Sun Wei Hao

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Education

Singapore Institute of Technology **September 2022 – September 2026**
BSc Computer Science in Real-Time Interactive Simulation: Information *Singapore*

Nanyang Polytechnic **April 2017 – March 2020**
Diploma in Mechatronics Engineering *Singapore*

Relevant Coursework

- Software Development
- Data Structures and Algorithms
- Machine Learning
- Object Oriented Programming
- OpenCV
- OpenGL
- UE5/Unity/Godot
- Algorithms Analysis
- Game Engine Development

Experience

AETHER **May 2025 – May 2026**
Software Engineer *Singapore*

- Developed multiple real-time simulation systems using Unreal Engine, Unity, and Godot for training and research
- Built a procedural simulation framework in Unreal Engine large-scale environments.
- Implemented AI traffic agents, pedestrian behaviours, and traffic-light logic in Unity, focusing on realistic urban movement and decision-making.
- Developed a Precision Approach Radar (PAR) simulation, including aircraft state machines, radar visualization, and landing guidance logic.
- Worked with geodetic coordinates, waypoint-based navigation, and real-time data visualization
- Optimized performance across simulations by managing AI density, rendering load, and update frequency to maintain stable FPS.

Sanmina **September 2019 – February 2020**
Robotics Engineer *Singapore*

- Received the FESTO Outstanding Project Award for an award-winning robotics/automation project.
- I reprogrammed the Autonomous Intelligence Vehicle(AIV)'s routes for improved efficiency, mapped paths using LiDAR, and resolved localization and mapping issues.
- Improve the manufacturing process by 60 percent in a production line for 60+ production line employees.
- specializing in collaborative robots (cobots), with hands-on experience in programming, integration, and safety compliance for industrial automation.
- Wrote, reviewed and edited technical document in accordance with template requirements.

Projects

EXODUS2 | *Game Development, Steam Release*

- First-person shooter released on Steam, where I contributed to post-processing effects, shaders, and gameplay scripting.
- Implemented and tuned post-processing effects to enhance visual atmosphere, including color grading and screen effects.
- Worked on shader-related features to support visual feedback and gameplay presentation.
- Developed gameplay scripting logic

Procedural Simulation Framework | *Unreal Engine 5, PCG, World Partition*

- Rule-driven procedural environment framework built in Unreal Engine 5 for large-scale simulation and autonomous drone testing
- Built a rule-driven procedural environment generation framework using UE5 PCG graphs for large-scale simulation.
- Implemented spline-based road generation and terrain-aware asset placement with collision checks
- Optimized performance for dense, high-realism scenes using instancing/HISM, LOD tuning, and streaming via World Partition.

PRISM (Police Response & Incident Simulation Module) | *Unity, C#, NavMesh*

- Urban traffic and behaviour simulation developed in Unity as part of the HackX Hackathon for police training and incident response scenarios.
- Implemented an urban traffic simulation including traffic-light state machines and intersection control logic.
- Developed AI traffic agents with modular vehicle behaviours (stop/yield/lane-following) and obstacle-aware movement.
- Built pedestrian navigation using NavMesh, integrating crossing behaviour and signal-based synchronization with traffic flow.

Precision Approach Radar (PAR) Simulation | *Godot, GDScript, Geodetic Waypoints*

- Radar-based air-traffic-control training simulation built in Godot to model precision approach guidance and landing workflows.
- Developed a radar-based approach-control training simulation with multi-aircraft traffic management and landing-request workflows.
- Implemented aircraft state machines, waypoint navigation, and geodetic flight paths loaded from JSON and converted to world coordinates.
- Built a PAR guidance interface with real-time deviation visualization for localizer and glide slope alignment, plus scoring/handover logic.

Magique | *C++, C#*

- *Magique* is a 2D thriller side-scrolling platformer in which you play as Amare, a young boy trying to escape from a exploitative circus, run by its ringleader Malachi.
- Served as the main programmer in a team of 8, focusing on implementing core gameplay mechanics (movement, puzzles, combat) and interactive elements that shape the overall player experience.
- Collaborated closely with artists and designers to integrate animations, level designs, and narrative elements, ensuring consistent art style and immersive storytelling.

AstroCow | *C, C++*

- *AstroCow* is a game where you pilot a UFO to abduct farm animals and transport them safely back to your home planet. Avoiding asteroids and environmental hazards is critical for survival.
- Contributed as a programmer in a team of 5, implementing camera, spawning logic for asteroids and game logic, and building the overall win/lose flow and credits sequence.
- Utilized object pooling and scene management techniques for optimized performance on various hardware configurations.

Personal Expense Tracker App | *Kotlin, Jetpack Compose, OCR*

- Developed a lightweight budgeting tool to record expenses and display categorized spending charts.
- Integrated OCR capabilities for automatic receipt scanning, greatly simplifying data entry for users.

Seam-Carving | *C++, OpenCV*

- Implemented a content-aware image resizing technique using both dynamic programming and greedy algorithms.
- Preserved key image features by identifying and removing low-energy seams, supporting both vertical and horizontal seam removal.
- Minimized distortion in important regions while still achieving target dimensions efficiently.

Technical Skills

Languages: C, C++, C#, Python, Kotlin, HTML, Type Script, Latex
Developer Tools: VS Code, Visual Studio, AWS, Android Studio
Technologies/Frameworks: Linux, Git, GitHub