

# Robotic Motion Control and Estimation using Computer Vision

## PROJECT DESCRIPTION

"This project involves the use of computer vision together with other onboard sensors to control and estimate the motion of a robot such as an unmanned aerial vehicle. Project topics include:

-Visual Servicing where computer vision system feedback is used to control the motion of the vehicle (eg, landing in an unprepared environment)

-visual state estimation where computer vision is used to estimate some or all of the vehicle state variables. SLAM, odometry, and optical flow provide methods for achieving this goal.

-platform development involves sensor calibration, on and off-board software development. Open source tools such as px4 and ROS are used. GPU-based solutions can be developed.

## FACULTY-DEPARTMENT

Engineering - Electrical and Computer

## DESIRED FIELD OF (STUDENT) STUDY

Computer vision, control systems, embedded systems, robotics, programming

Student should have an interest and background in robotics, control theory, and experimental work, and student should also know or be willing to learn Linux, ROS, px4, etc.

## INTERNSHIP LOCATION

University of Alberta Main Campus - Edmonton

## NUMBER OF INTERNSHIP POSITIONS

2

## INTERNSHIP START DATE

July 4, 2018

Contact: Brendan Cavanagh, Internship Coordinator (Inbound)  
University of Alberta International  
intern@ualberta.ca

## INTERNSHIP END DATE

End of September

## ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.