PhD-2-F2022: PhD position at ECE, University of Waterloo (Fall 2022)
Dated: 15-Dec-2022

Overview of position:
Yash Vardhan Pant and Stephen L. Smith invite applications for a co-supervised PhD student to work on problems at the intersection of control theory and machine learning, with applications to motion planning and decision making for autonomous robotic systems in challenging environments.
Based on the research interests and background of the candidates, the research can focus on topics such as robot navigation in partially known environments, multi-robot motion planning and control with complex temporal logic specifications, task allocation and motion planning for multi-robot systems repeatedly performing tasks in the same environment (evolving over time), etc. The successful candidate will have the opportunity to implement their research on mobile robots (aerial or ground) and will have access to the University of Waterloo's state-of-the-art RoboHub.

Required Qualifications:
- Masters (or in exceptional cases, a Bachelors) degree in Robotics, Systems and Control, Machine Learning, Mathematics, Computer Science, or a related area.
- Strong mathematical foundations in linear algebra, optimization, and probability, along with an interest in machine learning for robotic systems.
- Proficiency in programming with Python.

Additional qualifications:
Plus-points if you have one or more of the following skills (please highlight/list them in your cover letter):
- Knowledge of C++
- Familiarity with Matlab
- Experience with deep learning packages in Python (such as Tensorflow, Pytorch, Keras)
- Experience with optimization packages such as Casadi, CVX, Yalmip etc.
- Experience with non-convex optimizers such as IPOPT, Baron etc.
- Experience with Mixed Integer Programming using solvers like Gurobi.
- Experience with Control toolboxes such as MPT 3+
- Experience with the Robot Operating System (ROS)
- Experience with the Gazebo simulation environment

Please see https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/future-students/programs/electrical-and-computer-engineering-phd-waterloo for application details, and https://uwaterloo.ca/research/find-and-manage-funding/apply-funding/building-budget/recommended-salary-rates for information on salary and benefits.

Contact us:
Students who have submitted their application to ECE should email their CV and transcripts (can be unofficial) along with a few lines on how their background and research interests align with ours to: robots.at.uwaterloo@gmail.com
Important: Use the position code PhD-2-F2022 to start the email's subject line.