ALEX ZAPALAC

GAME DEVELOPER

408-832-7266

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I am an adaptable game desiger and developer with 8+ years of experience. I am collaborative, organized, creative, and detail-oriented. My strengths are gameplay systems design, software architecture, and cross-functional collaboration. I love video games, hiking, and heavy metal.

TECHNICAL PROFICIENCIES

Unreal Engine 5 | Unity3D | C# | C++ | Git |Perforce| Visual Studio| Confluence | Jira

EDUCATION

Masters of Science, University of California, Santa Cruz

WORK HISTORY

INDEPENDENT GAME DEVELOPER — 06/2023 - CURRENT

- Used the Poisson Disk Sampling algorithm in C# to simulate a galaxy of 5000+ star systems in Unity, running at 60+ FPS, each one with procedurally generated planets rotating around it.
- Shipped a mobile puzzle game made in Unity to the Google Play Store, which featured 27 handmade levels. Created an in-engine level editor from scratch in Unity to build and test these levels.
- Created real-time multiplayer services and systems for both peer-to-peer and server-authoritative games.

HUSSIAN COLLEGE | GAME DEVELOPMENT INSTRUCTOR — 02/2023 - 06/2023

- Instructed students on how to use Unreal Engine 5 Blueprints to make game projects.
- Taught game design to students, including making core game loops, game design documents, level plans, enemies, and weapons.
- Reviewed student's work and provided useful feedback.
- Mentored students with career advice and stories of direct experience in the game industry.

ROCKSTAR GAMES | GAME DESIGNER — 06/2020 - 08/2022

- Worked on game development in C# for a multiplayer, open-world AAA game at an advanced level, utilizing programming skills to fight technical debt and resolve core software architecture issues.
- Used Perforce and Helix Swarm for QA purposes such as detecting bugs and maintaining framerate.
- Refactored legacy code, added player-facing features, and helped review submitted code.
- Created tutorial content for player inventory and housing systems.

NAMAZU STUDIOS | SOFTWARE ENGINEER — 06/2019 - 01/2020

- Created a native C++ API for mobile devices that tracked the user's face using AI.
- Used marshaling in C# to pass data between C++ and Unity C# scripts.
- Wrote asynchronous C++ code to run AI facial detection and tracking algorithms while preserving a framerate of 60+ FPS in Unity.
- Developed game-focused systems and internal tools so users could directly implement this API in Unity for game development purposes.

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INDEPENDENT PROJECTS

SKYWORLD — 05/2024 - 06/2024

- Created a Tech Demo for an open-world adventure RPG in Unreal Engine 5, where players sail flying ships between floating islands and explore those islands for treasures and resources.
- Wrote a 3D Poisson Disk Sampling algorithm in C++ to procedurally generate an area full of floating islands & volumetric clouds, using spatial hashing to optimize the algorithm's memory complexity from $O(N^3)$ to $O(N)$
- Used Unreal PCG graphs and Materials to populate these islands with vegetation.
- Used Blueprints to program a Skyship that could be controlled by the player and collide with islands.
- Created behavior trees and Blueprints to control enemy AI.

BLOOM BOX — 01/2023 - 05/2023

- Finished a mobile puzzle game in Unity & shipped the Beta build to the Play Store.
- Wrote an in-engine level editor that used Scriptable Objects to keep track of level data.
- Designed 29 bespoke levels with increasingly difficult puzzles and new mechanics introduced.
- Created play pieces with different powers, such as Wind, Paint, and Rotator.
- Created and implemented all music and sound effects for the game.

THE DARK BEYOND — 07/2019 - 12/2022

- Used 2D Poisson Disk Sampling in Unity to generate thousands of solar systems, each complete with 3-7 procedurally generated planets.
- Created a framerate optimization system based on player distance to activate & deactivate solar systems. This system brought the framerate from 3 FPS to over 60 and vastly reduced initial load times.
- Created custom algorithms to generate mountains and continents on planets.
- Created a simple elevation-based shader to color planets.

ERUPTION — 09/2014 - 12/2015

- Shipped an unusual 3D puzzle game in Unity where the player is a volcano on a team of 4 developers.
- Wrote a mesh generation process based on the Marching Squares algorithm to generate a procedural lava mesh, to be rendered over the main map to give the appearance of flowing lava.
- Created a custom fluid dynamics algorithm using height sampling & spatial hashing.
  - This algorithm sampled hashed heightmap data & determined locally where lava would flow next.
  - Generated realistic lava flow patterns by tying this algorithm to a spawnable object then spawning 3-5 of them per eruption.
- Programmed all sound effects and music for the game using FMOD.