Engineering from Madurai Kamaraj University, India, and the Ph.D. degree in Biosignal Processing from IIT Guwahati, India. He was an Assistant Professor (Jul 2013 - Dec 2021) at School of Electrical Sciences, IIT Bhubaneswar. He was a Chief Engineer (Dec 2011 - July 2013) with the Advanced Technology Group, Samsung India Electronic Pvt. Ltd., Noida, India. He was an Assistant Professor (Jan 2010 - Dec 2011) at Center for Computational Engineering and Networking (CEN), Amrita University, India and a Lead Engineer (Jan 2009 - Jan 2010) with the Audio Group, Samsung India Electronic Pvt. Ltd., Noida, India.

Main Focus: Design and development of Energy-Efficient AI-powered Health Sensing and Monitoring Systems, Drone Detection and See-Through Wall Human Sensing, Human-Machine Interactions and Voice-Enabled Technologies, and Sound Based Surveillance Systems.

Professional Activities: Dr. M. S. Manikandan was a recipient of the 2012 Outstanding Performance Award and also Employee of the Month during his tenure at Samsung India Electronic Pvt., Ltd. and received 2019 CVET Most Cited Article Award at the Biomedical Engineering Society (BME) conference, Philadelphia, USA and 2019 IET Healthcare Technology Letters Premium Award. He is currently the Chair of Cardio-Respiratory (CR) Subgroup of IEEE Standards P1752.2 and Vice Chair of Working Group of IEEE Standards P2520.3.1 (Standard for Machine Olfaction Devices and Systems) and Member of Working Group of IEEE P1924.1 (Energy Efficient Communication Hardware (COM/GreenICT-SC/EECH)) with main contribution of Recommendation of Sensor and Data Acquisition Techniques. He serves as Associate Editor of IEEE Access, Healthcare Technology Letters, IET Generation, Transmission & Distribution, PLOS Digital Health and Frontiers in Signal Processing (Biomedical Signal Processing) and Academic Editor and Guest Editor of Journal of Healthcare Engineering. He serves as the reviewer for reputed journals including the IEEE, ACM, IET, Springer, Elsevier, PLOS ONE, and Taylor and Francis.