

JIARUN WEI

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EDUCATION

Carnegie Mellon University 09/2020 – 05/2022
Master of Science - Mechanical Engineering Pittsburgh, PA

Courses: Deep Learning, Computer Vision, Java for Application Programmer, Machine Learning

University of California, Berkeley 01/2019 – 12/2019
Exchange Study - Concurrent Enrollment Berkeley, CA

Courses: Feedback Control of Legged Robots, Introduction to Control of UAV, Model Predictive Control

Dalian University of Technology 09/2016 – 06/2020
Bachelor of Engineering - Mechanical Engineering Dalian, CN

Courses: C Programming, Fundamentals of Controls, Digital Circuits

EXPERIENCE

Division of Autonomous System, Autox Inc | [Company Website](#) 06/2022 – Present
Software Engineer San Jose, CA

- Working on the algorithm and evaluation system for autonomous reroute under complex scenarios in **C++**
- Built an interactive system to automatically setup and monitor autonomous driving vehicles by **Shell Script**
- Designed a **HTTP** server to improve the autonomous vehicle set up, communication efficiency and security

Safe AI Lab, CMU | [Demo](#) 09/2021 – 05/2022
Research Assistant Pittsburgh, PA

- Developed an autonomous delivery robot with Visual and Lidar perception by **C++** and **Python** in **Linux**
- Designed an automatic Camera-Lidar calibration algorithm using key-point correspondence approach by **C++**
- Achieved stable localization by **FAST-LIO** algorithm with Solid State Lidar and Stereo Camera IMU in **ROS**

PROJECTS

Monocular Depth Prediction Using Self-supervised Learning | [Project repo](#) 04/2022 – Present

- Built and trained a 2D image depth prediction neural network in **PyTorch** based on self-supervised learning
- Improved the prediction stability by adjusting Graph Adjacency Matrices in Graph Convolutional Network
- Implemented an automatic data selection and image color augmentation algorithm for **KITTI** dataset

Webiste Development for ICRA Competition | [Website](#) 01/2022 – 03/2022

- Developed a deliverable website for SeasonDepth Challenge Competition using **HTML**, recorded by **ICRA**
- Fulfilled the front end interfaces of registration, login and ranking page by customized **CSS** and **Bootstrap**
- Deployed the website on RDS server and associated it with a domain name to evaluate the participants' models

Zombies-Infection Game | [Project repo](#) 10/2021 – 12/2021

- Implemented a third person shooting game based on Object Oriented Programming by **C++** and **OpenGL**
- Constructed super classes of virtual props with extensible methods as interfaces in convenience of inheritance
- Optimized the texture loading time during weapon switching based on a novel pointer management algorithm

Collision Check for Robot Arms | [Project repo](#) 11/2020 – 12/2020

- Designed a safety region generation approach for robot arm collision check by **Python** and **MATLAB**
- Implemented a self-designed algorithm to solve the geometric parameters of the safety region based on SVD
- Developed a CAD software plugin to calculate and visualize the safety region of 3D objects in arbitrary shape

Emoji Prediction for Twitter Texts | [Project repo](#) 10/2020 – 12/2020

- Constructed a deep learning pipeline for emoji prediction on twitter texts based on **CNN** and **LSTM** by **Keras**
- Applied the **Word2vec** and **GloVe** embedding algorithm to data prepossessing and feature encoding of texts
- Conducted data cleaning and word parsing based on statistical method to get rid of the irrelevant information

SKILLS

Languages: C/C++, Python, Java, JavaScript, Shell Script, HTML, MATLAB

Tool-kits: PyTorch, MMCV, Wandb, Tensorboard, Numpy, Scipy, Git, Bootstrap, Latex

Environment: Linux, GNU GRUB, SSH, Vim, ROS, Conda, Docker, CARLA