

**SYSC 4907 – Fall 2026/Winter 2027**

Supervisor	Rose Gomar
Co-supervisor	
Course section	SYSC 4907 E
<b>Project ID</b>	E3
Project title	Edge-AI Home Anomaly Detection for Elder Care
Project description	<p>This project develops a non-intrusive home safety system that utilizes Acoustic Pattern Recognition to monitor the wellbeing of seniors without the use of invasive cameras or wearable pendants. By leveraging an on-device embedded processor, the system learns the "acoustic signature" of a home—including routine sounds like running water, appliances, and footsteps—to establish a baseline of normal activity. When a sudden deviation occurs, such as the specific acoustic impact of a fall followed by an unusual period of silence, the Edge-AI engine identifies the anomaly locally to ensure total data privacy. Real-time alerts are then transmitted via a dedicated IoT gateway to a caregiver application, providing an immediate safety net that respects the user's dignity and independence.</p> <p><b>Note:</b> Interested students should first reach out via email, include their résumé, and briefly describe their relevant background. Meetings with eligible students will be scheduled on a first-come, first-served basis. Students must form a team before contacting. At least one computer systems student must be included in the team.</p>
Program(s)	Biomedical and Electrical Computer Systems Software
Maximum number of students	Minimum 4 students -maximum 5 students
Meeting time with supervisor (optional)	Will be set later
Do you want the student to contact you before the office assign this project to them ? (Yes/No)	yes