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, Blender, Houdini, 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**
- Optimized San Miguel scene assets for mobile platform demo by refining **mesh topology, UV unwrapping**, and **textures** through **custom PBR pipeline**, using **Blender, Materialize, Photoshop,** and **Substance Painter** to create high-poly details.
- Collaborated with software engineers to design the **asset creation workflow** in proprietary asset pipeline.
- Using **Python**, automated file management, texture processing, and validation in The Forge's asset pipeline.
- Collaborated with graphics programmers to provide technical requirements for particle systems, UI implementation, and save/load functionality, while delivering iterative feedback on feature development.
- Developed **particle and lighting effects** using The proprietary particle editor for mobile platform, while resolving shading issues in legacy codebase using **HLSL**.

Role: Graduate Research Assistant June - Aug 2024
Rochester Institute of Technology Using **Unity, URP, Meta Quest, Android**
- Enhanced a VR exercise game by switching the render pipeline to **URP** and optimizing gameplay performance.
- Optimized rendering and game logic, deployed a **standalone** app that can run directly in the **Meta Quest** headset, without the need of PC Link.
- Designed and developed an physics-based aiming and block-avoiding **AI shooter** with **character animations**, enabling other researchers to guide users' limb positioning by easily setting the shooting position.
- 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 **procedural content generation assets** using **Unreal PCG Graph,** and spline's **auto-snapping tool** using **C++ and Blueprint**, efficiently utilized 3D assets, reduced level layout time by 90%.
- With 3D asset creating skills, established a **custom asset production pipeline** in an art bible, led an external art team of 5, **trained** 3 external 3D artists with custom pipeline and workflow.
- Using **Python** and **Unreal Editor Utilities Widget**, designed and implemented an **automated asset import tool,** reduced 90% of related manual work.
- Developed **Python** and **PyQt-based tools**, including a texture converter, asset renamer, and Blender validation plugin, automating asset workflows and eliminating key pipeline bottlenecks.
- 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, HLSL, RenderDoc, Unreal 5, Houdini**
- Developed a **real-time procedural wall generator** in Unity using **compute shaders** and Unity's low level **graphics API**, achieving **10K+ instances per frame at 50+ FPS** on RTX 4060 (profiled using **RenderDoc**) by offloading spline-based instance transform calculations from CPU to GPU.
- Implemented **Centripetal Catmull–Rom spline** evaluation and a **distance lookup table in HLSL** for efficient instance positioning and randomized segment lengths.
- Created two similar procedural fences using **Houdini** and **Unreal PCG Graph** for comparison. Conducted cross-engine performance analysis, 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 GPA: 3.89
China Agricultural University, Beijing, China. Sep 2018 – June 2022
B.Eng., Agricultural Structure Environment Engineering GPA: 3.44