

# Quinten Bubberman

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Third-year game programming student at Breda University of Applied Sciences specializing in graphics and engine systems programming. Experienced with Vulkan rendering pipelines, ECS architecture, and performance optimization. Focused on low-level systems, GPU-driven techniques, and building robust engine tools.

## Skills

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**Programming languages:** C++, Rust, Python, GLSL

**APIs:** Vulkan, EnTT, SDL3, GLFW

**Engines:** Unreal Engine, Godot Engine

**Tools:** Git, Perforce, Rider, Visual Studio, NSight Graphics, Helix, Linux

**Natural Languages:** Dutch (native), English (fluent)

## Projects

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### Vulkan GPU-Driven Renderer

Nov 2025 - Present

*C++ Graphics Programmer - Solo*

Implemented Multi-Draw Indirect with compute shader generating draw commands from storage buffers, rendering 636K objects at 60 FPS in single draw call. Built CPU frustum culling with plane extraction from projection matrix, achieving 5x performance improvement.

### Beetle: Custom Engine

Feb 2025 - Apr 2025

*C++ Engine & Tools Programmer - Team*

Developed Blender pipeline with custom GLTF property exporting and Python tooling. Built ECS-based UI system with live editor, cubic Bezier spline system for AI pathfinding, spring arm camera, 3D audio with FMOD, and input mapping. Shipped on PC and Steam Deck.

### Vulkan Renderer Replacement

Nov 2024 - Jan 2025

*C++ Graphics Programmer - Solo*

Migrated existing engine rendering backend from OpenGL to Vulkan, implementing PBR with IBL and instanced rendering. Built shadow mapping for directional lights, MSAA, and post-processing pipeline. Profiled with NSight Graphics and optimized vertex shader I/O and buffer transfers, reducing frame time by 33%.

## Education

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### Breda University of Applied Sciences

*Bachelor's, Game Technologies*

### Nehalennia

*HAVO (Senior general secondary education)*

Sept 2023 - Jul 2027

*Breda, Netherlands*

Sept 2018 - Jul 2023

*Middelburg, Netherlands*