

CHIAO-WEI HSU

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in chiao-wei-hsu

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🏠 EDUCATION

Northwestern University

GPA: 3.91/4.0

Sep. 2023 – Dec. 2024 (Expected)

Master of Science in Computer Science

Evanston, IL

✦ Computational Optics (Color Constancy, In-Pixel/On-Sensor Computation, Coded Aperture, Lensless Imaging), Deep Reinforcement Learning, Decentralization & Blockchain.

✦ Financial Large Language Models (LLMs) with Reinforcement Learning with Stock Prices

National Taiwan University & Ghent University

GPA: 4.23/4.3

Sep. 2008 – Jun. 2015

Bachelor/Master of Science in Optoelectronics

Taiwan and Belgium

✦ Made the first place (1/107) in the second semester of 2012 and published a paper in one top conference.

✦ Analog Circuits, Digital Circuits, and Signal Processing during bachelor program in National Cheng Kung University.

🏢 EXPERIENCE

Machine Learning Engineer (Research)

Oct. 2018 – Dec. 2022

Academia Sinica

Taiwan

- Engineered a **Knowledge-driven Multi-Modal QA System** integrating **vision, speech, and text** data, advancing capabilities in cross-modal information processing [3].
- Enhanced **state-of-the-art** performance by 4% on the **Named Entity Recognition (NER)** task through strategic **fine-tuning of Transformers**, applying **Multi-Task** and **Incremental Learning** techniques, and leveraging **Data Augmentation** [1][2].
- Designed and implemented a **Hierarchical Multi-Head Multi-Layer Attention** mechanism from the ground up, enhancing model interpretability and performance.

Software Developer

Aug. 2017 – May. 2018

Luye Gaotai

Taiwan

- Developed **3D vision graphics** (autostereogram) program by **JavaScript**.
- Developed a portal website using **HTML5/CSS3, Bootstrap, PHP, and JavaScript**.

📁 PROJECTS

AI-Driven Grocery Logging and Recipe Suggestions App & DEMO

Sep. 2023 – Apr. 2024

- Engineered prompts for **GPT-4 Vision**, deployed **OCR** to scan receipts, and implemented features to send expiry notifications and receipt suggestions.
- Adopted **ReactJS, Vite, and Firebase**; conducted tests using **Cypress**.
- Developed a **Serverless RESTful API** with **ExpressJS** as back-end deployed with **AWS ElasticBean**.
- Incorporated **API Gateway** with **AWS Lambda Functions**.

AI-Powered Driver Companion Mobile App & DEMO

Mar. 2024 – Apr. 2024

- Developed a mobile app that can hear, see, and throw dad jokes and fun facts to the driver with different personalities.
- Incorporated AI models, **YOLOv4, GPT-4, Text-To-Speech, Speech-To-Text**, to streamline from image recognition to natural language processing.
- Adopted **Django** as back-end, and **React Native, Expo** for mobile development.

✂ SKILLS AND KNOWLEDGE

Programming Languages: Python, C/C++, Java, JavaScript, PHP, Lisp/Racket, FORTRAN, SQL, SPARQL, LaTeX.

DL/LLM: Mamba, Diffusion Model, Transformer, LangChain, Prompt Engineering, Instruction Fine-tuning (IFT).

MLOps/DevOps: Docker-Compose, Conda, Linux shell/fish/zsh, Windows PowerShell, sed, awk, vim, GitHub Action.

WebDev/Database: ReactJS, ExpressJS, Django, MongoDB, PostgreSQL, Redis, Firebase, WikiData, Neo4j.

📖 PUBLICATIONS

[1] Hsu et al., “A Redundancy-Enhanced Framework For Error Correction in Named Entity Recognition”, ACL submitted.

[2] Hsu et al., “GlobalNER: Incorporating Non-local Information into Named Entity Recognition”, pre-print '23.

[3] Liang et al., “A Flexible and Extensible Framework for Multiple Answer Modes Question Answering”, ROCLING '21.

🏆 HONORS

✦ **First Place** at the 2020 Formosa Artificial Intelligence Grand Challenge; developed a Multi-Round Dialogue System and Question Answering System.

✦ **3rd Place** in the Taitung Mobile App Design Competition, 2015, for innovative app development.

✦ Inducted into the Phi Tau Phi Scholastic Honor Society for academic excellence.

✦ **Silver Award** at Global Startup Weekend 2015; **Silver Award** at Sanmen Startup Competition 2016; **2nd Place** at PitchCamp for building an upcycling C2C platform and consultancy as a **then-cofounder**. **Grew the business to 30 employees** and expanded to **three offices** across Taiwan since 2016.

✦ **Outstanding Social Youth** of 2017 awarded by Chiayi City for exceptional community service and leadership.