

2025 EECMS Summer Internship Application Form

Main Supervisor	Himanshu Agrawal
Other supervisors (if applicable)	Prof. Yue Rong A/P Sonny Pham
Project Title	Optimizing Human Pose Detection with Wi-Fi and AI Techniques in Controlled Indoor Spaces
Student location(s) for the project	EECMS, Curtin University
Duration of project	12 weeks
Project Description	<p>In recent years, there has been growing research interest in human pose estimation due to its significant implications in healthcare industry. Current state-of-the-art methods include LiDAR, RGB cameras, Wi-Fi, FMCW radar, and UWB. LiDAR, although highly accurate with 1-2 cm in indoor settings, is expensive, consumes significant power, and struggles with detailed human posture estimation. RGB cameras offer high accuracy too in cm range (around 10 cm) but raise privacy concerns due to video recording. FMCW radar requires sophisticated signal processing, making it complex, while UWB has good penetration but suffers from multipath effects and limited integration capabilities. A recent research study conducted by Carnegie Mellon University researchers[1] highlighted the challenges faced by current technologies in achieving high-resolution human pose estimation in indoor environments, suggesting the need for approaches like widely available Wi-Fi-based systems. This project aims to use multiple low-cost Wi-Fi transmitters and receivers for human head pose orientation estimation and explore deep learning and transfer learning techniques to enhance resolution and accuracy in a controlled indoor space.</p> <p>Objectives:</p> <ul style="list-style-type: none"> • Develop and implement deep learning models for accurate human pose estimation using Wi-Fi signals. • Validate and optimize the system's performance in a controlled indoor environment, focusing on healthcare applications. <p>[1] https://www.ri.cmu.edu/app/uploads/2019/09/Person_in_WiFi_ICCV2019.pdf</p>