

Kuo-Wei Lee

SOFTWARE DEVELOPMENT ENGINEER

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Education

Carnegie Mellon University

M.S. IN SOFTWARE ENGINEERING

Moffett Field, CA

Jan. 2021 - May 2022(expected)

- Selected Relevant Coursework (summer semester, 2020): Building Reliable Distributed System, Machine Learning for Engineers

National Tsing Hua University

M.S. IN COMPUTER SCIENCE (GPA: 4.13/4.30) | B.S. IN COMPUTER SCIENCE (GPA: 3.61/4.0)

Hsinchu, TW

Sep. 2014 - Jan. 2020

- Won SLAM Competition - 3D indoor reconstruction ($2^{nd}/16$), IPPR Conference on Computer Vision, Graphics and Image Processing (CVGIP)
- Honorable-mention Project Award - Scene Recognition and Localization from 360 images, Contest of Special Topics on Implementation, NTHU

Professional Experience

National Tsing Hua University

VISION AND LEARNING LAB (SUPERVISED BY PROF. HWANN-TZONG CHEN)

Hsinchu, Taiwan

Jan. 2020 - Aug. 2020

- Conducted research on computer vision - learning implicit depth perception to solve the ambiguity of silhouette hands. Paper named: SilhouetteNet: 3D Hand Pose Estimation from Silhouettes. (First author, co-supervised by Prof. Koichi Ito, Tohoku University, Japan)
- Developed deep neural networks with 3D point cloud feature extraction for vehicle localization (i.e. Constructed 3D map by spatial features and implemented matching mechanisms)

Digital Drift Corp.

SOFTWARE DEVELOPMENT ENGINEER, PART-TIME

Taipei, Taiwan

July. 2018 - Dec. 2019

- Developed UI/UX with user study research (mobile iOS) in a social mobile app concerning food dairy, named Bite! - An app for foodies
- Implemented image matching and classification system for **50k+** download app with **10k+** daily users (Apache server)
- Cooperated with US team to improve the system by computationally efficient image classification and object detection (Tensorflow-Lite)
- Constructed a smart trading system which predict the NBA cards price trending on Ebay and provide user friendly interface, named CardCool.

Umbo Computer Vision

COMPUTER VISION ENGINEER INTERN

Taipei, Taiwan

Sept. 2018 - June. 2019

- Developed person re-identification (ReID) system pipeline for University Security Project sold at USD **\$33,000**, i.e. from real-time camera streaming, person feature extraction, time cost analysis in each stage, to report person identities
- Experimented various implementations of approximate nearest neighbor (ANN) search for ReID features in terms of speed and accuracy
- Implemented a ReID prototype consisting of offline data collection, on-the-fly search and Redis database, and constructed demo HTML website
- Improved part of the system pipeline reliability and managed large scale system, i.e. solving dependency, concurrency and fast search
- Cooperated with research team in UK to research Person Re-ID trade-off, e.g., PCB, on Market-1501 and UmboCV dataset. (PyTorch)

Automotive Research & Testing Center

RESEARCH COLLABORATION

ChangHua, Taiwan

June 2018 - Dec. 2018

- Developed self-locating system for automobile via 3D point cloud (voxel-based map localization) and RTAB-Map (Real-Time Appearance-Based Mapping) which runs on ROS in a RGB-D camera setting
- Analyzed from LiDAR input (Velodyne 16) and the 3D map, achieving 1.21m mean error comparing with GPS when the velocity is 40km/hr

Industrial Technology Research Institute

RESEARCH COLLABORATION

HsinChu, Taiwan

Sept. 2017 - Sept. 2018

- Implemented 3D map reconstruction by deep simultaneous localization and mapping via drone (Tensorflow, ORB-SLAM, OpenCV)
- Optimized semantic segmentation in 2D and 3D sky for SLAM enhancement (i.e. improved obstacle avoidance and frame rate to 30 fps)

Projects & Technical Skills

Simplified Chatbot with a Distributed Fault-Tolerance System

BUILDING RELIABLE DISTRIBUTED SYSTEM

- Implemented a chatbot that can survive multiple simultaneous server-side failures (Backend Development | Python)
- Built distributed servers which solved concurrency message issues between users and support recovery with active or passive replication

Technical Skills

PROGRAMMING LANGUAGES & FRAMEWORKS & TOOLS

- C, C++, Python, GO, shell scripting, JavaScript, HTML, SQL, Git, Flask, Redis, OpenCV, PyTorch, TensorFlow, Scikit-learn, Unity