

Project Portfolio

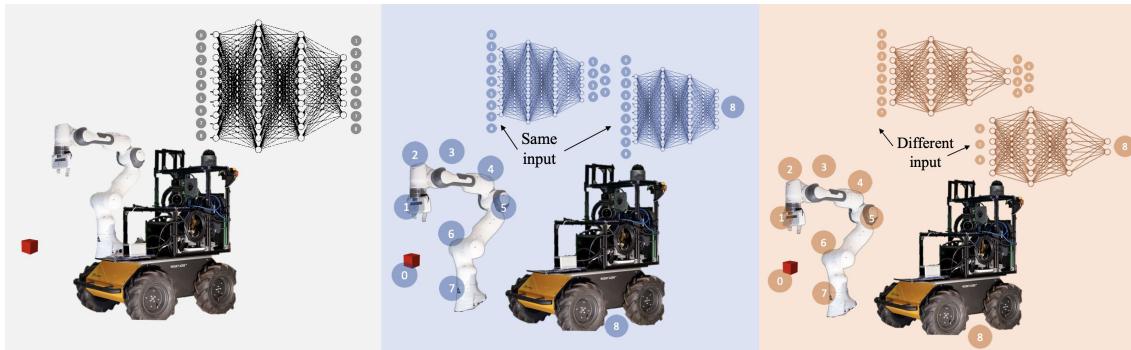
2023-2024 **Shared control for omnidirectional assistive robots (ongoing)** Robotics, Project Management

- Project management for an autonomous omnidirectional wheelchair.
- Working on learning algorithms for user-centric navigation.



2023 **Multi-Agent Reinforcement Learning for Mobile Manipulation** Robotics, Reinforcement Learning

- Conceptualization and supervision of research in multi-agent reinforcement learning.
- Demonstrated increased robustness for mobile manipulation versus single-agent RL.



2023 **ENRICH Challenge | Team Leader | UAV Mapping Winner** Robotics, Project Management

- Led 3 teams (12 members) with a mobile manipulator, a quadruped robot and an aerial robot.
- Management of software design, implementation and testing.
- 3D mapping, autonomous exploration and path planning, radiation mapping and teleoperation.
- Winner of the UAV 3D mapping challenge with fully autonomous exploration planner indoors.



2022

Multi-Robot System with ROS 2

Networking, DDS+Zenoh

- Implementation of a multi-robot localization and control module.
- Use of 8x Turtlebot 4 robots with ROS 2 internally and Zenoh communication.

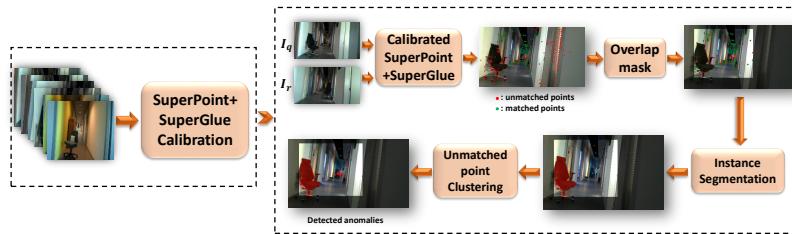


2022

Vision-based change and anomaly detection

Computer vision, Deep learning

- Computer vision pipeline for change and anomaly detection using RGB cameras.
- Vision-based approach, robust to viewpoint and environmental changes (e.g., illumination).
- Applicable to inspection robots in known or new environments.



Others

Hyperledger Fabric Blockchain and ROS integration

Worked on deploying applications and smart contracts for a multi-host Hyperledger Fabric network that integrated with ROS 2 systems, allowing for teleoperation of robots through the blockchain.

Object detection and spatial estimations from panoramic cameras

Supervised work on the implementation of a safe drone landing system using a 360° panoramic camera to detect people near the landing area and calculate their relative position..

Deep Learning Framework in Go

During the Summer of 2016, I initiated the development of an internal deep learning framework in Go while working at Psyche Interactive. Implemented basic neural network architectures and tooling for natural language processing (NLP) from scratch for the unsupervised classification of YouTube videos.

Various IoT projects

Worked with MQTT, LoRa, UWB and Zigbee for communication. Experience with FPGAs, ESP32 and various embedded computers (RPi, Intel, NVIDIA Jetson). Experience with lightweight ML and TensorRT.