

Tsingtao Zhang

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[LinkedIn](#), [Portfolio](#), [Github](#)

Skills

Game Engine and Graphics API: Unreal 5, Unity, OpenGL, Direct 3D 11, OpenCV

Programming Language: C/C++, C#, Python, GLSL, HLSL, HTML

Software: Blender, Photoshop, Substance Painter, Trello, Github, Perforce

Skillset: Pipeline Tool Design, 3D Math, VR development, Procedural Generation (PCG), Multiplayer, Android Development, Socket, TCP/IP, Agile Principle

Experience

Role: Graduate Research Assistant

June - Aug 2024

VR Exercise game development for Human Research

Rochester Institute of Technology

- Enhanced an existing project by resolving leftover issues and optimizing gameplay, collected data items grew from 2 entries to 5, game time extended from 5 min to 30 min.
- Designed and developed an AI shooter with physics-based aiming and block-avoidance, enabling other researchers to guide users' limb positioning by easily setting the shooting position.
- Collaborating with other researchers, parameterized in-game variables based on user physical measurements and target exercise intensity, enabling real-time dynamic tuning for personalized gameplay.
- To simplify the testing process, configured a wireless environment for seamless data transfer and real-time imagery streaming of headset imagery using Socket, reducing data collecting time by 80%.

Projects

Role: Technical Artist and Gameplay Programmer

Sep 2024 - Now

Duolatera: A VR Multiplayer Puzzle Game, using Unreal 5, C/C++, Python, Blender, Photoshop, Perforce, HLSL

- Designed and managed game asset production pipeline and led the team of 5 artists. With 3D asset creating skill, established an art bible for artists to reference.
- Using Python, created automation tools for Blender and Unreal Engine, reducing 90% of related manual work.
- Created Albedo to RGB Channel Mask Converter using Python and OpenCV, allowing external asset fit for the project's custom rendering pipeline with minimum human labor.
- Implemented PCG environment assets and spline's auto snapping tool, reduced level layout time by 70%.
- Implemented the online multiplayer gaming feature, allowing 2 players to cooperate remotely through Steam.
- Designed and implemented 30% of the multiplayer gameplay mechanisms for VR co-op puzzle solving.
- Using 3D Math and Unreal IK system, built IK retargeted/predicted avatar animation based on player's movement.

Role: Graphics Programmer

May 2024

Ocean Simulator: a real time ray-tracing water shader, using OpenGL, GLSL, C/C++

- Created a real-time interactive ocean renderer using GLSL in OpenGL with ray-tracing, performing above 30 fps.
- Using linear algebra, ray reflection and refraction, added in a very fast real-time caustics effect which influences the underwater illumination environment, enhancing visual realism.
- Created a clicking-promoted water circle waves on the surface interactively, on top of the default wave patterns.

Role: Gameplay Programmer and Technical Artist

July 2023

Cutie Tower Defense: A web tower defense game, using Unity, C#, Github, Blender

- Designed and implemented an object pooling system, optimized game performance by 40%.
- Developed tower behaviors and an enemy route-changing system, while working with other programmers, getting rid of 2 redundant helper scripts.
- Set asset importing format and standard, and helped artists to create assets and optimize to game-ready quality.

Education

Rochester Institute of Technology, Rochester, NY.

Expected May 2025

Game Design and Development, Master of Science.

China Agricultural University, Beijing, China.

Sep 2018 - June 2022

Agricultural Structure Environment Engineering, Bachelor of Engineering

Related Courses:

Linear Algebra, calculus, C and C++ programming language, data structure and algorithm, computer graphics, game graphics programming, global illumination, game design, game development process, gameplay and prototyping, applications in virtual reality, Python programming, web technology, Linux, database.

Extracurricular Activities

Bass in China Agricultural University Choir

Sep 2021 - June 2022

Led weekly practice in bass, participated in 4 performances and 1 national competition with gold price.