Seamus Johnston

Mechatronics Engineering

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SKILLS

Languages | OS | VC : C++, Arduino, ROBOTC, Python, XML, Bash | Windows, OS X, Linux | Git
Design | Datastores: AutoCAD, SolidWorks, Adobe Creative Suite 6 | MySQL
Mechanical | Hardware: 3D Printing, Laser Cutting, Machining | Arduino, Raspberry Pi, Kinect
ROS: Gazebo, RVIZ, Navigation Stack, Kinect IAI, RTabMap, Gmapping, FindObject

PROJECTS

RoboSwiffer - Autonomous Swiffer Robot
Nov 2015 - Dec 2015

- Built on an NXT platform, programmed in ROBOTC
- Used PID feedback control to allow for consistent motor speeds using incremental encoder
- Software created with Test Driven Development and Pair Programming
- Wrote and implemented drive code for an omnidirectional drivetrain
- Used sensor feedback to map the room, and generate a path for robot
- Robot detects and avoids obstacles using Bluetooth, ultrasonic range finder, and limit switches

RoBoat - Wifi TeleOperated Motor Boat
Mar 2016 - Present

- Software bundled as a standalone ROS package running on Ubuntu 14.04 and Raspberry Pi simultaneously, connected through wifi
- Uses RVIZ and Gazebo for real-time visualisation of boat tilt and motor rotation
- ROS integration of arduino motor controller codes controlled using keyboard
- Ultrasonic sensor feedback to visualisation programs for aid in long range boat control

EXPERIENCE

Robotics Research Assistant, University of Waterloo
Jan 2016 - Apr 2016

- Responsible for ROS development of an intelligent walker for the elderly
- Created Preliminary design in SolidWorks
- Wrote a URDF for Gazebo and RVIZ built from STLs exported from SolidWorks
- Worked with Neural Networks for object recognition and object based goal setting
- Worked with path planning in ROS to generate Ackermann drive specific paths
- Used SLAM to create real time maps with Kinect V2 using Gmapping and RTabMap
- Machined the handles and handle supports
- Designed control packages for wheels for keyboard and path planing interpretation
- Wrote Arduino Code to control ROS simulations and motors with a Bluetooth iOS app as well as strain measurements from the handles

EDUCATION

University of Waterloo, Waterloo, Ontario
2015-Present

- Candidate for Bachelor of Applied Science in Mechatronics Engineering
- Received the Presidents Entrance Scholarship for 90-94.9% average