Haoran Wang

Behavior Engineer / Gameplay Engineer / Technical Game Designer

(425) 494-8623 | haoran@wang.game | https://wang.game/ | hwang-game

Technical Skills

- Programming: C/C++, C#
- Scripting: Python, Batch Scripting
- Markup: Markdown, PlantUML, LaTeX
- Source Control: SVN, Perforce, Git
- Engines: Unity, Unreal, Godot, Custom C++ Engine
- Other Tools: ClickUp, Trello, Visual Studio, VS Code
- Game AI: Decision-Making, Navigation
- Procedural Content Generation: Level, Gameplay, UI/UX

Academic Game Projects

Solo – *Dungeon Nexus*: 10-min 2D Top-down Dungeon Crawler Sep. 2023 – Dec. 2023

- Engineered a customizable Procedural Content Generation (PCG) system that created a continuous game map featuring 5 distinct biomes, integrating 20-30 procedural rooms, 3 handcrafted mini-boss encounters, and an epic boss fight, resulting in engaging and well-balanced gameplay
- Facilitated game balancing methodically with automated testing, data telemetry, and a self-built auto-play AI in Unity, receiving unanimous positive feedback from 10+ iterative playtests

Tech Lead, Engine Programmer – *Lunar Sword*: 10-min 2D Roguelike JRPG Sep. 2022 – Apr. 2023

- Boosted both development efficiency and performance by engineering the architecture and kernel of the Celestial Engine (a self-built C++ engine) with object pooling and custom memory managers
- Enhanced project workflow and creative versatility by tailoring a procedural animation system, empowering the creation of 100+ procedural and handcrafted animations

Research Projects

Research Lead – *AI Research Demo*: 2D Top-Down Shooter Prototype Nov. 2023 – Dec. 2023

- Innovated an original adaptation of Goal-Oriented Action Planning (GOAP) architecture in Unity, amplifying decision-making realism with pioneering Situational Goal Prioritization feature
- Enriched behavioral diversity by introducing customizable personalities and preferences
- Streamlined the AI development workflow dramatically through algorithm overhaul
- Revealed promising potential of agent co-learning through experiments with adaptive heuristics

Solo – *A* Pathfinding Demo*: Unit-tested Pathfinding Sep. 2023

- Tripled the algorithm speed with custom data structures, a custom memory manager, and cache optimization in a custom C++ engine
- Improved movement naturalness substantially by integrating path-smoothing techniques

Professional Experience

Teaching Assistant – DigiPen Institute of Technology Sep. 2023 – Present

GAM200: Sophomore Team Game Projects

- Offered feedback and advice on game development plans, helping students refine strategies and enhance player experience
- Coached custom engine development, aiding students in project initiation and pitfall avoidance

Teaching Assistant – DigiPen Institute of Technology Jan. 2023 – Apr. 2023

CS230: Game Implementation Techniques

- Conducted office hours for project assistance, offering personalized support and guidance in applying architectures, techniques, and best practices to custom engine development
- Evaluated and Unit-tested custom engine projects, providing detailed feedback and grading

Education

B.Sc. in Computer Science & Game Design (Minor in Math), GPA 3.9 Sep. 2021 – Apr. 2025

DigiPen Institute of Technology