

# Michael Salton

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## Skills / About

<b>Programming</b>	C++, C#, Unity, Unreal Engine 5, Vulkan, OpenGL, GLSL, HLSL, WebGL, Rust, DirectX, SDL, Kotlin, Java
<b>Concepts</b>	CI/CD, SOLID, Optimization, Game Physics, VR/AR, Shaders, Multithreading, Tools Programming, Anti-Aliasing
<b>Math</b>	Topology, Graph Theory, Trigonometry, Linear Algebra, Matrices, Discrete Math, Computational Geometry, Calculus
<b>Spoken languages</b>	English, French

## Experience

### Game Developer

London, Ontario

Saltbox Interactive

October 2023 - Present

- Developing Discover Old D'Hanis, an educational video game leveraging real-world GIS data, photogrammetry, and optimized rendering techniques to accurately reconstruct the historical town of D'Hanis, Texas.
- Optimized GPU performance for high-detail photogrammetry models by implementing texture atlasing, compression, mipmapping, and adaptive tessellation, while developing and optimizing HLSL shaders, texture sampling optimizations, and shader LOD techniques to achieve high-quality visual effects with minimal GPU overhead.
- Discover Old D'Hanis was showcased at the Society for Historical Archaeology Conference 2025 in New Orleans and successfully presented to the community in Texas in June 2024, where it received praise for its engaging educational approach and is now being integrated into local schools and university lab curriculums as an educational tool.

### Software Developer

London, Ontario

Peavey Industries

May 2022 - March 2025

- Transformed distribution center operations by designing and implementing a Kotlin-based mobile app using MVVM architecture and Dagger Hilt for dependency injection, streamlining workflows, reducing errors, and boosting operational efficiency by 20%.
- Developed and deployed an Android mobile app for in-store order management, integrating Firebase Firestore and Push Notifications to streamline the processing of online orders and reduce handling time by 40%, improving logistics and customer experience.
- Built an automated pricing optimization tool using Python, SQL, and Redis, leveraging real-time market data and predictive analytics, reducing manual price adjustments, maintaining competitive pricing, and generating annual cost savings over \$2M.

### Software Engineering Intern

London, Ontario

Tribeca Games

May 2021 - September 2021

- Developed a high-performance urban planning application in Unreal Engine, leveraging Lumen for real-time global illumination and reflections, Screen Space Ambient Occlusion (SSAO), and Virtual Shadow Maps to create photorealistic 3D city environments optimized for AR.
- Designed custom shaders using Unreal's Material Editor and Custom Shader Nodes for urban elements like buildings, roads, and terrain, achieving realistic surface properties with procedural textures, dynamic weather effects, and physically based reflections.
- Implemented Unreal Engine's World Partition system and asset streaming to dynamically load and unload 3D models based on user interaction, reducing memory footprint and improving runtime performance during urban exploration.

## Projects

### Software Rasterizer

Custom software rasterizer built in C++ with SDL for windowing

January 2025 - Present

- Implemented a full rendering pipeline with vertex transformation, rasterization, and fragment shading, optimizing performance through efficient triangle rasterization, perspective-correct interpolation, and depth buffering to achieve smooth real-time rendering on the CPU.
- Implemented texture mapping, Phong shading, and a custom Blinn-Phong lighting model with normal mapping and specular highlights to enhance realism and deepen understanding of low-level rasterization techniques.

### 3D Pixel Art Engine

Custom engine and rendering pipeline built on top of Unity

October 2023 - May 2024

- Developed a pixel-perfect camera with sub-pixel movement precision, ensuring smooth and artifact-free rendering at various resolutions.
- Implemented Poisson Disc Sampling-based grass spawning for dense, non-repetitive vegetation while maintaining optimal performance.
- Created an outline shader using depth and normal-based edge detection to highlight interactive objects without excessive GPU overhead.

## Education

### Master of Computer Science, Specialization in Computer Graphics

Montreal, Quebec

Concordia University

2025 - 2027

### Bachelor of Computer Science, Minor in Video Game Development

London, Ontario

The University of Western Ontario

2020 - 2024