

Matthew Polak

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Education

Bachelor of Science in Computer Science, University of Ottawa, 4.0 GPA

September 2022 — December 2026

Experience

Software Engineer Intern

Microsoft AI

May 2026 — July 2026

Redmond, WA

- Root-caused and fixed **2** production segfaults in the **Cowork** agent loop, eliminating dozens of daily container crashes and restoring runtime stability.
- Proposed and shipped core evaluation-pipeline improvements — a standardized judge, unified case format, and dashboard — adopted as team standards.
- Solely owned **Cowork**'s **gRPC/MCP** integration and **215-task** paired evaluation of a new document backend behind a feature flag; repaired **~10** cases and cut false-negative failures from **~80%** to **1–2%** of failing cases.
- Built and iterated a **React/Vite** evaluation dashboard used by **~20** engineers; presented **189-vs-174** results twice to **~12** Distinguished/Principal Engineers, driving backend selection for a new product feature.

Software Engineer Intern

Shopify

September 2025 — December 2025

Ottawa, ON, Canada

- Shipped new tool-calling workflows in Shopify's AI assistant, enabling thousands of merchants to manage inventory locations and purchase orders conversationally.
- Designed an asynchronous preview primitive for Shopify's AI assistant platform, unblocking multi-step preview flows and now used platform-wide across Shopify.
- Diagnosed and fixed a silent defect breaking 30% of merchant workflows in the Shopify mobile app, then presented the root-cause analysis to 50 engineers to prevent recurrence.

Software Engineer Intern

Solace

January 2025 — April 2025

Ottawa, ON, Canada

- Built concurrency-based rate limiting in **Java** and **Spring Boot** for a customer-facing API, eliminating noisy-neighbor contention and delivering predictable latency across the cluster.
- Improved throughput of the event broker auditing system by 400%, directly resulting in new customers for their event-driven architecture.

Software Engineer Intern

Ciena

May 2023 — December 2024

Ottawa, ON, Canada

- Built a **Rust** log error-classification service processing several TB of production logs daily, reducing mean time to resolution by 30% for on-call engineers.

Achievements

- Open Source Contributor to [Svelte](#), [SvelteKit](#), [Lucia](#), [Bitcode](#), and [Plotters](#)
- 1st place: [2025 uOttHack 7 \(850\)](#), [2024 NASA Space Apps Ottawa \(300\)](#), [2024 Hack the Hill II \(1200\)](#), [2023 Hack the Hill \(600\)](#), [2023 MLH x {all in} \(1000\)](#), and [2023 MapHacks 2 \(100\)](#)
- Built and designed a decentralized file-sharing system with a custom wire protocol (Hack the Hill II)

Projects

3D Game Engine – Rust, WGSL, wgpu, TCP

- Built a **3D game engine** with a custom wgpu rendering pipeline and shaders, sustaining 200+ FPS on Blender-scale scenes.
- Implemented instancing, batching, and frustum culling to render 100k+ objects with real-time physics.

Recipe-sharing Platform – Svelte, TypeScript, PostgreSQL, tRPC, Drizzle, PyTorch

- Launched a **recipe-sharing** platform serving 100+ users with personalized recommendations over a 1M-recipe embedding dataset.
- Built a **PyTorch** and **Flask** vector-ranking pipeline using inner-product similarity search.

Compiled Programming Language – C++, LLVM, Bazel

- Built the **Owl** compiled language with an LLVM backend supporting static single assignment (SSA), constant folding, dead code elimination (DCE), inlining, and loop unrolling, compiling 150k LoC/sec.
- Implemented control flow structures, structs, arrays, pointers, functions, and a static type system for multi-architecture targets.

Technical Skills

Languages: Rust, TypeScript, Go, Python, C++ (20/23/26), Zig, Java, JavaScript

AI & Agent Systems: MCP, A2A, Tool Calling, Agent Evals, Browser Agents, Cursor, Claude Code, GitHub Copilot

APIs & Protocols: OpenAPI, Protobuf, GraphQL, WebSockets

Platforms & Tooling: PostgreSQL, Redis, Docker, AWS, GCP, OpenTelemetry, LLVM, Bazel