Selim Abdelwahab

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Education

University of Toronto **2022 – 2027**
B.A.Sc. in Computer Engineering, Minor in Artificial Intelligence *Toronto, ON*
- **GPA**: 3.88/4.0 **Dean's Honour List**: All eligible terms
- **Awards**: David Woods Family Scholarship, Gordon R. Slemon Scholarship, Ronald Paul Manning Scholarship

Experience

Electronic Arts (EA) **May 2025 – Present**
Software Engineer Intern – Frostbite Game Engine | C++, C#, WPF, Python *Toronto, ON*
- Optimized legacy systems, reducing large-level load times from ∼20s to **132ms** (99.3% faster).
- Authored **6+ workflow tests** validating procedural tool behavior and preventing regressions across engine revisions.
- Automated upgrade of **100+** project files and removed deprecated workflows across multiple game teams.
- Designed a reusable procedural setup flow allowing artists to reduce environment preparation from **6–8 manual steps to a single action** using tool "recipes."
- Debugged and resolved **complex race conditions** in multithreaded procedural pipelines, improving stability during heavy scene operations.
- Managed the procedural editor UI, implementing **deferred instantiation** and **thread-safe dispatch queues** to ensure responsive interaction under asynchronous workloads.
- Improved the engine's spline distribution tool by refining distribution algorithms, fixing edge-case failures, and enhancing overall usability for Technical Artists.

Electronic Arts (EA) **May 2024 – Aug 2024**
Software Developer Intern – Frostbite Game Engine | C++, C#, WPF *Toronto, ON*
- Led development of a procedural object distribution tool shipping with Frostbite.
- Authored **30+** native (C++) and visual scripting (VSL) functions used by Technical Artists.
- Enabled complex level generation to execute in under **10 minutes**, significantly improving workflows.

First Robotics Competition **Oct 2021 – May 2023**
Senior Programmer & Mentor | Java *Oakville, ON*
- Programmed autonomous alignment, climb sequences, and gear shifting for tactical advantages.
- Built elevator subsystem with 99% success rate, contributing to 3rd place in Ontario.

Projects

Polygon Triangulation Visualizer | *Unity, C#, HLSL*
- Developed an interactive Unity tool that lets users paint polygons and triangulates them in real time with a custom ear-clipping implementation.
- Rendered incremental results via procedural meshes, line renderers, and shader-driven highlights so each algorithm step is observable.
- Built UI controls and scripting hooks for stepping, pausing, and comparing strategies to support teaching and debugging workflows.

Planetary Simulator | *Rust, wgpu*
- Built a GPU-accelerated solar system viewer with wgpu/winit, procedural sphere meshes, and interactive orbit camera/axis gizmo controls.
- Implemented a config-driven ECS that loads JSON astronomy data, rescales it for rendering, and spawns selectable, highlighted celestial bodies.
- Authored a multi-threaded n-body integrator (Rayon) with adjustable time scaling and hundreds of physics substeps to keep orbits stable at runtime.

Google Maps Clone | *C++, GTK-4*
- Implemented Dijkstra's algorithm for shortest pathfinding with optimal STL container use.
- Developed interactive map interface using GTK and custom graphics rendering.

Technical Skills

Core Languages: C++, C#, C, Python, Rust, Verilog, Java, JavaScript, Nios II
Frameworks & Libraries: STL, WPF, GTK, NumPy, Pandas, JavaFX, React, jQuery, Node.js
Tools, Platforms & Specialization: Git, Perforce, Quartus, ModelSim, Unity, Jira, FPGA Development, 3D Graphics Rendering, Algorithm Optimization