

# Wei-Hsiang (Matt) Wang

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## SUMMARY

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- Backend engineer and Python/Node.js developer
- Experienced in the development of cloud-based machine learning systems
- Active contributor and project lead in the Taiwanese Python community

## WORK EXPERIENCE

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### Umbo Computer Vision

Backend Engineer - Cloud AI Team

Oct 2018 - Sep 2021

Mar 2019 - Sep 2021

#### CV Detection Services of Event-based & Stream-based Product (Python)

- Developed multiple event-filtering logic based on motion value, deep-learning-model output mask analysis, and human-examining feedback. Raised system automate rate from 40% to 90% while sustaining 10x channel growth.
- Reconstructed event-based service from AWS Lambda function to an HTTP server built on FastAPI and AWS ECS.
- Improved server throughput by 20% through serving with Gunicorn, handling I/O-bounded tasks asynchronously, and leveraging FFmpeg in GIF generation, with metrics from load testing using Locust as proof.
- Delivered cross-camera human re-identification feature in the stream-based product and close a governmental deal.

#### Human-in-the-Loop Service for Boosting Detection Accuracy (Node.js)

- Solved scalability issues by revamping the human-interacting mechanism with AWS API Gateway for WebSocket.
- Enhanced filtration logic based on a time-weighted scoring algorithm that boosted overall automation rate by 8% while achieving 98% recall rate.
- Reduced average request latency by 30% through MongoDB optimization, such as rectifying indexes to accommodate usage patterns, refining queries for index-covered query plans, & adopting read-write separation.
- Built auditing process with affiliated Grafana dashboards to examine detection accuracy of each production pipeline without straining human resources. Enabled faster response from engineers to any performance deterioration.

#### System & Per-Camera Performance Monitoring

- Implemented ETL cronjobs deployed to AWS EKS with Helm for importing event metadata to Elasticsearch.
- Assembled cross-services latency tracing dashboards with the association of alerting mechanism by utilizing New Relic Tracing and Grafana.
- Developed operational dashboard for tracking cameras with poor detection accuracy or high resource consumption.

#### Data Collection for Autonomous Machine Learning Platform

- Maintained labeling platform and coordinated both in-house and out-sourcing labelers.
- Integrated AWS Lambda with Slack command for FAE/Sales to import miss-detected events to the training pipeline.

Software QA Engineer - QA team

Oct 2018 - Feb 2019

- Produced a web-based panel for per-camera configuration that had been used intensively across the company.
- Conducted automated and functional testing while composing a series of comprehensive installation manuals.

## EDUCATION

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### National Taiwan University

M.S., Mechanical Engineering (Research Topic: Mechanism Design & Patent Analysis)

Aug 2016 - Aug 2018

B.S., Mechanical Engineering

Aug 2012 - Aug 2016

## TECHNICAL SKILLS

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**Languages:** Python, JavaScript (Node.js)

**Backend Frameworks:** Django, FastAPI, Flask, Express.js

**Cloud Services:** AWS (EC2, S3, ECS, SQS, Lambda, API Gateway), GCP (GCE, GCS)

**Databases:** MongoDB, Redis, SQL

**DevOps:** Terraform, Serverless, GitHub Actions, Jenkins, TravisCI

**Monitoring & Logging:** New Relic, Grafana, Elasticsearch, Kibana

**Others:** Nginx, Vue.js (Nuxt.js), TailwindCSS

## COMMUNITY EXPERIENCE

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### **PyCon Taiwan**

*Lead/Member - Web Team*

*Mar 2020 - Present*

- Led a team of 11 volunteer developers to maintain the official website and the proposal submission/review platform in Django hosted on GCP.
- Replaced the old Django templates by rebuilding the frontend from scratch in Nuxt.js to benefit from lower maintenance cost and better support of SEO and i18n.

### **Python Official Documents Translation (zh-TW)**

*Coordinator & Translator*

*Jul 2021 - Present*

- Standardized translating workflows, systemized translated wordings, and hosted monthly meetups.
- Automated translation source syncing process and established CI/CD pipelines using GitHub Actions.

### **Deep Learning Study Group**

*Coordinator & Speaker*

*Feb 2018 - Sep 2018*

- Held weekly meetups focusing on the convolutional neural networks (CNN) papers in computer vision domain & the model implementation in PyTorch.

### **Google Taiwan AI Bootcamp**

*Teaching Assistant*

*Jul 2018*

- Mentored participants to build deep learning models in Tensorflow on Google Colaboratory.

## CERTIFICATE

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**Google Cloud Certified Associate Cloud Engineer**

*Jun 2020*

**Redis Certified Developer**

*Nov 2021*

**HashiCorp Certified: Terraform Associate**

*Nov 2021*