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

Work Experience

Academia Sinica — Taipei, Taiwan
Research Assistant (Advised by Prof. Yi-Hsuan Yang & Prof. Li Su) — 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*]