SYSC 4907 – Fall 2026/Winter 2027

Supervisor	Sreeraman Rajan
Co-supervisor	
Course section	K
Project ID	K2
Project title	Tiny ML-based Smart Monitoring System
Project description	This undergraduate project aims to design and implement a **TinyML-based smart monitoring system** using remote sensors for real-time data acquisition and analysis. The system will collect signals related to human activity, environmental conditions, or basic health indicators, depending on the selected application. The primary goal is to develop an intelligent edge device capable of processing sensor data locally using lightweight machine learning models. The project will involve signal acquisition, preprocessing (such as noise filtering and normalization), feature extraction, and model training using supervised and/or unsupervised and/or semi-supervised and/or reinforcement learning techniques. A compact microcontroller platform will be used to deploy a quantized TinyML model that performs on-device inference without relying on cloud connectivity. This ensures low latency, reduced power consumption, and improved data privacy. Students will have to develop a suite of suitable metrics to quantify and evaluate the performance of the designed system. Students may have to collect data to implement the project. The final outcome will be a working embedded prototype demonstrating real-time intelligent monitoring at the edge. This project provides interdisciplinary exposure to embedded systems, signal processing, and edge artificial intelligence.
Program(s)	Biomedical and Electrical Computer Systems Software Electrical
Maximum number of students	4
Meeting time with supervisor (optional)	Through appointment
Do you want the student to contact you before the office assign this project to them ? (Yes/No)	Yes