

Matthew Hamilton

matthewhamilton3141@gmail.com | [linkedin.com/in/matthewhamilton3141](https://www.linkedin.com/in/matthewhamilton3141) | github.com/matthewhamilton3141 | matthewhamilton.dev

EDUCATION

University of Waterloo

Bachelor of Applied Science in Systems Design Engineering

Waterloo, ON

Sep. 2026 – May 2031

- **Relevant Coursework:** Digital Computation (SYDE 121, C++), Linear Algebra (MATH 115), Calculus 1 (MATH 117), Intro to Systems Thinking (SYDE 151), Intro to Design (SYDE 161)

PROJECTS

Retermina | Tauri, Rust, React, TypeScript

2026 – Present

- Built a desktop terminal workspace on Tauri v2 with a Rust backend driving native PTY shells, running fully local with no cloud dependency or subscription
- Engineered a draggable multi-panel layout with react-grid-layout: split terminals, syntax-highlighted editor, file explorer, live project-wide git diff, localhost tracker, and native preview
- Embedded a Claude Code CLI with per-project token tracking, plus *Iris*, a context-aware command bar that surfaces git, npm, and shell macros based on live repository state
- Implemented five structural theme engines with portable presets to instantly re-skin the entire application

gsplat-rt | Python, TensorRT, PyTorch, OpenUSD, Isaac Sim

2026

- Built a real-time pipeline converting live video into a 3D Gaussian Splat scene with a physics-ready collision mesh, exported as OpenUSD stages for NVIDIA Isaac Sim and Omniverse
- Engineered a multithreaded, lock-free architecture (OpenCV capture, TensorRT depth, TSDF fusion, USD export) with 1,100+ FPS capture throughput; benchmarked at 93.2 FPS (10.7 ms/frame) end-to-end on an NVIDIA A10G
- Compiled a strongly-typed FP16 TensorRT engine from Depth Anything V2 with zero per-frame device allocations; measured 6.3 ms depth latency on an NVIDIA A10G (2.26× over TF32 at 0.99996 output correlation)
- Fused depth into a TSDF volume accelerated by a custom CUDA integration kernel (0.06 ms/frame, 175× over numpy), with marching-cubes mesh extraction, and exported a PhysX collision proxy via UsdPhysics for reinforcement-learning robot interaction

Iris-NL | TypeScript, Ollama, NVIDIA NIM, TensorRT-LLM

2026 – Present

- Building an open-source TypeScript library that translates natural language into shell commands for terminal tooling
- Designed a provider-agnostic inference backend spanning NVIDIA NIM, local Ollama, and TensorRT-LLM, with a dedicated safety layer and automated test suite
- Built a benchmarking harness to measure and optimize a local TensorRT-LLM model on consumer GPU hardware

BAAM | Solana, Rust, TypeScript, Swift, MongoDB, Vultr

JAMHacks, 2026

- Built a social betting platform for close friend groups at JAMHacks, using Solana smart contracts for on-chain wagers, MongoDB Atlas for data, and a Vultr-hosted backend
- Shipped multiple client surfaces: a native iMessage plugin in Swift, a Discord bot, and a centralized web app
- Collaborated with a team to design and deliver the full stack within the hackathon timeframe

Portfolio | Next.js, React, TypeScript, Cloudflare R2

2026

- Built a personal portfolio site with Next.js, React, and TypeScript using a custom stacked-event architecture for a high-fidelity, animated UI
- Delivered media assets through Cloudflare R2 object storage and deployed on Vercel for globally distributed performance

TECHNICAL SKILLS

Languages: TypeScript, Python, Rust, Swift, JavaScript, HTML/CSS

Frameworks & Libraries: React, Next.js, Node.js, Tauri, Tailwind CSS, shadcn/ui, PyTorch, OpenCV

Tools & Platforms: Git, CUDA, TensorRT, OpenUSD, NVIDIA Isaac Sim, Solana (Anchor), MongoDB, Cloudflare R2, Vercel, Vultr

AI / ML: 3D Gaussian Splatting, Depth Anything V2, Ollama, NVIDIA NIM, TensorRT-LLM, MediaPipe