**COLLOQUIUM**

Department of Computer Science and Engineering

University of South Carolina

**Robotic System Design for Automated Marine Data Analysis**

**Gregory Dudak**

Date: **February 19, 2016**

Time: **1450-1605 (2:50-4:05pm)**

Place: **Swearingen 2A27**

# Abstract

**Abstract:** This talk will address the deployment of robotic systems for data collection. This includes task specification, gait learning and data analysis. As a concrete example I will discuss the automated analysis of video data, and specifically video data collected underwater with an amphibious vehicle (the Aqua 2 hexapod). Automated systems can collect data at prodigious rates and the timely analysis of this data is a growing challenge, especially when there are bandwidth constraints between the data source and the people who must examine the data. We are specifically interested in the real-time summarization and detection of the most interesting events in a video sequence, for use by humans who will analyze the data either in real time, or offline. To do this, we are developing methods that adapt to video data streams in real time to collect salient events and using them in the context of a group of vehicles that fly, swim and float.

Bio: Gregory Dudek is the Director of the School of Computer Science, a James McGill Professor, member of the McGill Research Centre for Intelligent Machines (CIM) and an Associate member of the Dept. of Electrical Engineering at McGill University. He is the former Director of McGill's Research Center for Intelligent Machines, a 25 year old inter-faculty research facility. In 2010 he was awarded the Fessenden Professorship in Science Innovation and also received the prix J. Armand Bombardier for Technological Innovation Robotics from ACFAS, the Association francophone pour le savoir (the French learned society). He is also the recipient of the Canadian Image Processing and Pattern Recognition Award for Research Excellence and the award for Service to the Community at the Conference on Computer and Robot Vision. He directs the McGill Mobile Robotics Laboratory.

He has been on the organizing and/or program committees of Robotics: Systems and Science, the IEEE International Conference on Robotics and Automation (ICRA), the IEEE/RSJ International Conference on Intelligent Robotics and Systems (IROS), the International Joint Conference on Artificial Intelligence (IJCAI), Computer and Robot Vision, IEEE International Conference on Mechatronics and International Conference on Hands-on Intelligent Mechatronics and Automation among other bodies. He is president of CIPPRS, the Canadian Information Processing and Pattern Recognition Society, an ICPR national affiliate.

He was on leave in 2000-2001 as Visiting Associate Professor at the Department of Computer Science at Stanford University and at Xerox Palo Alto Research Center (PARC). During his sabbatical in 2007-2008 he visited the Massachusetts Institute of technology and co-founded the company Independent Robotics Inc. He obtained his PhD in computer science (computational vision) from the University of Toronto, his MSc in computer science (systems) at the University of Toronto and his BSc in computer science and physics at Queen's University.

He has published over 200 research papers on subjects including visual object description and recognition, robotic navigation and map construction, distributed system design and biological perception. This includes a book entitled "Computational Principles of Mobile Robotics" co-authored with Michael Jenkin and published by Cambridge University Press. He has chaired and been otherwise involved in numerous national and international conferences and professional activities concerned with Robotics, Machine Sensing and Computer Vision. His research interests include perception for mobile robotics, navigation and position estimation, environment and shape modelling, computational vision and collaborative filtering.