

IEEE Robotics, Control, Instrumentation and Measurement (RobConIM) Seminar Series



Computer Vision Applications for Human-Machine Collaboration

SPEAKER: Ryan Batke

Fluid Power and Telerobotics Research Laboratory
University of Manitoba

DATE: Thursday, October 17, 2019

TIME: 3:00 PM

PLACE: Room E2-361; Engineering & Information Technology Complex (EITC)

Fort Garry Campus, University of Manitoba

ORGANIZER: IEEE Robotics, Control, Instrumentation and Measurement Chapter – Winnipeg Section

This research is centered around the integration of computer-vision based perception capabilities with existing machines for the purpose of developing human-machine collaboration applications. In this research a 6-DOF hydraulic manipulator controlled via a haptic device is integrated with a standard HD webcam and two computer-vision-based applications were developed. Vision-based teleoperation is used to control the manipulator through the use of a fiducial marker replacing the haptic device. Additionally, a second application was developed in which a virtual safety wall is created around the manipulator to improve safety in environments where operators work in close proximity to moving machines.

Embedding fiducial markers onto clothing for the use of human identification and tracking was also tested via a third application in which the markers are tracked in a 3D environment to produce a 2D map of the user's movements along with travel metrics.

Ryan Batke is currently working toward his BSc degree in Mechanical Engineering at the University of Manitoba.

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