Fengkai Chen

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OBJECTIVE

To obtain full-time position as a **Software Engineer** starting from May 2023.

SKILLS

- Familiar with **Ubuntu** operating system and Robot Operating System (**ROS**)
- Extensive hands-on experience in Deep Learning, Mobile Robotics, Object detection network
- Hands-on experience in AV simulation software and CI/CD pipeline.
- Language: *Python, C, C++*
- Tools: *Linux, ROS, Pytorch, Eigen, Matlab, Docker, NVIDIA Isaac Sim, IPG Carmaker, Jenkins, Simulink, Solder, Altium Designer*

EDUCATION

M.S. in Electrical and Computer Eng. Major（Robotics track）UMich, Ann Arbor 08/2021-05/2023

Selected Coursework: Mobile Robotics, Deep Learning for Computer Vision, Linear System Theory, Probability

GPA: 4.00/4.00 (31 credits earned so far)

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

WORK EXPERIENCE

Advanced Engineering Intern Plymouth, MI

Isuzu Technical Center of America, Inc. (ITCA) 01/2023–Present

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

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 unmanned vehicle, called inverse reinforcement learning (IRL) planner. The planner utilizes IRL network written in *PyTorch*. The IRL planner will generate exploration path with significant less time consumption compared with the original exploration algorithm. By deploying the IRL planner on **Husky UGV** - an outdoor field research robot, the Husky can explore the various outdoor environment in efficiently and generate the semantic map of surrounding area.

COURSE PROJECT

Enhanced Visual Checkout System in Autonomous Store (UMich) 09/2022 – 12/2022

- Advanced the traditional visual checkout system in accuracy for item detection and localization.
- Resolved the low accuracy challenge of visual system under various lighting conditions by implementing light enhancement using Zero-DCE++ network.
- Extracted a high-quality mask of the picked items, which reviews the complete contour of the item during picking.

Online Map Recognition using Bayesian Updates (UMich) 01/2022– 05/2022

- Presented a system for **online map recognition** method using **Bayesian** methods, which can match the correct small submap during relocalization across multiple maps.
- Developed a heuristic-based likelihood model, which formulates conditional probability of a particle distribution based on a provided map. The probability is based on valid particles number and covariance of 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.