CHRIS YUAN ZHONG | Game Programmer

Redmond (Open to Relocate) | Phone: (818) 747 8878 | Email: chrisyuanzhong@outlook.com

GitHub: https://github.com/ChrisYuanZhong | Portfolio: https://www.chrisyuanzhong.com

SKILLS

C++ & C, C#, Game AI, Game Engineering, Unity, Unreal, Blueprint, Cocos2d-x, Data Analysis, Perforce, Shaders, Git, SQL, HTML

EXPERIENCE

KOOAPPS (UNITY) (C#) (SQL) (DATA ANALYSIS) (ANDROID) (IOS) — Seattle, WA

Associate Game Programmer (Optimization) – Snake.io — 07/2024 - Present

- **Performance Optimizations**: Enhanced game performance by optimizing logic, data structures, and system architecture, resulting in improved **FPS** and reduced **stuttering** with significant **CPU** overhead reductions. Minimized **RAM** usage through **memory leak** fixes and asset cleanup. Leveraged CPU and memory **profiling** tools for performance analysis and investigation.
- **Technical Troubleshooting & Code Review:** Diagnosed and fixed bugs in **peer-written code** using comprehensive debugging methodologies including profiling tools, network analysis, **data analysis**, and custom diagnostic scripts. Resolved implementation issues with **third-party SDKs** and addressed critical performance & **revenue-impacting** problems across various systems.

THE GAPP LAB (UNITY) (C#) (VR) (SQL) (ANDROID) — Salt Lake City, UT

Game Programmer — 08/2023 - 05/2024

- Collaborated with another game programmer to fix a poorly structured and unplayable **Android VR** serious game project using Unity for **Meta Quest** headsets, enabling medical students to practice urinary catheter insertion through VR simulations.
- Transformed the project from a **non-playable** state into a fully functional training tool by restructuring, refactoring, and improving in-game mechanics and systems, elevating user experience.
- Contributed to user data analytics system in **MySQL** for 2 serious games on depression made in Unity.

PROJECTS

ACT Combat with Enemy AI - *Game Programmer* **(UNREAL) (3RD PERSON)** — 03/2024 - 04/2024

- **Animations**: Implemented complex combat animations and mechanics utilizing **Animation Notifications**, including Weapon Draw/Sheath, Weapon Locomotion, Attack Combo, Directional Dodge with Invulnerability Frames, and Hit Reaction.
- **Component Systems**: Leveraging **Decoupling Patterns**, created **reusable component systems** like Combat, Weapon Collision, and State Manager, enabling efficient code maintenance and future extensibility.
- **Enemy AI**: Engineered an intelligent Enemy AI system using **Behavior Tree** to process **AI Perceptions** including sight, damage sense, and hearing. Implemented enemy **AI behaviors** such as Patrol, Inspect, Chase, and Attack.
- **Blueprint Interfaces**: Utilized numerous **Blueprint Interfaces** to have different entities react differently to the same trigger.

GAME AI Simulation - *Game Programmer* **(C++) (OPENFRAMEWORKS)** — 02/2024 - 04/2024

- **AI Fundamental Movement Behaviors**: Integrated my Physics System to simulate physics for implementing Craig's algorithms to simulate fundamental **game AI movement behaviors** including Seek, Arrive, Flee, Pursue, Evade, Wander, and Flocking.
- **Pathfinding**: Implemented the **Dijkstra** and **A*** pathfinding algorithms and evaluated their performances. Integrated A* with Boid, enabling them to utilize the Seek behavior from the fundamental movement behaviors to navigate towards where mouse clicked.

GAME ENGINE SYSTEM: PHYSICS STATIC LIBRARY - *Game Programmer* **(C++)** — 11/2023

- Independently developed a physics static library used in my Cross-Platform Game Engine, ensuring **performance** and **modularity** and attracting multiple fellow peers to use it in their own game engines for game development.
- Designed and implemented an innovative three-phase **collision detection system** for rotated box colliders to maximize performance.
- Seamlessly integrated the system to my Game AI Project that was built in **openFrameworks** to manage movement and collision.

CROSS-PLATFORM GAME ENGINE - *Game Programmer* **(C++) (D3D) (OPENGL)** — 08/2023 - 11/2023

- Refactored an existing cross-platform graphics system that supports **D3D** and **OpenGL** to improve modularity and increase maintainability. Applied **Reference Counting** to eliminate memory leaks.
- Developed a C++ game engine that supports both **D3D** and **OpenGL** and features an intuitive interface that allows users to code scripts just like in Unity. And developed a **Side-Scrolling Platformer** game using it along with my Physics System.
- Created a **Maya plugin** to export 3D models into a customed human-readable **Lua** file format to enhance readability and editing convenience. Then converted it into a customed **binary** format during build time, reducing space usage by over **75%** and increasing processing speed for loading meshes by more than **120** times.

ALT CTRL GAME: OVERFLY - *Lead Game Programmer* **(UNREAL) (C) (HARDWARE) (10 PPL)** — 01/2023 - 04/2023

- **Physics Based Movement**: Independently designed and implemented an **advanced movement system** incorporating real-time **physics calculations** to realize diverse movement modes that served as the foundation of the ALT CTRL game.
- **Hardware Design & Implementation**: Programmed **C code** onto **Arduino** motherboards for ultrasonic sensors as the key component of our ALT controllers. Kept optimizing hardware communications to achieve **responsive control** of the in-game balloon inflations.
- **Innovative Inputs**: Designed and implemented two kinds of **input methods** for game menus and gameplay on bike pumps: scrolling and confirmation. Confirmation is achieved by "bursting", which is to quickly pump twice, also used for "jumping" in gameplay.
- **Object Inheritance Hierarchy:** Designed **inheritance hierarchy** for obstacles to make it very easy for artists to make new assets.

EDUCATION

UNIVERSITY OF UTAH - ***MASTER OF ENTERTAINMENT ARTS & ENGINEERING*** — 08/2022 - 05/2024

- **Relevant Courses:** C++ Game Programming, Shader Development, Advanced Game Studio, Rapid Prototyping

CHONGQING UNIVERSITY OF TECHNOLOGY - **BACHELOR OF COMPUTER SCIENCE** — 09/2018 - 06/2022

- **Relevant Courses: Linear Algebra**, Programming Language, Computer Graphics, Data Structure, Algorithm, Database
- **Scholarship:** First-Class Scholarship for 2020-2021 Academic Year of Liangjiang International College, 10/2021