IoT & LiDAR Technologies in Healthcare

25 November 2024 – 29 November 2024

DEAKIN UNIVERSITY | **SPARC** Scheme for Promotion of Academic and Research Collaboration | हैदराबाद विश्वविद्यालय **University of Hyderabad**

Organised by: Deakin University, Australia | **Funded by: SPARC Grant** | **Jointly Organised by: University of Hyderabad, India**

Project:	**IoT based Sensor Analytics to Enhance the Quality of Life for elderly population (P2354)**
Investigators:	**Dr.Nagender Kumar S, Dr.Atul Negi,** **Dr.Anuroop Gaddam, Dr.Chandan Karmakar**
	University of Hyderabad **Deakin University**

25-Nov-24 Day1: Introduction to IoT and LiDAR Technologies

Dr. Nagender Kumar S-University of Hyderabad and
Dr. Anuroop Gaddam-Deakin University

10:00 AM - 10:30 AM: Registration and Welcome Coffee

10:30 AM - 11:00 AM: Opening Remarks
 Overview of the workshop objectives and schedule

11:00 AM - 1:00 PM: Introduction to IoT and LiDAR Technologies
 Overview of IoT and LiDAR systems - SPARC grant and project objectives

1:00 PM - 2:00 PM: Networking Lunch

2:00 PM - 3:15 PM: Lab Session: Introduction to Unitree 4D LiDAR L1 Sensor Hands-on demonstration of sensor calibration and data acquisition

 3:30 PM - 5:00 PM: Hands-on Session: Data Acquisition in Fieldwork Scenarios, Practical session to capture real-time data

26-Nov-24 Day 2: Smart Platform for Healthcare

Dr.Nagarajan Ganapathy-IIT-Hyderabad

10:00AM-10:45AM: Smart Platform for Healthcare

11:00AM-1:00PM: Smart Platform to offer Evidence-based Personalized Support for Healthy and Independent Living at Private Spaces

1:00PM-2:00PM: Networking Lunch

2:00PM-3:15PM: Lab Session: Introduction to multimodal signal quality assessment and fusion strategies.

3:30PM-5:00PM: Hands-on Session: Multimodal Data Acquisition in wild Scenarios, Practical session to capture real-time data from out-of-lab conditions

27-Nov-24;Day 3: Deep Learning and LiDAR Anomaly Detection & Advanced LiDAR-based Gait Analysis Techniques **Dr. Anuroop Gaddam-Deakin University**	28-Nov-24; Day 4: Technology end-user driven ecosystem for Healthcare **Dr.Rakesh Biswas Kamineni Institute of Medical Sciences**	29-Nov-24;Day 5: Future Research Directions in LiDAR and IoT **Dr. Anuroop Gaddam-Deakin University**
10:00AM-11:15 AM: Talk: Deep Learning for Anomaly Detection in LiDAR Data **11:30 AM-1:00 PM**: Discussion: Challenges in Applying Deep Learning to Real-world Data Understanding CNN-LSTM models and their role in gait anomaly detection.Case studies on deep learning and LiDAR integration **1:00 PM - 2:00 PM**: Lunch Break **2:00 PM - 3:15 PM**: Lab Session: Training a CNN-LSTM Model for Gait Anomaly Detection Practical session focused on training models for gait disorder detection **3:30 PM - 5:00 PM**: Hands-on: Model Evaluation and Optimisation focused on evaluating models.	**10:00AM-11:15AM:Talk: Technology end-user driven ecosystem for Healthcare** **11:30AM-1:00PM:** Gait Data Analysis using Python and Open3D Real-time data visualization and anomaly detection **1:00 PM - 2:00 PM**: Lunch Break **2:00PM -3:15PM:** Gait Analysis using wearable and Non-Wearable devices **3:30PM-5:00PM:** Discussion: Challenges in Applying Deep Learning to Real-world Data Case studies on deep learning and LiDAR integration	**10:00 AM - 11:15 AM**: Talk: Multi-modal Feature Learning for Visual Question Answering (VQA) Future trends and applications of LiDAR and IoT in healthcare **11:30 AM - 1:00 PM**: Interactive Session: Future Research Directions in LiDAR and IoT Open discussion on current trends and research **1:00 PM - 2:00 PM**: Lunch Break **2:00 PM - 3:15 PM**: Open Forum: Q&A Session Interactive forum with participants on emerging research topics **3:30 PM - 4:00 PM**: Feedback and Organizing Committee Meetings

About the Workshop:The IoT and LiDAR Technologies in Healthcare Workshop explores the integration of Internet of Things (IoT) and Light Detection and Ranging (LiDAR) technologies in revolutionizing healthcare systems. IoT enables seamless connectivity between medical devices, providing real-time data and monitoring, which enhances patient care and treatment outcomes. This interconnected network allows for improved diagnostics, remote patient monitoring, and efficient healthcare delivery. Meanwhile, LiDAR, known for its precision in mapping and 3D scanning, offers groundbreaking applications in medical imaging, robotic surgery, and elderly care. The workshop delves into the synergistic potential of these technologies, aiming to foster innovation in predictive healthcare, automation, and data-driven patient management. By advancing these cutting-edge tools, the healthcare sector can expect improved diagnostics, patient safety, and operational efficiency. The five-day workshop provides the hand-on activities to ensure that attendees discuss and understand each topic and can apply the information to their own requirements.

Who can attend the workshop: Academicians, Research Scholars, UG, PG students, faculty members / professionals & industry personnel working in the concerned / allied discipline. **Registration is free but mandatory**:URL: https://forms.gle/14UG5wiunB6PsRv27 **Venue:**G9 Dr.Zakir Husain Lecture Hall Complex, School of Computer and Information Sciences,University of Hyderabad. **Registration Closing Date:** 21-Nov-24,Shortlisted participants will be informed on 22-Nov-24. **Workshop Date:** November 25-29,2024. Further details Contact:20mcpc04@uohyd.ac.in;