Fengkai Chen

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OBJECTIVE

To obtain a challenging full-time **Software Engineer** position starting from June 2023.

TECHNICAL SKILLS

- Proficient in **Python** and **C++** programming, familiar with common data structure.
- Familiar with **Ubuntu** operating system and Robot Operating System (**ROS**).
- Extensive hands-on experience in Deep Learning and Mobile Robotics.

EDUCATION

University of Michigan, Ann Arbor, MI 2021/08-2023/05

M.S. in Electrical and Computer Engineering: Robotics track | GPA: 4.00/4.00

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

Zhejiang University & University of Illinois at Urbana-Champaign (Joint program) 2017/09-2021/06

B.E. in Electrical Engineering (ZJU) | B.Sc. in Electrical Engineering (UIUC)

Selected Coursework: Machine Learning, Data Science, Control System, Introduction to Robotics.

PROJECT/RESEARCH EXPERIENCE

Inverse Reinforcement Learning Exploration on **Husky UGV** Ann Arbor, MI

Research Assistant advised by Prof. Maani Ghaffari 2022/01– Present

- Led the Inverse reinforcement learning (**IRL**) part of the project, which took Incremental Information Gathering (**IIG**) algorithm expert demonstration.
- Built and trained an **IRL** network using **PyTorch** which learns the reward map from **IIG** expert demonstration, IRL planner will generate exploration path more efficiently.
- Deployed exploration on **Husky UGV** (an outdoor field research robot), with the **IRL&IIG** the Husky could explore the outdoor environment in a short time and generate the semantic map of surrounding area.

Online Map Recognition using Bayesian Updates Ann Arbor, MI

Mobile Robotics Final Project advised by Prof. Maani Ghaffari 2022/01 – 2022/05

- Presented a system for **online map recognition** method using **Bayesian** methods, which could match the correct small submap during relocalization across multiple maps.
- Developed a heuristic-based likelihood model to model the conditional probability of a particle distribution given a map, which feedbacks the map likelihood based on valid particles number and covariance of pose.
- Conducted the experiments with **Gazebo simulation** and use Turtlebot3 as our robot platform, the results performed 100% accuracy in a virtual apartment environment.

3D Human Pose Reconstruction Hangzhou, China

Senior Project advised by Prof. Gaoang Wang 2021/01 – 2021/05

- Refined the 3D pose over an entire sequence from multi-view cameras by applying **Bi-LSTM** after 3D reconstruction.
- Effectively encode multi-view pose within a unified 3D framework by temporal refinement on single frame 3D poses.
- Outperformed the single frames-based model on *Campus* dataset, especially under crowded scenes.

INTERNSHIP EXPERIENCE

Hangzhou Zhongheng Electric Co., LTD Hangzhou, China

Summer Intern 2020/06–2020/09

- Carried out the design and test of power monitor product, completed the required *I/O* waveform test and ripple test.
- Fulfilled **EMC** tests on product communication board debugged the key components and parameters to pass the tests including electrostatic test, pulse group test, surge test, etc.
- Finished the interim product report of power monitor, which reports the complete condition of the product including all the test results and product analysis.