Jaz Winn Ng

Mobile: +65 9107 7490
Email: ngjazwinn@gmail.com
LinkedIn: https://www.linkedin.com/in/jazwinn-ng
GitHub: https://github.com/jazwinn

PROFILE

Computer Science (Real-Time Interactive Simulation) undergraduate at Singapore Institute of Technology with experience in C++ software development. Able to work in a fast-paced environment, demonstrate problem-solving skills and continuously seek to expand technical knowledge. Seeking the opportunity to grow and contribute meaningfully as a software engineer.

EDUCATION

Singapore Institute of Technology Singapore (Digipen) August 2023 – Present

- Bachelor of Computer Science in Real-Time Interactive Simulation
- **Relevant Modules:** Operating System | CUDA programming | Low-Level Programming

SKILLS

- **Programming Language:** C++, C, C#, Java, JavaScript, HTML, CSS
- **Concepts:** Object-Oriented Programming, Spatial Data Structures and Algorithms
- **Frameworks & Libraries:** OpenGL, FFmpeg, Mono/.NET, GoogleTest, Spring Boot, React
- **Tools:** WSL, GDB, Valgrind, Git (Bitbucket & GitHub), Bitbucket Pipelines, CMake, Docker, Postman
- **Others:** RESTful API Development, Game Engine Architecture

PROJECTS

Procedural Cave Generation

- Developed using C++20 and OpenGL to create a realistic 3D cave system.
- Implemented binary space partitioning, Perlin noise, and cellular automata algorithms to generate cave structures procedurally.
- Applied greedy meshing and the marching cubes algorithm to refine geometry and improve rendering performance.

Spatial Data Structures

- Implemented advanced spatial data structures in C++ to optimise rendering and collision detection.
- Utilised structures such as Bounding Volume Hierarchy (BVH), Binary Space Partitioning (BSP), and K-Dimensional Tree to efficiently manage scene geometry.
- Achieved performance improvements of up to 5 times in rendering and collision queries through optimised spatial partitioning and traversal algorithms.

Custom Game Engine

- Led as Technical Lead a team of 8 (6 programmers, 2 game developers) to design and develop a C++ game engine from scratch, defining system architecture and C# scripting workflow.
- Implemented rendering using OpenGL, gaining deep experience with the GPU pipeline, shaders, and graphics optimization.
- Managed project milestones and coordinated Git workflows to ensure smooth collaboration, improving efficiency and streamlining workflows.

WORK EXPERIENCE

Teaching Assistant, Digipen Institute of Technology | Singapore September 2024 – April 2025

- Mentored freshmen in computing and mathematics modules, sharing insights and practical tips to help them succeed.