
Presenter: Dr. Junaed Sattar

Abstract: Robots are increasingly being used in diverse environments in a variety of tasks, including but not limited to exploration, search-and-rescue and rehabilitation, and also personal applications. For safe, reliable and effective deployment of mobile robots, close collaboration between humans and robots are of utmost importance, as are robust, intuitive and natural communication methods.

This talk will present insights into research in sensory human-robot interaction, and present findings from robot field trials, as well as from quantitative and qualitative studies. My research looks at algorithms for robust perception of human activities and intent, which improves interaction with and control of autonomous robots in arbitrary environments. A significant portion of this work has investigated vision-based approaches for underwater human-robot collaboration and interaction, including human-motion detection and visual tracking. Part of this research has looked at a quantitative model of human-robot dialog incorporating task cost and communication uncertainty, with the goal of preventing robots from carrying out potentially dangerous and unsafe tasks unless confirmed by its human partner. This human-robot dialog framework has been evaluated on-board a number of different robotic platforms including the Aqua amphibious robot, the Willow Garage PR2, and a collaboratively-controlled wheelchair being used by older adults with impaired cognitive abilities. Currently, this work is being extended to multi-robot, multi-human deployments and interaction scenarios for service robots and search-and-rescue applications using a number of autonomous ground and aerial vehicles, and incorporating wearable technology for robot-human collaboration. System building is an essential component of field robot deployments, and the talk will briefly discuss some of the inroads made towards achieving the goal of reliable, long-term and reproducible robot missions.

Bio: Junaed Sattar is an Assistant Professor at the Department of Computer Science at Clarkson University in Potsdam, NY, and is the founding director of the Robotics, Autonomy and Interactions Lab (RAIL). Before coming to Clarkson, Junaed worked as a Post-Doctoral fellow in the Laboratory for Computational Intelligence (LCI) at the University of British Columbia in Vancouver, Canada, funded by the FRQNT (Quebec Research Funds in Natural Sciences and Engineering) Post-Doctoral Scholarship. His undergraduate degree is in Computer Science and Engineering from the Bangladesh University of Engineering and Technology, and his MSc and PhD degrees are from McGill University in Montreal, Canada. Junaed focuses his research on field robotics and human-in-the-loop autonomy for mobile robots. His research looks into vision-guided robotics, human-robot interaction, applied machine learning for robotics, and assistive robotics. His research has been applied to variety of robotic platforms, including underwater, aerial, terrestrial, service and assistive robots. His work has been featured in a number of Canadian and International media outlets such as CTV National, Canal Savoir (in French) and the Discovery Channel.