2025 EECMS Summer Internship Application Form

Main Supervisor	Susannah Soon
Other supervisors (if applicable)	Sonny Pham / Kit Yan Chan
Project Title	Deploying deep learning models for strep throat detection on mobile devices
Student location(s) for the project	EECMS
Duration of project	Eight weeks
Project Description	Strep throat, a bacterial infection, can lead to rheumatic fever and chronic rheumatic heart disease (RHD) if diagnosed late. As of December 31, 2021, there were 6,749 cases of RHD, with 78% among Indigenous Australians. The median age for Indigenous Australians with RHD is 33, compared to 60 for non-Indigenous Australians. Limited healthcare access in Indigenous communities causes preventable hospitalizations and worsened health conditions. Early strep throat diagnosis is necessary to reduce RHD-related deaths and severe illness in Indigenous communities. Our project aims to promote preventive healthcare by deploying a mobile device equipped with deep learning models for real time detection. The mobile device aids in diagnosis with minimal involvement of healthcare workers and aims to detect early strep throat, which can lead to RHD, facilitating timely treatment. Our research team has conducted preliminary research on developing deep learning models for strep throat detections; the models achieve reasonable detection accuracies in offline computational tests. In this project, we will further enhance the model performance in term of both detection accuracy and inference time. We will improve the detection accuracy by tuning hyperparameters, model architectures. We will evaluate the real-time performance of the models on the mobile computing platform such as NVIDIA Jetson board. We will measure how quickly and accurately the models perform predictions on the mobile computing platform. We will also measure the energy consumption of performing a detection. We will further simplify model complexity to reduce inference time and improve real time performance in mobile computing platforms.