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# Sensor Relocation by Mobile Robots using Multi-Objective Optimization

**Speaker:** Mr. Benjamin Desjardins, School of Electrical Engineering and Computer Science, University of Ottawa

**Organized by:** IEEE CI/SMC Ottawa Joint Chapter

**Where:** Graduate Student House, Room 307, University of Ottawa, 601 Cumberland St, Ottawa

**When:** Thursday May 12th, 2016, 6:30 - 8:00 PM

**Admission is free but registration is required via Eventbrite** (<https://www.eventbrite.ca/e/technical-talk-sensor-relocation-by-mobile-robots-using-multiobjective-optimization-tickets-25178468477>)

**Refreshments will be served**

## Abstract:

Optimization is one of the core focuses within computer science yet it can be difficult to apply it to real-world problems. This is in part due to the difficulty of mathematically modelling real world phenomena such that it can be described as a function with a single output. In order to circumvent this problem, we introduce the concept of modelling a problem more realistically using evolutionary multi-objective optimization algorithms.

Wireless sensor networks (WSNs) provide a method for monitoring a region of interest. Within the WSN domain there is a type of network referred to as a Wireless Sensor and Robot Network (WSRN) in which a robot is added to the network in order to provide some task. We look at the case where said robot is responsible for relocating sensors to provide maximum network coverage. This problem has been previously examined as a traditional optimization problem but we provide a more realistic real-world model allowing for more appropriate responses. In this talk, we examine the steps required to intelligently transform a problem into a multi-objective version in such a way that the end result is more beneficial to the user. Tangentially, we will also examine the performance of current evolutionary multi-objective optimization algorithms with respect to this multi-objective formulation.

## Speaker biography:

Ben Desjardins is currently a Master of Computer Science student at the University of Ottawa. He completed his undergraduate degree at the University of Ottawa in 2013, and worked as a software developer for IBM until 2014 when he returned to schools to pursue research interests. His research involves the applications of multi-objective optimization to the wireless sensor network domain. He has published papers as well as a book chapter in this area.