ALEXANDER WEISS

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SOFTWARE ENGINEER

Game Engines | Digital Audio | Computer Graphics

Recent computer science graduate with extensive academic project experience as a programmer, including six months as a technical lead, working in cross-disciplinary teams of creative and technical professionals. Seeking a software engineer position leveraging my skills in digital signal processing, audio programming, video game engines, computer graphics, software architecture, and pipelines. Successfully shipped a 2D custom engine game on Steam and developed innovative methods for creating generative video game music.

- **Languages:** C, C++, C#, ARM Assembly, Python, PowerShell, Bash, MATLAB, GLSL
- **Development Tools:** Git, Subversion, CMake, Visual Studio, GNU Make, GDB, Docker
- **Project Management:** Agile Development, GitHub, GitLab, Azure DevOps, Trello
- **Operating Systems:** Windows, Linux, FreeRTOS
- **Game Development:** Unreal Engine 5, Unity, OpenGL, Vulkan API
- **Audio:** REAPER, Audacity, Wwise, FMOD Studio, JUCE, Ambisonics, DSP
- **Best Practices:** Code Reviews, Pairs Programming, Build Automation, Documentation

PROFESSIONAL EXPERIENCE

Teacher Assistant August 2021 – April 2024

DigiPen Institute of Technology

- Supported hundreds of students with code and debugging assistance.
- Advised student game teams on project development and milestone presentations.
- Assisted instructors with project grading and student feedback.

ACADEMIC PROJECTS

Audio Software Engineer January 2024 – April 2024

Ambisonics Plugins – *JUCE, solo project*

- Created 3 VST3 plugins leveraging JUCE's specialized audio development tools for modularity and existing ambisonics support, resulting in a streamlined development process.
- Developed a higher-order ambisonics decoder for a configurable multi-channel speaker array, utilizing a decoding matrix for initial implementation, leading to precise sound localization.
- Explored binauralization through JUCE's convolver and libmysofa, enhancing the spatial audio experience for headphone users.
- Conducted continuous testing in REAPER, resolving issues to ensure robust performance.

Audio Programmer and Build Engineer September 2023 – December 2023

InfeStation – *3D FPS Survival Horror Video Game, Unreal Engine 5, 10-person team*

- Integrated Wwise Spatial Audio, leveraging object-based surround sound, geometry-informed reflections, and room-driven reverberation, to craft an immersive audio environment and enhance sound localization.
- Modeled player emotions using the PAD dimensional model, ensuring dynamic game experiences that adapt to player feelings, customizable by narrative designers for emotional engagement.

- Created generative background music using MetaSounds, tailored to the player's evolving emotional state, contributing to a more personalized experience.
- Collaborated in a 3-person audio team and a 4-person programming team to achieve technical audio goals.

Engineer September 2022 – April 2023
9 To Fright – *3D Shopkeeping Simulator Video Game, Unreal Engine 5, 21-person team*

- Enhanced playtesting efficiency by automating the Unreal Engine 5 build process, leading to faster iterations.
- Integrated Wwise middleware, partnering with the Sound Designer to develop adaptive audio solutions and establish a modern audio pipeline.
- Ensured effective cross-discipline collaboration with a 21-person team of programmers, artists, and designers by providing tech support for effective Subversion source control practices.

Lead Engine and Graphics Programmer September 2021 – April 2022
Mirage – *2D Platformer Shooter Video Game, Custom Engine, 12-person team*

- Architected a modular game engine in C++, facilitating rapid feature deployment and minimizing technical debt.
- Engineered a cache-efficient particle system using data-oriented design principles for artists to craft VFX.
- Developed advanced post-processing effects, including bloom, using OpenGL and GLSL, aligning with the artists' creative vision and enhancing the game's visual appeal.
- Led the technical team of 3-5 programmers, coordinating weekly meetings to enhance interdisciplinary communication, leading to more cohesive project development.
- Set up cross-compilation for Linux using Visual Studio and WSL2 to support players on a variety of platforms.

Programmer January 2021 – April 2021
GAMESHIFT – *2D Platformer Shooter Video Game, Alpha Engine, 3-person team*

- Developed the core game engine in C to integrate all the gameplay systems.
- Programmed gameplay elements and behaviors in Visual Studio which led to level and mechanics creation.
- Designed sounds in REAPER and Audacity for SFX and music which play during the game.

EDUCATION

Bachelor of Science in Computer Science and Digital Audio April 2024
Minor in Electrical and Computer Engineering
DigiPen Institute of Technology

- Student Ambassador, People Respecting Individuals and Minorities Club Vice President, FIRST Mentorship Club Vice President