

# Taoyuan Wang

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## EXPERIENCE

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### 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 Development's autonomous drone delivery project, now a subsidiary of Alphabet, serving the next generation of aviation
- Implemented configuration systems and operator interfaces based on Google Maps, enabling timely four-dimensional (three-dimensional plus time) restriction annotations and enforcement, ensuring adherence to safety protocols
- Worked on C++ Scaffolding backend handlers and validators using Protocol Buffers and S2 Geometry Library (e.g. polygon self-intersection, vertices duplication, loop clockwise, gRPC retry logic to avoid race conditions, etc)
- Migrated geospatial data to new schema in Google Cloud Spanner, visualizing historical fleet records with analytical query engine within Alphabet infrastructure, enabling metric monitoring and alerting for the critical ecosystem

### 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 for China platforms to support local market, serving as the founding engineer for Appen China
- Researched on point cloud object detection/tracking to enhance annotation 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
- Developed product backend with Spring, Hibernate and JUnit

### Research Assistant at Academia Sinica

12/13/2017 – 03/09/2018

*Natural Language Processing Lab*

*Taipei, Taiwan*

- Researched on Chinese short-text conversation chatbot
- Implemented sequence to sequence models with PyTorch
- Maintained a large repository of post-comment pairs from Weibo datasets
- Leveraged the appropriateness scores of comments as reward for reinforcement learning

### Military Service in the Social Welfare Department

11/10/2016 – 10/27/2017

*IT Specialist for documents persistence and systems maintenance*

*Tainan, Taiwan*

## EDUCATION

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### 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

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**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