

# ZHEHAO XU

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## EDUCATION

University of Southern California, Viterbi School of Engineering

Master of Science, Computer Science

Bachelor of Science, Computer Science (Games) GPA: 3.89/4.0

Honors: Dean's list (2021 – present)

Los Angeles, CA

Expecting: May 2025

Expecting: May 2024

## SKILLS

**Programming Languages / Frameworks:** C++, C#, Java, Python, DirectX, HLSL, DirectX, HTML/CSS, JavaScript, MySQL

**Version Control Software:** Perforce, Git

**Game Engines:** UEFN, Unreal Engine 4/5, SDL Library, Unity

## EXPERIENCE

USC Viterbi School of Engineering

CSCI Course Producer

Los Angeles, CA

August 2022-December 2023

- **Collaboration:** Collaborate with the professor and assisted a diverse group of 330 students with data structures and object-oriented design.
- **Debugging:** Actively supporting students by debugging their code using Valgrind and GDB in C++, catching bugs or memory leaks to achieve highly functioning code.

Sony

Summer Technical Associate – Sony Immersive Music Studios

Culver City, CA

June 2023-August 2023

- **Rapid Prototyping:** Employed UEFN and Unreal Engine to quickly create prototypes within a 2-week period that seamlessly merge music and gaming elements that efficiently translate ideas to interactive experiences.
- **Audio Synchronization:** Designed and implemented a robust system of audio synchronization with gameplay using the Sequencer Tool inside of UEFN, achieving innovative gameplay mechanics.

## GAME PROJECTS

Oasis Blitz

Fall 2023 – Spring 2024

- **Gameplay Mechanics:** Working with a team of 20 people and implementing environmental, character, and enemy AI gameplay mechanics using Hierarchical State Machine and other standard Unity libraries such as DOTween, FMOD, and Cinemachine.
- **Optimization:** Enhanced gameplay performance by profiling and optimizing with object pooling and implementing additive scene loading, resulting in faster scene transitions in Unity.
- **Linear Algebra:** Apply advanced mathematical principles including matrix manipulations, vector math and quaternions to precisely calculate camera rotations, player orientation and enemy facing mechanics, contributing to a seamless player experience.

DirectX11 Custom Game Engine (Class Project)

Spring 2024

- **C++ Development:** Developed a game engine with rendering, animations, and collision detections with C++ and DirectX11.
- **Graphics Programming:** Used HLSL with D3D11 buffers to implement rendering. Created skinned shader for skeletal animation, normal-map shader, Phong lighting shader, Toon shader, Half-lambert shader, and Blur shader. Experimented with multiple Render Targets for post-processing and layered blending.

Multiplayer FPS (Class Project)

Fall 2023

- **Networking:** Successfully achieved networking with listen servers and dedicated servers on a First-Person Shooter game, including replicated game mechanics such as chatting, scoring, ammo pickups and more.
- **Unreal Engine Programming:** Mainly programmed in C++ to create fundamental gameplay features while following UE coding conventions and worked with blueprint programming when implementing animations.

Getaway Mobile Game

Fall 2023

- **Mobile Development:** Programmed and designed a mobile game using Unity, coded in C# to achieve all gameplay logic including mobile specific touch controls and AI navigation.
- **Gameplay Design:** Achieved an exciting mobile gameplay experience with an emphasis on affordances of touch control, gameplay juice, and a rudimentary ability system.

Simply Rotate

Spring 2023

- **Gameplay Engineering:** Led a team of 5 people, designed, and programmed a physics-based 2D puzzle game where you can rotate levels to create solutions, constructed using Unity C# with custom shader graphs to create retro shader effects.
- **Level Design:** Practiced level design principles, successfully conveyed complex gameplay ideas with minimal graphics, and encouraged players to think outside the box to create innovative solutions to puzzles.

## LANGUAGES AND INTERESTS

- **Languages:** English – Fluent; Chinese (Mandarin) – Native.
- **Interests:** Game Development; Drumming (Mainly Indie Rock); Music Production; Gaming; Skiing.