

# ALESSANDRO GENOVESE

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## EDUCATION

### York University

BS Computer Science *GPA: 3.3*

Toronto, ON

Sep 2020 - Oct 2024

## EXPERIENCE

### Genova3D

*Engine Programmer, Owner*

Toronto, ON

Oct 2024 - Present

- Cooperatively designed game engine architecture with support for several graphics APIs, including Vulkan, Direct3D12 and OpenGL.
- Developed real-time global illumination using Voxel Cone Tracing to produce realistic light interactions.
- Leveraged hardware ray tracing support to implement raytraced shadows and reflections.
- Created skeletal animation subsystems to handle pose calculation and vertex deformation using keyframe data and weight maps.
- Implemented a variety of post-processing effects, including bloom, motion blur, depth of field, and anti-aliasing.
- Designed and collaborated on physics subsystems used to handle collisions, forces, and raycast intersections.
- Used profiling tools, such as Renderdoc and Nvidia Nsight, to analyze and improve application performance.

### Digital Hub

*Shopify App Developer*

Toronto, ON

May 2023 - Present

- Designed apps for the Shopify platform using the Gadget framework.
- Produced efficient server-side software for handling complex requests involving large store databases.
- Collaboratively designed and developed efficient front-end user interfaces.

### Taktil Instruments

*Embedded Software Developer*

Toronto, ON

June 2020 - May 2023

- Led the development of C/C++ drivers for microcontrollers in the STM32 family.
- Used low-level memory management and direct memory access capabilities to maximize real-time performance.
- Created comprehensive unit tests to ensure the proper functioning of vital system components.
- Studied, documented, and communicated findings in technical hardware datasheets to a general audience.

## TECHNICAL SKILLS

Programming Languages:	C/C++, Python, C#, HLSL, GLSL
Development Tools and Frameworks:	CMake, Vulkan, DirectX12, OpenGL, Unreal Engine 5, Unity Engine, Godot
Programming Concepts:	OOP, Design Patterns, Multithreaded Programming, Optimization

## PROJECT CONTRIBUTIONS

### Blender (3D Modelling Software) Vulkan API, C++, CMake, Renderdoc, Git

Contributed to community development by reporting bugs, providing fixes, and suggesting improvements for the Vulkan rendering subsystem. Designed a Vulkan-based visual debugging tool to diagnose render graph issues.

### Godot (Game Engine) Direct3D12, C++, SCons, GLSL, Git

Diagnosed and resolved GLSL shader compilation issues, contributed fixes and enhancements to the Direct3D12 rendering subsystem, and improved the visual file and folder management system to enhance usability.

### Game Developer Club (Academic Club) Blender, C#, C++

Active member of a game developer club, contributing diverse skills including 3D modeling and animation, sharing innovative game ideas, and providing insights on game engine development.