CHRIS YUAN ZHONG | Game Programmer

Salt Lake City (Open to Relocate) | Phone: (818)747 8878 | Email: **chrisyuanzhong@outlook.com**
GitHub: **https://github.com/ChrisYuanZhong** | **Portfolio**: **https://www.chrisyuanzhong.com**

SKILLS

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

EXPERIENCE

THE GAPP LAB (UNITY)
Salt Lake City, UT

Game Programmer
08/2023 - Present

- Providing technical support to development teams in need and contributing to multiple medically related Unity projects.
- Contributed to user data analytics system in **MySQL** for two serious games on depression made in Unity.
- Collaborated with another game programmer to revitalize a poorly structured **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.

PROJECTS

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

Game Programmer

- **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 (C++) (OPENFRAMEWORKS)
02/2024 - 04/2024

Game Engineer

- **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 (C++)
11/2023

Game Engineer

- Independently developed a physics static library used in my Cross-Platform Game Engine, ensuring **performance** and **modularity** and attracting multiple fellow classmates 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 (C++)
08/2023 - 11/2023

Game Engineer

- 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.
- 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.

ALT CTRL GAME: OVERFLY (UNREAL) (10 PEOPLE) (SIDE-SCROLLER)
01/2023 - 04/2023

Lead Game Programmer

- **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:** Game Engineering, C++ Game Programming, Shader Development, Advanced Game Studio, Rapid Prototyping, Game Design, Level Design

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