

# Yu Xiang Luo

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Website

## Education

### National Taiwan University

Sep 2021 – Jun 2025

Bachelor of Science in Computer Science, GPA: 3.6/4.0

Taipei, Taiwan

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

## Experience

### Taiwan AI Labs

Apr 2024 – Present

Machine Learning Engineer Intern

Taipei, Taiwan

- Trained VoiceCraft, a transformer 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.
- Enhanced VoiceCraft by integrating VALL-E components, boosting inference performance and quality.
- Developed 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

- 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

### Bubble | 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: [Bubble](#)

### 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, 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.

### 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.

### 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.

## 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