

Fengkai Chen

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SKILLS

- Industrial experience in AD (autonomous driving) simulation, SIL(Software-in-the-Loop) Simulation.
- Extensive hands-on experience in Deep Learning, Mobile Robotics, Object detection network.
- Programming: *Python, C++, Code Generation(MATLAB Simulink C/C++)*.
- Design&Simulation: *Matlab Simulink, ASAM openSCENARIO/openDRIVE, NVIDIA Isaac Sim*
- Tools: *Linux, ROS, Pytorch, Eigen, Docker, CI/CD Jenkins, Altium Designer, Zuul, Bazel, Artifactory, Codebeamer.*

WORK EXPERIENCE

Autonomous Driving Simulation Engineer

Auburn Hills, MI

Stellantis NV

06/2023–Present

- Working in ADX Stellantis simulation team, Stellantis-BMW Group Autonomous Driving R&D project Autodrive 1.0 / Thunder.
- Designing the vehicle model for Stellantis vehicles and integrating them into the simulation pipeline.
- Developing OEM-specific SIL solutions for the simulation, and design of L2/L2+ features.
- Validating features and components in CI/CD pipeline.

Advanced Engineering Intern

Plymouth, MI

Isuzu Technical Center of America, Inc. (ITCA)

01/2023–05/2023

- Integrate autonomous driving software stack with IPG Carmaker.
- Validate and correlate between simulation and testing.
- Support virtual development and CI/CD Jenkins pipeline building.

EDUCATION

M.S. in Electrical and Computer Eng. Major (Robotics track) UMich, Ann Arbor

08/2021-05/2023

Selected Coursework: Self-Driving, Mobile Robotics, Deep Learning for Computer Vision, Linear System Theory.

GPA: 4.00/4.00

B.S. in Electrical Eng. Major Zhejiang U. & U. of Illinois at Urbana-Champaign (Joint program)

09/2017-06/2021

Selected Coursework: Machine Learning, Power Electronics, Control System, Introduction to Robotics

GPA: 3.85/4.00

RESEARCH EXPERIENCE

Research Assistant at CURLY Lab, Naval Architecture and Marine Engineer Dept. (UMich)

05/2022–01/2023

Advised by Prof. Maani Ghaffari

- Developed an exploration planner for the unmanned vehicle: inverse reinforcement learning (IRL) planner. It takes the exteroceptive information (camera and lidar) and generates an exploration path with significantly less time consumption compared to the original exploration algorithm.
- Deployed the IRL planner on **Husky UGV** - an outdoor field research robot, the Husky can explore the various outdoor environments in efficiently and generate a semantic map of the surrounding area.

COURSE PROJECT

Racing on a Pre-Defined Map with Unknown Obstacles (UMich)

03/2023 – 04/2023

- Implemented a PID controller for the host vehicle to follow the predefined waypoints.
- Designed a lane-switching logic to avoid obstacles detected within 150 meters range of the vehicle.
- Finetuned the controlled variables to follow the lane smoothly and reached the endpoint within the required duration.

Online Map Recognition using Bayesian Updates (UMich)

01/2022– 05/2022

- Presented a system for **online map recognition** using **Bayesian** methods, which can match the correct small submap during relocalization across multiple maps.
- Developed a heuristic-based likelihood model and formulated the conditional probability of particle distribution based on valid particle numbers and covariance of the pose.
- Conducted the experiments with **Gazebo simulation** and used Turtlebot3 as our robot platform, which produced 100% submap matching accuracy in a virtual apartment environment.