Jeffrey (Ka Hin) Yuen

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github.com/JKHYuen

Video Game Programmer and Designer

Full project details and code samples: jkhyuen.github.io

Independent and flexible software developer with 10+ years of game design and programming experience, comfortable learning new technologies and languages by familiarizing with low-level concepts to build complex systems.

Languages: C#, HLSL (Shader Effects and Compute Shaders), C/C++, Python, Java, HTML, CSS/SCSS, Liquid, Ruby

Tools: Unity, ShaderLab, Git/Gitlab, Steamworks SDK, Visual Studio Code, Visual Studio 2017/2022, Jekyll, Kramdown

Specializations:

- Multidisciplinary experience developing game ideas into marketable products from start to finish
- Gameplay systems design and object oriented programming
- Low-level graphics and shader development

Shipped Games (All games released on *Steam*)

nothing_matters ***April 2022 — June 2023***

- Designed and implemented **5 2D mini-games**, 3 of which **evolve over time** with additional mechanics.
- Designed and implemented a **fully featured 3D FPS using PBR graphics**, with features such as dynamic decals, recoil, baked/dynamic lighting, and **fast projectile collision detection** with a custom physics solution.
- Developed a **custom post processing pipeline** with **screen space shaders** to create a wide variety of visual design for the game's shifting themes and narrative.
- Designed and implemented a **detailed fictional operating system**, with modern UI design, window management, notifications and apps (e.g. video player, news article display, notepad and a functional command console).
- Developed a **UI framework** that conveniently fades and moves any UI element to save time on animations.
- Implemented **Steam achievements** using the Steamworks SDK.
- Wrote over 23,500 words and filmed 4 short real life videos for narrative content.

PHYSARUM: Slime Mold Simulator ***April 2021 — August 2021***

- Implemented a **HLSL compute shader** to simulate the real life organism *Physarum polycephalum* with a **multi-agent behavior model**. GPU bound simulation easily **supports millions of agents** on modern hardware.
- Designed and implemented an **intuitive UI** to elegantly fit a large amount of tweakable parameters
- Developed features to upload videos, images and **live web cam footage** to manipulate slime patterns in real time.
- Implemented a **custom encoder** that generates sharable strings to **import and export** user simulation parameters.
- **Collaborated** with a composer to create the gameplay **soundtrack and trailer score**.

Efficiently responded to all customer bug reports on Discord and Steam to fix bugs on the same day for all released products.

Projects (Playable builds of all projects available on portfolio website)

Bloom Attenuation ***November 2021***

- Implemented **bloom from scratch** to add a **novel feature that simulates light falloff** using the depth buffer for a more realistic effect.

Palindrome ***October 2020***

- Designed and implemented a proof of concept **2D arena shooter** that features **time reversal mechanics** inspired by the movie *TENET*.

Last Secutor (See portfolio page for full details and commentated video demonstrations) ***2014 — 2022***

- Honed game development skills by **developing a 2D turn based RPG solo**.
- Despite being an unfinished project, **core RPG systems are fully implemented** such as status effects, equipment, compare tooltips, grid-based inventory, turn based AI, player data serialization, quests, dialogue trees and dynamic character shader effects.
- Designed and implemented a **unique skill tree system** where players can pick and choose **4 connected sub trees**.
- Content systems (e.g. skills, skill trees) implemented with **object oriented design**, integrated to the Unity GUI to provide **powerful tools** to quickly tweak and create new content **without the need to add or alter code**.

Education

Bachelor of Science in Computer Science ***2013 — 2019***

Simon Fraser University, Burnaby, British Columbia