



POSTDOCTORAL POSITION IN Autonomous Systems

The Intelligent Systems Laboratory, under the direction of Dr. Scott Dick, is seeking candidates for one anticipated postdoctoral fellow position in support of an industrial collaboration funded by MITACS. The candidate will be responsible for designing and evaluating an intelligent supervisory control system for an autonomous dredge. Said system will be tasked with ensuring the safe and efficient operation of the dredge system, in tailings ponds with unknown bottom contours, sediment distributions and obstacles, all in an extremely harsh environment. The project sponsors and principal investigators believe that machine learning is the most promising avenue for designing such a system – specifically model-based deep reinforcement learning. As the control policies to be produced by the system are furthermore quite complex, a novel model architecture (a hybrid of deep learning and fuzzy logic) is being proposed for the system.

This position is part of a larger collaboration between the project sponsor and a team from the University of Alberta. The larger team will also be producing physical and virtual simulation models of the dredging system; these will be the principal data sources for training the supervisory controller, and the testbeds for evaluating it. This position is for one year, contingent on funding approval; a further one-year extension may be possible, contingent on satisfactory performance and funding approval.

The candidate for this project will be responsible for data collection from the simulation sources; designing and evaluating each system component versus all reasonable alternatives; integrating and evaluating the full control system; writing reports and publishing research findings; and assisting in graduate student supervision and writing research proposals. They will work closely with the principal investigators, graduate students in the Intelligent Systems Laboratory, and employees of the project sponsor.

The candidate must have an earned Ph.D. in Computer Science, Computer Engineering, or a closely related field, with a specialization in autonomous systems. The preferred qualifications include:

- Expertise in deep reinforcement learning (especially model-based learning), demonstrated through high-quality publications in respected venues;
- Hands-on experience in robot / autonomous systems development incorporating that expertise;
- Excellent software design and development skills (including software testing), demonstrated through the candidate's programming portfolio (e.g. Github);
- Excellent verbal and written communication skills;
- Experience in mentoring junior graduate students.

To Apply:

Forward your CV and contact information for three references (preferably by email) to:

Dr. Scott Dick
Department of Electrical and Computer Engineering
University of Alberta
11th Flr DICE Bldg.

9211 – 116 Street
Edmonton, AB, Canada
T6G 1H9

Email: dick@ece.ualberta.ca
T: 780 492-6216 (+1 if outside Canada)

Closing date:

Review of applications will begin on June 30, and continue until the position is filled.

We thank all applicants for their interest; however, only those individuals selected for an interview will be contacted.

The University of Alberta is committed to an equitable, diverse, and inclusive workforce. We welcome applications from all qualified persons. We encourage women; First Nations, Métis and Inuit; members of visible minority groups; persons with disabilities; persons of any sexual orientation or gender identity and expression; and all those who may contribute to the further diversification of ideas and the University to apply.