Miles S. Priebe

920-204-4742 | miles.priebe@gmail.com

Education

University of Minnesota-Twin Cities — Minneapolis, MN
Master of Science in Robotics — December 2023
GPA: 3.805/4.00

University of Minnesota-Twin Cities — Minneapolis, MN
Bachelor of Science in Electrical Engineering — May 2022
Minor: Computer Science

Personal Objective: Bridge the gap between human-like perception and robotic capabilities, leveraging deep learning to enhance the sensory intelligence of robots.

Skills

- Languages: Python, C/C++
- Packages/Libraries: NumPy, PyTorch, TensorFlow, Scikit-Learn, OpenCV, Open3D, Intel RealSense, CUDA, NVIDIA Isaac ROS, Wandb, TensorBoard
- OS's/Frameworks/Simulations: Linux and command-line tools, Git, Docker, ROS, GazeboSim, PyBullet, NVIDIA IsaacSim, Unreal Engine

Work Experience

Honda Research Institute USA, Inc. — San Jose, CA
Student Associate Researcher – Visuotactile Perception for Robotic Manipulation — January 2024 – April 2024

- Enhancement of perception algorithms to estimate object states through the integration of vision and tactile sensor data.
- Development in IsaacSim and Unreal Engine and ensuring their successful transfer and performance on real-world advanced robotic platforms with multi-fingered Allegro hands (Sim2Real).
- Exploration of LSTM and Transformer models to improve the stability of the 6D pose estimates over time.

The Toro Company — Longmont, CO (Remote)
Robotics Software Engineering Intern – LiDAR Mapping and Localization — May 2023 – August 2023

- Developed a framework for LiDAR-based map generation and localization for an autonomous lawn mower application.
- Connected the NVIDIA Isaac ROS package to a Fast LiDAR-Inertial Odometry package and used a Kalman filter for robust navigation in fast-motion, noisy, and cluttered outdoor environments.
- Built support for offloading maps and positional data from hard-core processors to AWS cloud storage for path planning and area clearing.
- Worked with a large interdisciplinary team of hardware engineers and software developers to expand features for the full robot stack.

Open Systems International, Inc. — Medina, MN
Project Engineering Intern – Automation Processes — May 2021 – August 2021

- Wrote Python scripts for a supervisory control and data acquisition (SCADA) system to handle automatic data file parsing.

Research Experience

University of Minnesota – Robotics: Perception and Manipulation (RPM) Lab — Minneapolis, MN
Graduate Research Assistant – Perception for Robotic Manipulation — January 2023 – December 2023

- Built a ROS package to process data from Intel RealSense cameras inside a custom visual-tactile sensor and estimate 6D pose and shear forces.
- Trained a diffusion-based visuomotor policy learning model on teleoperated demonstrations and deployed the policy on a real-world UR5e robot with a 65% success rate at the standard benchmark "Push-T" task, and a 60% success rate at a novel rotate bottle task.
- Developed a Sim2Real framework to generate a large dataset of tactile images and train a Resnet-MLP model to classify chess pieces with an accuracy of 95%.

University of Minnesota – Wearable Technology Lab (WTL) — St. Paul, MN
Undergraduate Research Assistant – Soft Robotic Systems — October 2019 – August 2022

- Configured MQTT protocol connection of soft robotic compression garment WIFI microcontroller to a central Hub server through Docker.
- Integrated a conversational voice assistant to provide real-time on-body stimulation solutions (e.g., pressure, heat, etc.).
- Designing a neural-network-based control system for SMA-driven soft exoskeleton arm flexion/extension using Matlab and Simulink.