Christopher O'Shea

osh1996@gmail.com
Cell - 617-320-8264

Permanent Address:
47 Salisbury Dr
Westwood, MA 02090

Education:

Worcester Polytechnic Institute (WPI), Worcester, MA
Bachelor of Science in Robotics Engineering, May 2018
Northeastern University, Boston, MA
M.S. in Robotics Engineering Candidate, Expected Fall 2024

Computer Skills: Linux, Git, ROS, Python, C/C++, HTML, CSS, Bash, Algorithms, Artificial Intelligence, Machine Learning, Jira, Bitbucket, Confluence, Microsoft Office Suite

Engineering Skills: Arduino, Agile Methodology, Algorithms, Software Design Patterns, Controls, 3-D Printing, Laser Cutting, Solidworks, Cura, Root Cause Analysis, Test Protocol Development, Precision Soldering, DSP, Finite Element Analysis, Rapid Prototyping, Software Documentation, Systems Analysis, Sensor Function Analysis

Professional Experience:

SharkNinja, Senior Mechatronics Engineer, Robotic Systems, 2019 - 2022

- Managed robot navigation subsystem, including sensor selection and validation, robustness/longevity testing, and field performance evaluation
- Root caused and provided corrective actions for safety-critical and high-priority consumer-facing issues
- Traveled abroad to architect the system flows and integrate hardware, electronics, and software into a working prototype
- Acted as subject matter expert on system-level robot behaviors to convey technical concepts to wider teams to facilitate cross-functional collaboration
- Maintained intimate working knowledge of the robot's embedded Linux OS
- Debugged, modified, and contributed to tools designed by software developers to evaluate performance and assess the robustness of the system
- Developed test protocols to integrate new technology/functionality into the system
- Developed and delivered compelling live product demonstrations highlighting new technology and functionality to our highest-volume clients
- Managed and mentored project engineers, supporting skill development
- Generated Confluence documentation to make software and electrical tools more accessible to other teams

SharkNinja, Product Developer, Robotic Systems, 2019 - 2019

- Assisted in the management of JIRA software boards using Agile methodology for sprint-based planning and development
- Designed, maintained, and improved product life-testing fixtures and harnesses
- Root-caused defective systems and worked cross-functionally to design, validate, and deploy solutions in the field
- Traveled abroad to document, verify, and improve large-scale robot manufacturing
- Developed test cases and supporting documentation for new robot functions

SharkNinja, Software Quality Engineer Contractor, Robotic Systems, 2018 - 2019

- Developed and executed test cases to meet software requirements
- Developed and debugged ROS (C++) simulation for automated testing
- Automated testing of essential navigation functions on physical test units
- Designed user-friendly software interfaces to allow other teams to run test cases
- Learned, used, and designed custom hardware to verify compliance with safety

requirements

Engineering Projects:

Navigation Sensor Fusion for Path Visualization, Northeastern, 2023
- Wrote drivers for ROS to interact with three different types of embedded sensors: GPS, RTK GNSS Module, IMU
- Logged data from ROS using all three sensors to track location
- Applied Sensor Fusion algorithm to the data streams to drastically improve location accuracy in varied environments chosen to understand the strengths of each sensor
- Packaged sensors into a car with a laptop to run a ROS node outputting the calculated accurate location and overlaying our driving path onto a map of the area surrounding Northeastern's campus

Design, Manufacture, and Control of a Modular Robotic Arm, WPI, 2018
- Designed and 3-D printed modular joints with standardized mechanical and electrical interfaces using Solidworks
- Designed breakout boards for TI-embedded devices and wrote code to run an RTOS on each joint, allowing recognition of joint type
- Created custom CAN Bus protocol to facilitate communication between joints
- Designed and implemented custom Serial UART communication protocol between base linkage and computer running user-interactable Java GUI
- Implemented multithreading to handle simultaneous inputs and outputs

Hospital Kiosk Application, WPI, 2017
- Acted as assistant-lead software engineer in a team of 11 people
- Followed Agile methodology to produce a Java-based app (>70,000 lines of code) for hospital patrons to easily navigate and utilize amenities of the hospital
- Standardized a template for the primary interfaces of each subsystem of the software
- Wrote wrappers for code subsystems to integrate them into one controller
- Wrote all pathfinding algorithms, including A* and Dijkstra's
- Handled version control/continuous integration using tools such as Travis CI, Gradle, and Git
- Wrote software documentation for submodules of the project
- Implemented Android application and Amazon Alexa interface
- Won best overall app award in class

Autonomous Robotic Mapping, WPI, 2017
- Used frontier-based exploration to autonomously navigate an unknown space using A* with a modified heuristic to move from point to point without impacting obstacles
- Used data gathered with Microsoft Kinect and wheel odometry passed through an EKF to produce a map in real-time via the overarching SLAM algorithm
- Programmed with ROS (Python) and run on a Turtlebot 2