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| **Christopher O’Shea**  [osh1996@gmail.com](mailto: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