Taoyuan Wang

+1-669-609-3436 | alanwanga@icloud.com | linkedin.com/in/taoyuanwang | alanwanga.github.io/portfolio | SF Bay Area

Experience

Software Engineer at Wing (Alphabet/ex-Google) 10/24/2022 – Present
UAS (Uncrewed Aircraft Systems) Traffic Management (UTM) Team *Palo Alto, CA*

- Designed and developed distributed **real-time** applications for Google X's autonomous drone delivery initiative, advancing next-generation aviation systems with safety validated through automated end-to-end testing pipelines
- Implemented configuration tools and operator interfaces built on **Google Maps** to support timely four-dimensional (3D + time) restriction annotation and enforcement, ensuring flight safety and regulatory compliance. Replaced legacy authentication modules with role-based configurations and **low-latency** permission checks optimized for critical operations, including pilot-initiated emergency landing commands
- Built **C++/Scaffolding** backend services using **Protocol Buffers** and **S2 Geometry Library**. Migrated **geospatial** data to a new schema in **Google Cloud Spanner** and visualized historical fleet records with analytical query engine on Alphabet's infrastructure, enabling metric monitoring and alerting across critical systems
- Led the development of **LLM/VLA**-powered multi-drone coordination systems featuring natural language control, AI-human-robot interaction, **3D simulation** for flexible autonomous task execution and rapid scenario generation

Software Engineer at Appen US 10/01/2021 – 10/21/2022
Computer Vision Tools Team *Sunnyvale, CA*

- Led the design and development of AI-assisted annotation tools for **multi-modal** data, guiding the projects from initial prototyping to full production (frontend with React and Three.js, backend with Flask and Spring)
- Extended point cloud cuboid annotation to **semantics segmentation** as a side project then was adopted as a new product, attracting 20+ leading clients in the autonomous vehicle and robotics sectors

Software Engineer at Appen China 04/01/2019 – 09/30/2021
Computer Vision Tools Team *Shanghai, China*

- Built China platforms to support local market, serving as the founding engineer for Appen China
- Researched point cloud **object detection/tracking** to enhance labelling efficiency using open source projects
- Conducted **sensor fusion** experiments based on client device parameters (e.g. LiDAR/camera position, rotation, focal length, etc) with NumPy to project points from 3D to 2D domain
- Implemented event loggers, collaborated with UX designers and data scientists to study the behavior of annotators for training process and annotation tools improvement, resulting in a 56% reduction in labelling costs

Software Engineer at Works Applications 04/02/2018 – 03/29/2019
AI WORKS HUE Tech Lead Group *Shanghai, China*

- Developed product frontend with Vue.js, backend with Spring and Hibernate
- Explored **transformer**-based chatbot and LSTM-based OCR (Tesseract) to automate workflows and extract data

Research Assistant at Academia Sinica 12/13/2017 – 03/09/2018
Natural Language Processing Lab *Taipei, Taiwan*

- Researched Chinese short-text conversation chatbot and maintained a large Weibo post–comment dataset. Implemented **Seq2Seq** and **attention** models with PyTorch
- Utilized comment appropriateness scores as rewards in **reinforcement learning** from human feedback (RLHF)

Military Service in the Social Welfare Department 11/10/2016 – 10/27/2017
IT Specialist for documents persistence and systems maintenance *Tainan, Taiwan*

Education

National Tsing Hua University Hsinchu, Taiwan
M.S. in Computer Science (Researched in Internet Lab) *Sep 2015 – Aug 2016*

National Tsing Hua University Hsinchu, Taiwan
B.S. in Computer Science (Exchanged to Beijing Tsinghua and Nagoya University) *Sep 2010 – Aug 2015*

Skills

Languages: Python, JavaScript, Java, C/C++
Frameworks: Flask, React/Redux, Spring, JUnit, Jest, pytest
Developer Tools: Git, Docker, Jenkins, Jupyter Notebook, PyCharm, WebStorm, Intellij IDEA
Libraries: NumPy and WebGL using Three.js for 3D data visualization