

Mo Xu

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EDUCATION

University of Michigan - Ann Arbor

Master in EECS track Data Science & Machine Learning - GPA:3.7

MI, United States

Sept 2022 – Dec 2023

Dalian University of Technology

BEng in Electrical Engineering - GPA:3.5

Dalian, China

Sept 2018 – June 2022

TECHNICAL SKILLS

Programming: Python, MATLAB, C++/C, SystemVerilog, Bash, SQL

Interests: Robot Crowd Navigation, Reinforcement Learning, MPC, Human-Robot Interaction, CV

Technologies/Frameworks: Git, Linux, ROS2, AWS, PyTorch, Tensorflow, CVXPY, Gymnasium, openCV

PROFESSIONAL EXPERIENCES

Research Assistant @ University of Michigan

Fluent robotics lab

Sep 2023 – Present

- Detect 3D human skeletal keypoints via YOLOv8.
- Track human 3D positions from images and point clouds then match with skeletal keypoints.
- Establish a real-time pipeline to predict human future trajectories via scene transformer.

Research Assistant @ Westlake University

I4FSI Lab

April 2023 – Aug 2023

- Designed the swimming modules of an amphibious quadruped 12-DOF robot.
- Established raspberry Pi 4B python environment with socket, servos, and IMU interfaces.
- Utilized SOTA reinforcement learning model Proximal Policy Optimization(PPO) for control.
- Established a customized RL environment based on Gym.Env with socket connection to the Robot.

ABB Engineering (Shanghai) Ltd.

Intern, Electronics department

June 2021 – Aug 2021

- Utilized C language in PID control of the high voltage power supply of robots.

SELECTED PROJECTS

Kalman Filter vs. Particle Filter in Pybullet

Algorithmic Robotics Course Project

Aug 2023 - Nov 2023

- Implemented motion planning and perception algorithms: A*, RRT, PCA, RANSAC and ICP.
- Compare the performance of Kalman Filter and Particle Filter with PR2 robot simulation in Pybullet.

Lidar and Visual SLAM Loosely-Coupled Fusion

Mobile Robotics Course Project

Jan 2023 - April 2023

- Utilized ORB-SLAM3 to calculate robot rotation and translation with loop closure detection.
- Convert the 3D points cloud into rotation and translation matrix by LITAMIN2 LiDAR SLAM.
- Loosely coupled Visual and LiDAR SLAM by modifying data prior.

Predicting Music Popularity Based on Extracted Instrumental Features

Machine Learning Course Project

Jan 2023 - April 2023

- Searched and downloaded 45000+ songs on the Google Cloud by multithreaded Python scripts and extracted Mel-spectrograms by librosa to manually extract features.
- Utilized the Transformer on Tensorflow and ResNet to classify the popularity with the extracted Mel-spectrograms but found the low correlation between popularity and spectrograms.

Design an Experiment of Auto Vehicle Algorithm Bias in Trolley Problems

Ethics for AI and Robotics Project

Jan 2023 - April 2023

- Designed an experiment to obtain people's preferences on virtual trolley problems.
- Proposed the algorithm bias strategy to satisfy major preferences of people.