

Miles S. Priebe

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Education

University of Minnesota-Twin Cities

Master of Science in Robotics

GPA: 3.778/4.00

Minneapolis, MN

December 2023

University of Minnesota-Twin Cities

Bachelor of Science in Electrical Engineering

Minor: Computer Science

GPA: 3.03/4.00

Minneapolis, MN

May 2022

Personal Objective: Exploring perception, manipulation, and human interaction areas of robotic systems used to automate the world around us.

Skills

- Languages: Python, C++
- Packages/Libraries: PyTorch, TensorFlow, Scikit-Learn, OpenCV, Open3D, Intel RealSense, NVIDIA Isaac ROS
- Frameworks/Simulations: ROS1&2, GazeboSim, PyBullet, RoboDK

Work Experience

The Toro Company (TTC) Robotics

Robotics Software Engineering Intern – LiDAR Mapping and Localization

Longmont, CO (Remote)

May 2023 – August 2023

- Developed a framework for LiDAR-based map generation and re-localization in GPS-denied environments.
- Interfaced with the NVIDIA Isaac ROS hardware acceleration package and an open-source LiDAR-inertial odometry package.
- Built support for offloading maps and positional data from hardcore processors to cloud tools for path planning and area clearing.

Open Systems International, Inc.

Project Engineering Intern – Automation Processes

Medina, MN

May 2021 – August 2021

- Wrote Python scripts for a supervisory control and data acquisition (SCADA) system to handle automatic data file parsing. Handled dumping and populating database operations to update customer interfaces.
- Product satisfied over 80% of mandatory system tests.
- Presented the final product tool and demonstration to the CEO and a large group of project managers.

Research Experience

University of Minnesota – Robotics: Perception and Manipulation (RPM) Lab

Research Assistant – Visuo-Tactile Perception Systems – Laboratory

Minneapolis, MN

January 2023 – Present

- Lab Objective: Focusing on addressing the fundamental question of “What should/does/can a physical object in our environment mean to a robot?”.
- Master’s Capstone Project: Replicated and extended the Soft Bubble Gripper from Punyo at Toyota Robotics Institute (TRI). Re-designed 3D fabricated parts for compatibility with UR5 robot and Robotiq grippers. Wrote ROS package to interface with Intel Realsense cameras and implement pose estimation and shear deformation estimation functionalities. Demonstrated robustness through placement tasks of transparent objects.

University of Minnesota – Wearable Technology Lab (WTL)

Research Assistant – Designing Soft Robotic Systems – Laboratory

St. Paul, MN

October 2019 – August 2022

- Lab Objective: Focusing on the intersection between apparel and new technology: Expanding garment functionality through dynamic geometry and new sensing functions; improving the way we use, manage, and consume clothing; streamlining the design and manufacturing processes of smart clothing and e-textile products.
- Project 1: Configured MQTT protocol connection of soft robotic compression garment WIFI microcontroller to a central Hub server through Docker. Collaborated with an interdisciplinary team of faculty and students in computer science. Integrated a conversational voice assistant to provide real-time, in-home, unobtrusive sensing and on-body stimulation solutions (e.g., pressure, heat, etc.). Participated in a formal interview of my contribution and in a demonstration of the controllability and functionality of the technology.
- Project 2: Designing neural-network-based control system for SMA-driven soft exoskeleton arm flexion/extension using Matlab and Simulink. Comparing performance of various data-based model-free controllers on the system.