

Yu Xiang Luo

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Education

National Taiwan University

Sep 2021 – Jun 2025

Bachelor of Science in Computer Science

Taipei, Taiwan

- **Relevant Coursework:** Data Structures and Algorithms (C), Algorithm Design and Analysis (C++), Machine Learning (Scikit-Learn), Operating Systems (C), Web Programming (React.js), Reinforcement Learning (SB3).

Experience

Taiwan AI Labs

Apr 2024 – Present

Machine Learning Engineer Intern

Taipei, Taiwan

- Trained VoiceCraft, a VALL-E based text-to-speech (TTS) model enabling voice synthesis and editing.
- Integrated a customized phonemizer from previous work and a GAN-based vocoder to enhance voice quality.
- Modified model architecture to enable interaction between two different models, which improved synthesis results.
- Trained a transformer based lyrics-to-melody model with custom data representation and embedding.

Institute of Information Science, Academia Sinica

Jul 2023 – Apr 2024

Research Assistant

Taipei, Taiwan

- Conducted research on Named Entity Recognition (NER) leveraging Language Models (LM).
- Designed and refined Chain-of-Thought prompts to enhance model reasoning.
- Engineered the application of Low Rank Adaption (LoRA) to language models, optimizing resource efficiency.

Projects

Chinese VoiceCraft | PyTorch, Python

- Led the development and training of a transformer-based text-to-speech model in Traditional Chinese.
- Modified model architecture to pass the hidden states embedding to VALL-E model, improving the results.
- Integrated phonemizer, Encodec, VoiceCraft, VALL-E, and GAN-based vocoder, enhancing voice quality.

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.

Swift App (Prototype) | Swift, Xcode SDK

- Developed an iOS app prototype as a practice in mobile device development and object-oriented programming.
- Implemented a Tic-Tac-Toe game and a Math game to showcase game logic and user interface design.
- Designed a homepage with SwiftUI, featuring sections for personal information and a photo carousel.

Full Stack Website | React.js, Express.js, Node.js, MongoDB

- Developed a full-stack web application with a responsive front-end and a RESTful API back-end.
- Implemented user authentication, data management, and CRUD operations with MongoDB as the database.
- Integrated an auto-recovery mechanism to ensure seamless application restart in case of crashes.

Machine Problems | C, RISC-V

- 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, RISC-V

Web Development: React.js, Node.js, Express.js, MongoDB, PHP, MySQL

DevOps: Docker, Kubernetes, Bash, Git, Conda, NVM

Machine Learning: Scikit-Learn, PyTorch, Wandb