Seamus Johnston

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University of Waterloo Mechatronics Engineering 2020

U.S/Canadian citizen seeking roles to advance my knowledge in the field of robotic software design

SKILLS

Languages	C++, Python, Arduino, C, XML, Bash, C#, MySQL, MATLAB
Libraries	Boost, Eigen, ROS, Gazebo, OpenGL, OpenCV, OROCOS KDL
Hardware	3D Printing, Laser Cutting, Arduino, Raspberry Pi, ARM

PROJECTS

Co-Founder/Controls Lead

UW Sailbot - University funded with 40 members, placed 4th internationally May 16 - Sept 19

Created an autonomous sailboat to compete in the International Robot Sailing Regatta

- Developed velocity optimized GPS path planning algorithm in Python
- Designed entire ROS architecture for autonomous control on NVIDIA Jetson TX1
- Wrote an OpenGL simulator for ROS navigation development and data visualization

EXPERIENCE

Flight Controls Intern

Kitty Hawk - Project Cora May 19 - Aug 19

Modelling and controller analysis for an autonomous VTOL aircraft

- Implemented and analyzed a thermal motor model in C and MATLAB
- Added logic to trajectory planner to greatly simplify landing behaviour
- Implemented surface/motor failures and increased convergence rates in MATLAB non-linear trim optimizer, resulting in improved controller analysis

Vehicle Dynamic Controls Engineering Intern

NVIDIA - Autonomous Vehicles Group Sept 18 - Dec 18

Filter and controller design/optimization for an autonomous car

- Designed control system latency monitor and analyzed controller performance
- Analyzed and designed different methods for state filtering (Kalman, etc.) in C++ which reduced measurement noise and jerk, thus resulting in improved ride quality

Robotics Software Developer

Trexo Robotics Jan 18 - Apr 18

Designed a gait trajectory planner and control loop for adolescent physical rehabilitation

- Wrote a gait trajectory controller to enable a bipedal exoskeleton to walk on a treadmill in C++, which improved motion fluidity/smoothness and heel contact
- Designed a simulator using Gazebo with a custom ROS control loop plugin

Robotics Engineering Intern

2G Robotics May 17 - Aug 17

Software Developer

Tigercat Industries Sept 16 - Dec 16

Robotics Research Assistant

University of Waterloo Jan 16 - Apr 16