

Jia-Wei Liao

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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) PhD Student of Computer Science and Information Engineering · CMLab · GDSC · NTU DAC · TMBA	Sep 2022 - Present GPA: 4.28 / 4.30
National Yang Ming Chiao Tung University (NYCU) Master of Applied Mathematics · GIMI LAB	Sep 2020 - Aug 2022 GPA: 4.29 / 4.30
National Taiwan Normal University (NTNU) Bachelor of Mathematics with Educational Program and Scientific Computation Program	Aug 2016 - Jun 2020 GPA: 4.06 / 4.30

Work Experience

Research Assistant Academia Sinica AIILab	Jul 2023 - Present <i>#Computer Vision #Generative AI #Diffusion Model</i>
<ul style="list-style-type: none">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 intel Wireless Solution Group	Jul 2024 - Aug 2024 <i>#LLM #RAG</i>
<ul style="list-style-type: none">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 Appier AiDeal Scientist Team	Aug 2022 - Jun 2023 <i>#Machine Learning #Data Analysis #Feature Engineering</i>
<ul style="list-style-type: none">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 (× 1), Merit Award (× 1), and Honorable Mention Award (× 3)
- TWSIAM 2024 Thesis Award, 2022 Poster Second Place Award
- Academia Sinica Dr. Hung-Ching Chou Scholarship
- Dean's List Award, NYCU, NTNU