CHRIS YUAN ZHONG | Game Programmer

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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

- **FPS/Stutter Optimization**: Improved FPS and minimized stuttering by optimizing game logic, data structures, and redesigning system architecture, achieving significant reductions in CPU overhead and delivering smoother gameplay experiences.
- **Memory Optimization**: Improved memory efficiency by identifying and resolving memory leaks through memory profiling, ensuring stable performance across extended play sessions.
- **Data Analysis**: Been a Data Analyst for two months as training. Developed skills in data collection, statistical analysis, and visualization techniques to support various projects on Google Play Store, Apple AppStore, and Amazon Appstore.

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