Linden Sheehy

linden.sheehy@outlook.com | 613-804-9070

github.com/lindensheehy | linkedin.com/in/lindensheehy | lindensheehy.github.io/PortfolioWebsite/

Summary

4th-year Software Engineering student specializing in C++ and systems programming. Experienced in building large-scale, real-time systems, with a focus on clean architecture and performance optimization.

Education

BASc in Software Engineering (CO-OP) – 4th year
University of Ottawa, Ottawa, Ontario   *Expected Dec 2026*

Projects

Kiwi3D – 3D Game Engine Framework / Scene Editor   github.com/lindensheehy/Kiwi3D
C++, Win32 API   *Sep 2023 – Jul 2025*

Architected a 3D game engine (17,000+ LOC) entirely from scratch using raw C++ and the Win32 API, manually implementing the graphics pipeline, vector math library, and hierarchical UI framework over two years.

- Engineered a high-performance software rasterizer implementing **perspective-correct interpolation** via barycentric coordinates, z-buffering, alpha blending, and **frustum clipping**, optimizing the core render loop via bounding-box iteration to render complex scenes of **10,000+ triangles** at **200+ million pixels/sec**.
- Architected a hierarchical UI framework featuring a custom **XML-based DSL parser** supporting **recursive prefab instantiation**, enabling dynamic **action binding** and complex modular layout reuse.
- Developed a complete standard library replacement including custom **linear algebra** and a **unit testing framework**, eliminating runtime dependencies (STL) to control memory layout and execution speed.

Real-Time Graphical Data Overlay   github.com/lindensheehy/ESPOverlay
C++, x86 Assembly, Win32 API   *Oct 2024 – Dec 2024*

Engineered a standalone C++ application capable of injecting into and introspecting external processes via manual memory management, serving as a deep dive into Windows internals, reverse engineering, and malware analysis.

- Developed a transparent real-time overlay using raw **Win32** and **GDI+** APIs that interfaces with a black-box application via **assembly injection**, rendering dynamic entity data entirely without external libraries.
- Engineered a **double-buffered shared memory** architecture for thread-safe IPC between the injected hook and the overlay, achieving a throughput of 6,000+ entities/sec while minimizing data contention.
- Implemented a custom 3D-to-2D projection pipeline via linear algebra, achieving accuracy within 5 pixels.

Professional Experience

Data Analyst (Co-op/Intern) – Transportation Safety Board of Canada   Gatineau, QC
Excel, Power BI, Power Apps, Sharepoint   *Sep 2024 – Dec 2024; May 2025 – Aug 2025*

- Engineered 4 production-grade Power BI dashboards using **DAX** and semantic data models to visualize complex safety metrics, driving actionable insights and operational efficiency for a team of 8 analysts.
- Modernized legacy Excel workflows by developing a **Power Apps** solution to streamline project tracking.
- Defined technical standards and documented architecture to ensure long-term system maintainability.

Junior Developer (Co-op/Intern) – Field Effect   Ottawa, ON
Python, Git, Docker   *Nov 2021 – Mar 2022*

- Engineered comprehensive automated **Python** unit test suites to drastically increase code coverage, ensuring system stability and minimizing critical regression defects in mission-critical production environments.
- Integrated into a high-velocity **Agile** workflow, utilizing **Jira** and **Git** to streamline sprint delivery.

Technical Skills

Languages: C++, C, x86 Assembly, Python, Java, Shell, JavaScript, C#, Kotlin, SQL, HTML, CSS, XML
Graphics & Math: Real-Time Rendering, Linear Algebra, Graphics Pipelines, Shader Logic, 3D Geometry
Systems & Internals: Ghidra, Static Analysis, Function Hooking, Memory Injection, PE Format
Libraries & APIs: Win32 API, CMake, SDL2, GDI+, Spring Security, Gradle, NumPy
Development: Git, Docker, System Design, Unit Testing, Agile Methodologies, Algorithms, OOP, CI/CD
Data & Analysis: Power BI, Pandas, Power Apps, Excel, Data Visualization, DAX, Great Expectations, ETL