

Integrated Decision Support System for Health and Safety

For: PhD students, 12 months

Program supported: [Aging in Place Challenge Program](#)

Academic Collaborator	NRC Principal Investigator	Associated NRC Research Centre
Carleton University	Pengcheng Xi (Researchgate)	Digital Technologies

Project Description:

This project aims to build an integrated decision support system based on smart sensing and AI-driven data analysis to provide evidence-based support on detection, monitoring and prediction of event or disease for ensuring safety and health of seniors.

Specifically, we seek to provide enhanced monitoring and alerting for improved medication management, nutrition and hydration tracking, and health status monitoring. Once completed, the system will be able to provide suggestions on medical screening, flag safety/health risks, monitor food/nutrition in-taking, ensure medication adherence and appropriate use, inform medication changes and its efficacy, and provide tailored recommendations for health and safety behavior changes.

The host (Prof. Rafik Goubran) at Carleton University will lead the collaboration project on AI-driven cough analysis, vital sign measurement, data fusion, decision support model design and testing in living lab environment.

Through this internship, the student will have the opportunity to work on state-of-the-art AI technologies for cough detection and classification, vital sign measurement with smart sensing, data fusion and decision support system building and testing. This will contribute to Safety and Health, two Master Projects under the NRC Aging in Place Challenge Program, and lead to achieving the program's overall objective on decreasing the number of seniors who will need nursing home care across Canada by 2031.

Student Profile:

The student is expected to have expertise or background in one or more of the following research areas: biomedical signal analysis, image/video processing, computer vision, machine learning and deep learning.