Jeng-Yue (Buffett) 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 (NTU) — Taipei, Taiwan
Bachelor of Business Administration in Information Management — Jun 2025
Bachelor of Science in Geography
- Awards: Phi Tau Phi (**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, Hugging Face, React, Next.js, FastAPI, Flask
Tools: Docker, Kubernetes, Helm, PostgreSQL, Apache Spark, Airflow, Argo CD, LangChain, GitHub Actions, Linux, MCP

Experience

Academia Sinica — Taipei, Taiwan
Research Assistant (Advised by Prof. Yi-Hsuan Yang & Prof. Li Su) — Jan 2024 – Aug 2025
- Proposed SynthCloner, the first **factorized codec** for synthesizer preset conversion, disentangling timbre, content, and ADSR envelopes via information perturbation with attribute-specific auxiliary tasks for **controllable style transfer**; introduced the SynthCAT dataset and reduced multi-scale STFT loss from 5.69 to **3.00**, surpassing state-of-the-art baselines.
- Designed a zero-shot timbre encoder using **SimSiam** with a **Swin Transformer**, incorporating sequence perturbation and random shifting augmentation, and achieved **86%** K-NN top-1 timbre similarity across 75k+ Beatport timbre segments.
- Developed an audio-query music **source separation** system using band-split **Mamba2** with hypernetwork conditioning, enhancing timbre conditioning and boosting instrument-specific SNR by 7%.

Quid Inc. — Taipei, Taiwan
Machine Learning Engineer Intern — Dec 2024 – Jun 2025
- Implemented search result similarity ranking and match scoring with **LangChain**, then optimized performance by integrating **DSPy** modules with **Chain-of-Thought** and **MIPROv2**, cutting prediction MSE from 0.17 to **0.03**, and developed an LLM-based assessment module to automate summary and title generation, minimizing manual prompt tuning.
- Engineered **Kubernetes**-native **CI/CD** workflows for in-house LLM services (160+ company adoption) using **Helm**, **Argo**, and **GitHub Actions**; packaged the **NER** lookup service with Helm charts and built internal tooling to automate workflow **unit testing**.
- Refined **trend-prediction** module with rigorous statistical criteria to capture volatile hashtags and filter persistent top ones, coordinating cross-team deployment of a trend-detection system that increased TikTok hashtag capture by **18%**.

Selected Projects

GraphRAG for News Analysis with LLMs (Python, React, Next.js, Neon, Recharts) — Dec 2023 – Dec 2024
- Partnered with *California State University, Bakersfield* to design a **GraphRAG**-powered news analysis system that automated extraction and categorization of anti-Asian racism themes and sentiment from **600+** articles (**97%** reduction in manual effort), and architected an interactive full-stack application integrating **GPT-4o** for entity extraction and summarization.
- Applied **LDA**, **BERT** classification, and **TF-IDF** to analyze public sentiment shifts and mainstream vs. non-mainstream media coverage, utilizing temporal analyses of the 2021 Atlanta Spa shootings to support quantitative research.

Agri E-Commerce & Price Tracking Platform (Python, React, Docker, Node.js, MongoDB) — Jun 2024 – Nov 2024
- Led a 3-member team to build a real-time agricultural transaction platform, utilize **Selenium** for vegetable price tracking, and design a rule-based model that generated optimized fertilizer usage recommendations; advanced to the IMV contest semifinals.

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*]