NOTICE OF UNIVERSITY ORAL

GEODESY AND GEOMATICS ENGINEERING

Master of Science in Engineering

Alec Parise

Friday, November 22 @ 1pm

Head Hall – Room E-11

Board of Examiners:

Supervisor(s):	**Monica Wachowicz, Geodesy & Geomatics Eng.**
Examining Board:	**Shabnam Jabari, Geodesy & Geomatics Eng.**
	Jennifer McArthur, Architectural Science – Ryerson
Chair:	**Peter Dare, Geodesy & Geomatics Eng.**

AN IOT PLATFORM FOR OCCUPANCY PREDICTION USING SUPPORT VECTOR MACHINE

ABSTRACT

The Internet of Things (IoT) is a network of devices able to connect, interact and exchange data without human intervention. Most of today's research focuses on collecting indoor sensor data with the purpose of reducing costs of operation facilities management. Innovative approaches ranging from context aware sensing platforms to dynamic robot sensing have been proposed in previous research work, but the challenge still remains on understanding how sensor data can be used to predict occupancy usage patterns in smart buildings. This research aims at developing a non-intrusive sensing method for gathering sensor data for predicting occupancy usage patterns that can be used for reducing building emission while also promoting a comfortable and productive working and living environment. Towards this end, an IoT platform based on an open source architecture consisting of Arduino and Raspberry Pi 3 B+ is designed and deployed in three different environments at two University campuses. By utilizing temperature and humidity for observing indoor environmental characteristics while combining PIR motion sensors, C02, and sound detectors a robust occupancy detection model is created, and by applying Support Vector Machine, occupancy usage patterns are predicted. This platform is a low-cost and highly scalable both in terms of the variety of on-board sensors and portability of the sensor nodes, which makes it well suited for multiple applications related to occupancy usage and environmental monitoring.

All Faculty Members and Graduate Students are invited to attend this presentation.