<u>NEW</u> Course Offering for Winter 2008

COMP-4766

The Department of Computer Science at Memorial University, St. John's campus, is pleased to offer the course, **COMP-4766 - Introduction to Autonomous Robotics** in the Winter 2008 semester.

Introduction to Autonomous Robotics examines the fundamental constraints, technologies, and algorithms of autonomous robotics. The focus of this course will be on computational aspects of autonomous wheeled mobile robots. The following topics will be covered: major paradigms in robotics, methods of locomotion, kinematics, simple control systems, sensor technologies, stereo vision, feature extraction, modelling uncertainty of sensors and positional information, localization, SLAM, obstacle avoidance, and 2-D path planning. The format will be lecture in slot 18 (10:30 to 11:45 a.m. on Tuesdays/Thursdays) in EN-2051, and a lab from 3:00 to 5:00 p.m. on Wednesdays in EN-1049.

Prerequisite: Computer Science 2711, Mathematics 2000, Mathematics 2050, and Statistics 2510.

Course Outline:

- Introduction Major paradigms in robotics
- Mobility Methods of locomotion; kinematics; simple control systems
- Perception Sensor technologies; stereo vision; modelling uncertainty of sensors and positional information
- Localization and Navigation Environmental representation; Kalman and particle filtering; simultaneous localization and mapping (SLAM)
- Motion Planning 2-D path planning; obstacle avoidance

Method of Evaluation: Assignments 40%; Midterm 20% and Final Exam 40%.

As online registration of this course will not be available until January, please email the instructor to indicate your interest in this course. Classes will begin in the week of January 7, 2008.

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