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

Experience

Role: Graduate Research Assistant Rochester Institute of Technology
VR Exercise game development for Human Research June - Aug 2024
- Enhanced an existing project by switching the render pipeline to URP and optimizing gameplay performance.
- 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.
- Solo developed the game while collaborating with other researchers to design the user study. Parameterized in-game variables based on user physical measurements and exercise intensity, and enabled researchers to tune the exercise intensity in real time. Enriched data items from two to five and extended game time from 5 min to 30 min.
- Configured a wireless environment for seamless data transfer and video streaming of headset imagery using Socket, reducing data collecting time from 5 min to 10 seconds per user test.

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 contents and spline's auto snapping tool, cutting average layout time from 1 min to 10 seconds.
- 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 March - 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
Cutie Tower Defense: A web tower defense game, using Unity, C#, Github, Blender April - July 2023
- 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. August 2023 - 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.