William Bender
Tools, graphics, and engine/simulations programmer, with a specialty in custom game engines.

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Skills:

Game Engines:
- Godot • Unreal Engine
- Custom engines

Computer Graphics:
- 2D/3D Rendering
- Vulkan • OpenGL
- WebGPU • GLSL
- Real-Time Ray-Tracing
- 3D Animation Rendering

Languages:
- C++ (STL 20)
- Rust • C

Game Tools:
- Dear ImGui
- flecs ECS
- FMOD • SDL3
- Custom Editors

Mathematics
- Vector Calculus
- Advanced Physics
- Linear Algebra
- Curves and Surfaces
- Statistics

Other
- Custom ECS
- 3D audio
- Parallel Programming
- Algorithm Analysis
- AI • Data structures
- CMake

Relevant Projects:

Tools and AI Programmer – *SHUTTLEFALL, Digipen GAM375* – September 2025 → December 2025
- Working with a team of artists, designers, and other programmers to polish a 3D Unreal Engine game for a steam release.
- Created a Dear ImGui tool to track in-game statistics throughout a playthrough. Statistics are stored and can be replayed to track issues or see how players played through the game.
- Re-implemented the primary enemy AI to feel more dynamic and lifelike using Unreal's behavior trees and navigation.

Core ECS / Engine Developer – *EC&WW, Digipen GAM300-350* – September 2024 → April 2025
- Developing a high-performance custom C++20/C# 3D engine with a team of 7 programmers, integrating the ECS (Entity Component System) pattern while maintaining an intuitive interface.
- Designed an archetyped ECS data structures to efficiently store and process large amounts of data, providing easy to use tools for both engine programmers and users.
- Implemented Entity Relations, an ECS first method for connecting entities to one another.
- Created 3D audio system allowing for multiple simultaneous audio file playback.

Tech Lead / Engine Programmer – *Shatterlight, DigiPen GAM200-250* – September 2023 → August 2024
- Tech Lead for a team of 6 programmers and 4 game designers developing *Dine n' Bash*, a strategy and time management game published to the Steam platform.
- Led the development and implementation of a custom 2D C++ game engine from scratch using minimal low-level libraries (GLFW, FMOD Core, OpenGL, Dear ImGUI).
- Personally designed and built a templated ECS to manage entities and their components, including a scene manager and deserialization system
- Implemented a specialized and performant 2d instanced renderer that allowed for 100k+ sprites to be drawn at a time while maintaining performance.

Education:

DigiPen Institute of Technology - September 2022 - June 2026
- **B.S. Candidate in Computer Science and Real-Time Interactive Simulation**
- **Minor in Mathematics**

Work History:

Low Level Programming (CS-315) Teaching Assistant – Winter 2025, Fall 2025
- Aiding in curriculum development, specifically for a project to teach students the ECS pattern, and how to implement games and engines while being mindful of CPU cache.