Jia-Wei Liao

0939-580-280 | jw.liao1209@gmail.com | jia-wei-liao | jwliao1209 | jwliao1209.github.io

Summary

I am Jiawei. My research focuses on Deep Learning and Computer Vision. Currently, I serve as a Research Assistant at Academia Sinica and lead a team investigating Generative AI. My interest extends to Data Science, evident from my year-long tenure as a Data Analyst Intern at Appier. During the internship, I engaged in client data analysis, feature engineering, business model development, and established key business metrics. My commitment to clean code architecture, design patterns, and high-quality programming was nurtured during my time at Appier. I possess strong communication and presentation skills, honed through extensive cross-department collaboration. Passionate about contributing to innovation, I am eager to apply my skills to solve challenging problems in the technology industry and open to discussions about potential collaborations.

Education

National Taiwan University (NTU) — Sep 2022 - Present
PhD Student of Computer Science and Information Engineering · CMLab · GDSC · NTU DAC · TMBA — *GPA: 4.28 / 4.30*

National Yang Ming Chiao Tung University (NYCU) — Sep 2020 - Aug 2022
Master of Applied Mathematics · GIMI LAB — *GPA: 4.29 / 4.30*

National Taiwan Normal University (NTNU) — Aug 2016 - Jun 2020
Bachelor of Mathematics with Educational Program and Scientific Computation Program — *GPA: 4.06 / 4.30*

Work Experience

Research Assistant — Jul 2023 - Present
Academia Sinica AIIULab — *Computer Vision, Generative AI, Diffusion Model*
- Led a team of three undergraduates in conducting research on the application of generative models, resulting in a submission to top-tier conferences.
- Developed a generative model for aesthetic QR codes, using the diffusion model and ControlNet to produce high-quality, scannable designs.
- Designed a Scanning-Robust Guidance (SRG) with differentiability and convexity, achieving **nearly 100%** scan success for generative QR codes.

Software Engineer Intern — Jul 2024 - Aug 2024
intel Wireless Solution Group — *LLM, RAG*
- Implemented a Retrieval-Augmented Generation (RAG) system using the open-source Llama 3.1 model for Intel's internal database.
- Developed a full-stack application by integrating Flask for backend-frontend communication and designing the frontend UI.

Data Analyst Intern — Aug 2022 - Jun 2023
Appier AiDeal Scientist Team — *Machine Learning, Data Analysis, Feature Engineering*
- Developed a business model to identify user purchase tendencies and established key evaluation metrics to optimize business goals.
- Designed innovative features and feature selector to improve the CIR about **3%** in alignment with business goals.
- Produced Jupyter scripts to aid in data analysis and fulfill client data requests for the Project Manager.

Projects

Taiwan-LLM Tutor: Large Language Models for Taiwanese Secondary Education [CODE] [SLIDES]
- Developed a Taiwanese Mandarin LLM using QLoRA and instruction tuning to generate answers for GSAT questions.
- Devised Vision BERT by integrating RoBERTa and CLIP to perform multiple-choice tasks on GSAT questions.

Multimodal Pathological Voice Classification (2023 AI CUP Golden Medal Award) [CODE] [REPORT]
- Applied FFT for frequency feature extraction and employed wavLM and wav2vec for zero-shot transfer of latent features from audio data.
- Integrated models such as Random Forest, LightGBM, and TabPFN to enhance model robustness, ultimately achieving SOTA performance.
- Utilized feature importance and SHAP interpretability tools to dissect and interpret model predictions.

Recommender System for Product Placement Optimization (NTU DAC)
- Implemented Item2Vec and BERT4Rec for session-based recommendation systems, achieving improved personalized suggestions and recommendation accuracy, evaluated by Mean Reciprocal Rank (MRR) and Top-K accuracy.
- Optimized the recommendation algorithm, improving inference speed by **60x** and enhancing real-time recommendation efficiency.

Skills

- **Programming Language:** Python (PyTorch, TensorFlow, Scikit-learn, Numpy, Pandas), MATLAB, C, and SQL
- **Dev Tools:** Git, VS Code, Jupyter, and Vim

Honors

- AI CUP Golden Medal Award ($\times 1$), Merit Award ($\times 1$), and Honorable Mention Award ($\times 3$)
- TWSIAM 2024 Thesis Award, 2022 Poster Second Place Award
- Academia Sinica Dr. Hung-Ching Chou Scholarship
- Dean's List Award, NYCU, NTNU