Seamus Johnston

Mechatronics Engineering

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SKILLS

Qualities : Canadian/US Citizen, Self-Starter, Personable Leader, Adaptable, Robot Whisperer
Languages | OS : C++, Arduino, ROBOTC, Python, XML, Bash | Windows, OS X, Linux
Design | VC | Electrical : AutoCAD, SolidWorks, Adobe Creative Suite 6 | Git | Soldering
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

- Goal: Robot detects and avoids obstacles using Bluetooth, ultrasonic range finder, and limit switches
- Software Lead:
    - Programmed the software for an NXT platform, in ROBOTC
    - Wrote PID feedback loops to allow for consistent motor speeds using encoders
    - Wrote and implemented drive code for an holonomic drivetrain
    - Programmed robot to generate optimized path based on sensor feedback

RoBoat - Wifi TeleOperated Motor Boat
Mar 2016 - Present

- Goal: Motor boat running ROS on Raspberry Pi and Ubuntu 14.04 offboard to visualize tilt and ultrasonic data as well as motor spin and direction
- Software Lead:
    - Wrote a custom ROS package that interfaces with RVIZ and Gazebo
    - Leveraged ROS to link keyboard control to the arduino motor codes
    - Linked multiple sensors to allow for teleoperation beyond visual range

EXPERIENCE

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

- Goal: Create an intelligent walker that helps the elderly by planning paths around obstacles and use intent based goal planning
- Mechanical and Manufacturing:
    - Designed preliminary model in SolidWorks
    - Machined the walker's handles and handle supports
- Software Design:
    - Wrote a package with components for visualization and manual/auto wheel control
    - Leveraged a CNN for object based recognition and goal setting
    - Customized path planning algorithms in ROS to allow for Ackermann drivetrains
    - Utilized SLAM algorithms to create real time maps with RTabMap
    - Wrote Arduino Code to control ROS simulations with an iOS app and 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