

Zhiyang Ying

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EDUCATION

University of Southern California (USC) - Los Angeles, CA, USA
M.S. in Computer Science (Game Development)

Expected May 2027

Shenyang Jianzhu University - Shenyang, Liaoning, China
B.Eng. in Computer Science and Technology

Oct 2020 - Jun 2024

HONORS

PlayStation Career Path Scholarship

- Awarded by Sony Interactive Entertainment (SIE) in recognition of outstanding potential and achievement in game development.

Ratchet It Up Game Jam (Graduate Division) - Winner

Lead Programmer

- Integrated DualSense gyroscope input and used quaternions to control gravity direction and enable dynamic gravity switching.
- Refactored character camera and movement for non-Z-up environments; replaced NavMesh with gravity-plane tracing, enabling enemies to traverse walls, floors, and ceilings.

SKILLS

- Programming Languages: C++, Python, Blueprints
- Tools: Codex, Claude Code, Unreal Engine 5, Rider, Visual Studio, Visual Studio Code, PyCharm, Photoshop
- Version Control: Perforce, Git, SVN

INTERNSHIP EXPERIENCE

[SeaSun Games - AI NPC Module and MOD Tool Development](#)

May 2026 - Aug 2026

Game Development Intern

- Implemented an MCP Server in Unity supporting SSE and Streamable HTTP; used reflection to register tools dynamically and connect external AI Agents with the game runtime for querying, debugging, and evaluation.
- Built NPC debugging and evaluation tooling with unified test-case loading, assertions, layered diagnostics, and result persistence, supporting regression tests and comparisons between retrieval pipelines.
- Delivered a standalone .NET and MongoDB vector-retrieval service with an automated ingestion pipeline; combined local exact matching, remote semantic retrieval, and graceful fallback to resolve natural-language entity descriptions to Unity scene objects and drive NPC behavior.
- Developed a MOD texture-replacement tool and its in-game integration, supporting asset scanning, model previews, and texture replacement.

TEAM PROJECTS

[The Man I Invented \(USC MFA Thesis Project\) - First-Person Sci-Fi Action Survival Game](#)

May 2026 - Present

Lead Programmer

- Built data-driven character and equipment systems in C++ with GAS. PlayerState owns the player ASC, while equipment swaps dynamically grant and revoke abilities across input, firing, ammunition, reloading, and damage; extended a shared projectile base for repair and explosive projectiles.
- Designed a component-based world-state persistence framework using GameInstanceSubsystem, persistent instance GUIDs, and a custom state interface to save transforms and gameplay data, supporting runtime object reconstruction, permanent-destruction records, and state restoration.
- Built an extensible enemy-combat framework with a shared base class for ASC, attributes, and ability configuration, then derived humanoid, nightmare, and boss variants. Dynamically loaded behavior subtrees to reuse common AI logic, selected GAS abilities by phase and distance, and implemented special abilities such as invisibility and area barrages.
- Built a modular first-person animation architecture with shared animation bases and skeleton-independent templates, using Linked Anim Layers for weapon-specific aiming, firing, and reloading. Combined upper- and lower-body poses across separate arms, visible legs, and full-body shadows, with bone-driven leaning and spring-damped weapon lag.
- Used Gameplay Tags and Gameplay Cues to decouple combat logic from audiovisual feedback, enabling independent configuration of weapon-hit and character-hit effects across Niagara, blood decals, spatial audio, and camera shake.

[Wok This Way \(USC MFA Thesis Project\) - Online Multiplayer Shooter](#)

Sep 2025 - May 2026

Gameplay Engineer

- Integrated Steam Online Subsystem for lobby creation, joining, and match-start flow.
- Built a server-authoritative weapon system using RPCs and property replication to synchronize firing, weapon state, and character interactions, with server-side trajectory, collision, and damage validation.
- Tuned engine network smoothing and interpolation parameters to reduce position snapping and visual pulling under high latency.

PERSONAL PROJECTS

[Infernal - Single-Player Third-Person Action RPG with AI](#)

Jan 2026 - Present

- Collected player behavior trajectories with Unreal Learning Agents and trained a Boss behavior-cloning model through imitation learning.
- Designed a multidimensional reward function and trained a reinforcement-learning Agent to autonomously learn combat strategies in nonlinear levels.

[3D Rendering Algorithms in C++](#)

Sep 2025

- Implemented a ray tracer and BVH acceleration structure in C++, improving rendering performance by approximately 30x.
- Implemented a software rasterizer simulating the complete graphics rendering pipeline.

[Procedural Universe Environment Simulation - Unity Shaders](#)

Nov 2025

- Wrote custom HLSL Shaders for elevation-based biome layering and natural terrain transitions.
- Implemented randomized-sampling triplanar mapping with FBM noise to eliminate texture repetition on spherical surfaces.
- Integrated the lighting pipeline and used the Fresnel effect to simulate atmospheric scattering around planetary silhouettes.