Tsingtao Zhang

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LinkedIn, Portfolio, Github

Skills

Game Engine and Graphics API: Unreal 5, Unity, OpenGL, Direct 3D 11
Programming Language: C/C++, C#, HLSL, GLSL, Python
Software: RenderDoc, PyQt, Blender, Photoshop, Substance Painter, Git, Perforce, Figma
Area of Focus: Asset Pipeline, Tool Development, Asset Creation, Procedural Content Generation, VR, Multiplayer

Work Experience

Role: Contract Technical Artist July - Oct 2025
The Forge Interactive Inc. Using Blender, Substance Painter, PBR workflow, HLSL, Python,
- Developed particle and lighting effects including rain, fireflies, lanterns, and candles using The Forge's proprietary particle editor for mobile platform, while resolving shading issues in legacy codebase, and optimizing parameters for indirect lighting and lightning strikes using HLSL.
- Optimized San Miguel scene assets for mobile platform demo by refining meshes and textures through custom PBR workflow, using Blender and Substance Painter, correcting topology issues and baking high-poly details. Using Python, improved The Forge's asset pipeline.
- Collaborated with graphics programmers to provide technical requirements for particle systems, UI implementation, indirect lighting, and save/load functionality, while delivering iterative feedback on feature development.

Role: Graduate Research Assistant June - Aug 2024
Rochester Institute of Technology Using Unity, Meta Quest, Android
- Enhanced a VR exercise game by switching the render pipeline to URP and optimizing gameplay performance.
- Reorganized existing UI layout, made uniform UI prefabs which are reused in multiple levels.
- 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. Implemented character animations using Unity Animator.
- Parameterized in-game variables that are tuned during gameplay based on research data collection requirements.
- 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 - June 2025
Duolatera: A VR Multiplayer Puzzle Game, using Unreal 5, C/C++, Niagara, Python, Blender, Perforce, HLSL
- Implemented PCG content generation and spline auto-snapping tool, reducing level layout time by 90%.
- With 3D asset creating skills, established asset production pipeline and an art bible, led an external art team of 5.
- Using Python and Unreal Editor Utilities Widget, created an automated asset import tools for Unreal Engine, reducing 90% of related manual work.
- Created a texture conversion tool using PyQt and OpenCV, converting albedo textures into RGB Channel Masks.
- Using PyQt, developed an asset renaming tool, autonomously managing all assets avoiding human error.
- Created procedural and stylized material and VFX using Material Graph, HLSL, and Niagara system.
- Using Unreal IK system, built IK retargeted/predicted avatar animation based on player's movement.
- Implemented the online multiplayer gaming feature, allowing 2 players to cooperate remotely through Steam.

Role: Technical Artist July 2025 - now
A Runtime Procedural Tower Defense Game Prototype, using Unity, Compute Shader, HLSL, RenderDoc, Unreal 5
- Developed a procedural wall builder system in Unity. Dynamic brick mesh instances are calculated and generated along the spline, which can be changed by the player anytime during gameplay.
- Optimized rendering performance by implementing GPU-accelerated compute shaders to calculate transforms for 5,000 cube instances per frame, achieving a 185% performance improvement (70 to 200 FPS).
- Conducted cross-engine performance analysis by developing a comparable procedural fence builder in Unreal Engine, identifying limitations in runtime PCG updates through codebase investigation.

Education

Rochester Institute of Technology, Rochester, NY. Aug 2023 - Aug 2025
M.S., Game Design and Development
China Agricultural University, Beijing, China. Sep 2018 – June 2022
B.Eng., Agricultural Structure Environment Engineering