

Jeng-Yue Liu

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EDUCATION

Carnegie Mellon University

Pittsburgh, PA

Master of Science in Artificial Intelligence and Innovation

May 2027

- Relevant Courses: Introduction to Computer Systems, Introduction to Machine Learning, Generative AI for Music and Audio.

National Taiwan University

Taipei, Taiwan

Bachelor of Business Administration in Information Management

Jun 2025

Bachelor of Science in Geography

- Awards: Summa Cum Laude (**top 1%** of the school), Bachelor Degree Thesis Award, Presidential Award, Dean's List (2x).

SKILLS

Languages: Python, C, C++, Java, JavaScript, TypeScript, R, SQL, Shell

Frameworks: PyTorch, TensorFlow, Scikit-learn, Hugging Face, LangChain, React, Next.js, FastAPI, Flask, JUCE

Tools: Docker, Kubernetes, Helm, PostgreSQL, Apache Spark, Airflow, Argo CD, GitHub Actions, Postman, Linux

WORK EXPERIENCE

Academia Sinica

Taipei, Taiwan

Research Assistant

Jan 2024 – Aug 2025

- Outperformed state-of-the-art models with a 47.3% reduction in multi-scale STFT loss, enabling controllable timbre-content-ADSR disentanglement in style transfer, by proposing the factorized codec with attribute-specific auxiliary task and information perturbation.
- Achieved 86% k-NN top-1 similarity across 75k+ Beatport segments by designing a zero-shot timbre encoder with SimSiam and Swin Transformer, leveraging sequence perturbation and temporal augmentations for timbre-invariant representation learning.
- Boosted instrument-specific SNR by 7% in audio-query music source separation system by developing a band-split Mamba2 with a hypernetwork that generates weights for conditioning control to improve timbre conditioning.

Quid Inc.

Taipei, Taiwan

Machine Learning Engineer Intern

Dec 2024 – Jun 2025

- Reduced manual prompt tuning by 10+ hours per week by optimizing search result similarity ranking and match scoring with DSPy under Chain-of-Thought and MIPROv2, and automating summary and title generation through an LLM-based assessment module.
- Advanced TikTok emerging hashtag capture accuracy by 18% through enhancing the trend-prediction module with Bayesian online changepoint detection, enabling early identification of volatile trends for social media sentiment analysis.
- Extended internal Python testing packages to automate CI/CD testing and releases by defining CanalTask and WorkflowTemplates in Helm charts, integrating the NER lookup service with Argo Workflows.
- Minimized deployment overhead of LLM services, adopted by 160+ companies, by streamlining Kubernetes-native CI/CD workflows.

PROJECT EXPERIENCE

Computer Systems Programming

May 2025 – Aug 2025

- Achieved 10,000+ KOPS throughput and 74%+ efficiency by designing a dynamic memory allocator with a segregated free list.
- Lessened cache misses in matrix transpose by implementing cache-aware blocking to improve temporal locality.
- Built a process-safe Linux shell with job control and I/O redirection by mitigating race conditions in signal handlers.

GraphRAG for News Analysis with LLMs

Dec 2023 – Dec 2024

- Improved glossary adherence and cut token cost by 49%, achieving >70% expert-validated alignment, by fine-tuning LLMs with a glossary-first QA pipeline that retrieved glossary chunks and constrained answers to glossary definitions.
- Eliminated 97% of manual analysis effort by engineering GraphRAG indexing and an LLM-powered full-stack app that extracted entities, distilled cross-article insights, and revealed shifts in public attitudes via temporal entity frequency analysis.

Human Mobility's Next Location Prediction

Sep 2023 – Apr 2024

- Achieved 80% accuracy in human mobility next-location prediction with a lightweight model (<3 GB) by developing a multimodal hybrid GRU that fused static/dynamic movement data with spatial imagery.

PUBLICATIONS

- **Jeng-Yue Liu**, et al., "SynthCloner: Synthesizer Preset Conversion via Factorized Codec with Disentangled Timbre and ADSR Control". *Proc. International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026 (Under Review). [[arXiv](#)]
- **Jeng-Yue Liu**, Tzai-Hung Wen, "Trip-Purpose-Based Methods for Predicting Human Mobility's Next Location". *Annual Conference of the Population Association of Taiwan*, 2024. [[Thesis](#)]