Chen Xu

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TECHNICAL SKILLS & CONCEPTS

Programming Languages/APIs: C++, C, HLSL, GLSL, C#, Python, Unreal Blueprints, DirectX12/11, OpenGL, FMOD
Tools: Unreal Engine 5, Unity, RenderDoc, Pix, Razor GPU/CPU, Nvidia Nsight, Visual Studio, Perforce, Git, ImGui
Concepts: GPU Architecture, Real-Time Rendering, Debugging, Profiling, Optimization, Multithreading, GPGPU, Linear Algebra, 2D&3D Math, Trigonometry, Post-processing, Ray Tracing, Lighting Models, OOP, Data Structures
Spoken Languages: English, Chinese

PERSONAL PROJECTS

Personal C++ Game Engine **Sep 2022 – Present**

- Created a game engine from scratch using DX12 and DX11; Built 2D/3D math and physics library
- Customizable rendering pipeline supporting compute shaders, post-processing effects, and custom lighting models
- Engine systems include multithreaded jobs, buffer reader/writer, audio, input, events, dev console, TCP network

Fluid Simulation *(built in personal engine)* **Aug 2023 – May 2024**

- Implemented screen-spaced rendering using point sprites with vertex shader instancing
- Rendering with diffuse reflection, refraction, cubemap reflection, Fresnel, and caustics (basic photon-mapping)
- Achieved real-time physics simulation with position-based fluid, performance optimized via compute shaders

Stylized Rendering Tool *(built in personal engine)* **Feb 2024 – May 2024**

- Developed six real-time customizable post-processing effects; Utilized ImGui for dynamic variable adjustments
- Shader manager in personal game engine for loading/saving variables from XML, with API for applying effects

Doomenstein: 3D Retro FPS Rendering *(built in personal engine)* **Feb 2023 – May 2023**

- Built a Doom clone with XML data driven game object definitions and 3D collision detection
- Spline based 3D selection UI, billboard sprite animation responsive to player input and AI behavior

Simple Miner: Multithreaded Procedural Terrains *(built in personal engine)* **Mar 2023 – Jul 2023**

- Developed a *Minecraft* clone in a custom engine with Perlin noise for amortized chunk-based world generation
- Game-specific memory management, lighting, saving/loading, and optimizations using hidden surface removal

SHIPPED GAMES

Asurya's Embers *(Steam • EGS)* **Jul 2023 – Dec 2023**

Game R&D and AI Engineer, Unreal Engine 5.3, 3D FPS, Team of 22 (7 Programmers)

- Profiled and optimized the game, achieving a 66% reduction in frame time from 33 ms/frame to 11 ms/frame
- Designed and implemented AI base, Enemy base, AI controller base C++ classes and blueprints
- Developed the AI behaviors of 2 kinds of normal enemies and a boss enemy and their animation blueprints

SeaFeud *(Steam)* **Feb 2023 – May 2023**

Game UI Engineer, Unreal Engine 5, 3D Arcade Racer, Team of 47 (14 Programmers)

- Developed architecture of global menu and split screen interface using Common UI
- Collaborated with artists to create and implement custom UI layouts, and button styles
- Implemented main menu, player selection menu and HUD, customized widgets to solve losing-focus issues

WORK EXPERIENCE

The Forge Interactive, Inc **Aug 2024 – Present**

Graphics Programmer

- Develop and maintain "The-Forge" cross-platform (PC, consoles, mobiles) rendering framework with CI/CD
- Profile and optimize performance on multiple platforms, PS4 CPU optimization

EDUCATION

SMU Guildhall, *Master of Interactive Technology in Digital Game Development, Software Development* **May 2024**
USST, *Bachelor of Computer Science and Engineering* **Jun 2021**