Yu Xiang Luo

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Education

National Taiwan University Sep 2021 – Jun 2025
Bachelor of Science in Computer Science, GPA: 3.6/4.0 *Taipei, Taiwan*

Experience

Taiwan AI Labs Apr 2024 – Mar 2025
Machine Learning Engineer Intern *Taipei, Taiwan*

- Trained VoiceCraft, a transformer based text-to-speech (TTS) model enabling voice synthesis and editing.
- Integrated customized phonemizer, VoiceCraft, and GAN-based vocoder to enhance voice quality.
- Enhanced VoiceCraft with two-stage inference using VALL-E components.
- Developed a transformer based lyrics-to-melody model with custom data representation and embedding.
- Implemented countdown embeddings to align the number of melody notes with lyric words.

Institute of Information Science, Academia Sinica Jul 2023 – Apr 2024
Research Assistant *Taipei, Taiwan*

- Co-authored a paper on service demand extraction using large language models (LLMs), presented at SCC 2024.
- Increased input/output extraction accuracy from 56%/48% to 97%/98%, surpassing previous methods.
- Built a custom dataset from LeetCode, enhancing training data quality for service demand extraction tasks.
- Optimized prompt design, improving model reasoning accuracy by 15% through Chain-of-Thought techniques.
- Reduced input/output extraction time by 40%/50%, significantly improving efficiency.

Projects

ToxicTone | *Python, PyTorch*

- Co-authored a paper titled ToxicTone as the first author, which was accepted for presentation at Interspeech 2025.
- Created the first large-scale Mandarin toxic speech dataset with prosodic labels.
- Multimodal models outperformed text-only baselines, highlighting the need for speech-based toxicity detection.

Bubblo | *Unity, C#*

- Led a team of four engineers and one artist to develop a 2D platformer with unique mechanics and original artwork.
- Designed and enforced a modular, low-coupling architecture using object-oriented programming principles.
- Adopted agile practices to prioritize tasks, meet deadlines, and iteratively improve gameplay and user experience.
- Check out the game here: Bubblo

Let's Volley | *React.js, Nest.js, Node.js, PostgreSQL*

- Built a full-stack web application that connects volleyball players and venue maintainers.
- Enabled players to create and join games, and interact with others through a centralized platform.
- Allowed maintainers to manage venues, schedule court availability, and oversee game logistics.
- Implemented secure authentication with JSON Web Tokens and integrated Google OAuth for easy login.
- Utilized Leaflet for interactive venue maps and DayPilot Scheduler for intuitive game and court management.

BandWitch | *Bash, React.js, Express.js, Node.js, Python*

- Developed a monitoring system enabling simultaneous use of multiple networks to scale total bandwidth.
- Configured system-level iptables and routing using Bash scripts.
- Achieved 80% scalability in network speed through effective utilization of multiple connections.

Machine Problems | *C, RISCV*

- Implemented user-level threading by allocating separate stacks in heap memory.
- Optimized virtual memory management through demand paging and swapping to maximize resource efficiency.
- Built xv6's timer interrupts to enable preemptive user-level threading and designed scheduling algorithms.
- Extended the inode structure to support double indirect blocks, increasing the maximum file size in the file system.

Technical Skills

Languages: C/C++, Python, JavaScript, Swift, RISCV
Web Development: React.js, Node.js, Express.js, MongoDB, PHP, MySQL
DevOps: Docker, Kubernetes, Bash, Git, Conda, NVM
Machine Learning: Scikit-Learn, PyTorch, Wandb