

# Jeng-Yue Liu

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## EDUCATION

### Carnegie Mellon University, School of Computer Science

Master of Science in Artificial Intelligence and Innovation

Pittsburgh, PA

May 2027

- Relevant Courses: Multimodal ML, AI Engineering, LLM Systems, Computer Systems, ML/DL, Gen AI for Music and Audio.

### National Taiwan University

Bachelor of Business Administration in Information Management

Taipei, Taiwan

Jun 2025

- 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, NumPy, 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

Machine Learning Research Intern

Jul 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.
- Boosted instrument-specific SNR by 7% in audio-query music source separation system by developing a band-split Mamba2 with a hypernetwork for adaptive 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 temporal fusion transformer, enabling early identification of volatile trends for social media sentiment analysis.

### Music and AI Lab, NTU

Taipei, Taiwan

Undergraduate Researcher

Jan 2024 – Jun 2025

- Achieved 86% k-NN top-1 similarity across 75k+ Beatport segments by designing a zero-shot timbre encoder with MoCo-v2 and Swin Transformer, leveraging sequence perturbation and temporal augmentations for timbre-invariant representation learning.

## PROJECT EXPERIENCE

### AI Humorous Podcast Generation Platform (CMU Startup Competition)

Sep 2025 – Present

- Built a multimodal podcast platform integrating Whisper ASR, OpenAI embeddings for semantic retrieval, and RAG-based AI host personas, enabling contextual narrative retrieval, story interleaving, and natural dual-host banter generation.
- Engineered a text-to-speech system with segmented parallel processing and multi-engine optimization, achieving zero-shot voice cloning, emotion-controllable multi-speaker synthesis, and a 13× real-time generation factor.

### 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](#)]