CMPT 882 - G100 Special Topics in Artificial Intelligence

Instructor(s): Richard Vaughan

Calendar Objective/Description:
None

Instructor's Objectives:
Special Topics Title: Distributed Robot & Sensor Systems

Goals:
Students will understand:
(i) the applications and challenges of building systems of multiple robots and/or sensors;
(ii) the major approaches from the literature;
(iii) motivating examples from nature.

Students will implement their own multi-robot system in a research-paper-style project.

Topics:
- multi-robot systems
- sensor networks
- software engineering for distributed systems
- control and coordination models for multi-agent systems, including
  - explicit consensus models
  - swarm approaches
- applications & challenges

Outline:
- seminar class based on research papers
- students present and critique papers
- two short programming homework: compare explicit consensus with a swarm robot approach
- project: implement and experiment with a multi-robot system or sensor network in simulation or on real hardware

Prerequisites:
None

Grading:
Based on student presentations, short homework, and a major project.

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).