

YU-LIN LIU

✉ willy229.liu@gmail.com ⬤ Kaohsiung, Taiwan 🔗 <https://willy229liu.github.io/>

HIGHLIGHTS OF ACHIEVEMENTS AND QUALIFICATIONS

Industry Experience: Game Engine Development Engineer with over 3 years of experience.

Education: Bachelor of Engineering in Software Engineering

Skills: Specialized in optimization for a Large-scale Open-world Online Game with Millions of Players.

- Programming: C++, C#, Lua, Java and Python
- Engines & Tools: Unity, Jenkins, Spring, Git, Perforce, and Tensorflow
- Memory Optimization, Multithreading, and Animation Optimization
- Resource Loading Acceleration
- Custom Data Structure Design
- Developer Tools & Plugin Development

EDUCATION

Nanjing University

09/2018 – 06/2022 | Nanjing, China

Bachelor of Engineering, Software Engineering

- **GPA:** 4.16 / 5.0

- **Core Courses:** Data Structure and Algorithm Analysis, Computer Organization and System Architecture, Software System Design, Software Engineering and Computing

WORK EXPERIENCE

Game Engine Development Engineer

07/2022 – 04/2025 | Shanghai, China

Lilith Games, AFK: Journey ↗

- Developed game systems in **Unity** using **Lua, C++, C#, and Python**.
- The game received multiple awards, including **App Store Best Game of 2024, Google Play Best Game of 2024**, and a nomination for **Best Mobile Game at The Game Awards 2024**.

Memory Optimization

- Reduced memory usage from 2.5GB to 1GB by eliminating redundant allocations, designing custom data structures, and using memory-mapped loading.
- Resolved memory leaks, enabling iPhones with 3 GB RAM to run the game for over 1 hour by identifying zombie memory, mitigating memory fragmentation, and reducing frequent allocations.

3D Character Production Pipeline

- Compressed animation memory usage by removing frames with only subtle changes, reducing asset memory footprint from 10MB to 1MB.
- Assembled all artist resources into complete character assets.
- Implemented automated tools for animation clipping detection and batch modification of model vertex normals.
- Designed an animation play system to dynamically load clips and controllers, reducing animation memory usage from 100MB to 10MB.

Loading Acceleration

- Accelerated game startup loading time from 40 to 10 seconds by simplifying the parsing of map data.
- Designed asynchronous resource loading strategies to minimize waiting times during system transitions.

Tools for Effect Evaluation

- Built tools to provide artists with clear standards for checking visual effect performance during development.
- Developed an effect grading system to control and monitor the performance cost of in-game effects.

Map Visual Optimization and Loading Acceleration

- On a 2D map, rendered over 500 complex icons on screen while allowing players to drag the map at a stable 60 FPS.
- Optimized a level-of-detail (LOD) system for the Infinite Map Zoom System to reduce the number of vertices on screen.
- Designed terrain-adjustment algorithms for curved maps to enhance control fluidity, ensuring natural camera movement during drag interactions.
- Optimized a multithreaded map mesh rendering pipeline by rearranging data read sequences to reduce the number of draw calls.

Game Engine Development Internship

07/2021 – 02/2022 | Shanghai, China

Lilith Games, AFK: Journey ↗

Developer Tools for Designers and Artists

- Implemented a map-copy tool.
- Built a FlatBuffers-based map data export pipeline.
- Developed a map resource management tool.

2D Mini-map Rendering System

- Implemented gesture functions (drag and pinch) for the map and icon interaction logic such as touch responses.

Infinite Map Zoom System

- Optimized the system so the map can be dragged or pinched to the edge without noticeable loading and can transition smoothly from a 3D map to a 2D map.
- Developed a camera movement system to control camera behavior on the map.

RESEARCH EXPERIENCE

Research Assistant

National Sun Yat-sen University

05/2025 – 08/2025 | Kaohsiung, Taiwan

- Predicted age from single-lead electrocardiograms in polysomnography to estimate the severity of the apnea–hypopnea index.
- Used 1D or 2D machine learning models. Applied ResNet-18, MultiRocket, TabPFN, XGBoost, and other ECG foundation models from research.
- Worked with real-world data from a hospital sleep medicine center, requiring extensive noise cleaning and preprocessing.
- Achieved 0.95 training accuracy on real-world data by cleaning noisy data and combining different models to correct errors.

Graduation Design (Capstone Project)

Nanjing University

03/2022 – 06/2022 | Nanjing, China

- Used a 2D-CNN to detect faults in app UIs. Designed a model taking image inputs to generate binary classifications (true/false), achieving 0.87 accuracy on the test dataset.
- Built an automated testing framework to augment the dataset. Collected screenshots from real-world apps and injected faults into normal screenshots to create faulty samples.

AWARDS

National Third Prize – Citi Financial Innovation Application

Competition

Nanjing, China

05/2021

- Project development competition; project name: *T-Bank*.
- Designed a system that enables students to volunteer in remote locations, including an algorithm to match the requirements from remote locations with suitable students.
- Implemented the core backend API, including login verification and user data processing.

Creative Award – Lilith “Da Vinci Project” Game Creation

Competition

Nanjing, China

07/2020

- Developed a fully playable 30-minute horror game using Lilith's developed editor, implementing all game logic in Lua.

National Third Prize – Huawei CodeCraft Competition

China

05/2020

- Algorithm competition; source code: <https://github.com/1Lucifer1/HuaweiCodeCraft2020>
- Optimized C++ code to reduce runtime. Preliminary and semi-final problems involved detecting cycles in directed graphs; the final focused on computing vertex centrality.
- Built custom data structures to avoid STL overhead, tuned code for better cache locality, and redesigned thread management to maximize CPU efficiency.

Third Prize – Eazy-Learning Contest, Institutional Software

Development

Nanjing, China

05/2019

- Project development competition; source code: https://github.com/1Lucifer1/el_app
- Implemented an Android application for online answer-battle games.
- Implemented online combat using a networking framework. Developed the entire project in Android Studio.

EXTRA-CURRICULAR ACTIVITIES

Vice Minister in Activities Department

Institution Student Council

07/2019 – 06/2020 | Nanjing, China

- Organized multiple events for undergraduate students at my institute.
- Organized the 2019 Freshman Welcome Gala of the Software Institution with over 400 participants.
- Planned the entire event and designed several key performances.