

# James Redekopp

416-317-2533 | [james.redekopp@uwaterloo.ca](mailto:james.redekopp@uwaterloo.ca) | [linkedin.com/in/tesselland](https://linkedin.com/in/tesselland) | [redekopp.dev](https://redekopp.dev)

## EDUCATION

### University of Waterloo

*Honours Bachelor of Applied Science, Computer Engineering*

Waterloo, ON

Sept. 2025 – May 2030

- President's Scholarship

## PROJECTS

### GPU-Accelerated Coordinate Searcher | *CUDA, C++, Nvidia Visual Profiler, Git*

- Achieved a **60× performance improvement**, reducing 10-billion-entry searches from 2 hours to under 2 minutes
- Rewrote an existing Java tool in C++, redesigning multithreading and memory usage to remove lock contention
- Implemented GPU acceleration with CUDA, profiling to minimize branch divergence and optimize memory layout
- Open-sourced the tool with a CLI and file-based configuration, iterating based on community feedback

### Pufferfish Chess Engine | *C++, Python, Pytorch*

- Optimized C++ move generation and search with pruning and transposition tables to reduce compute
- Achieved sub-second move computation and placed **3rd out of 400 participants** in a chess bot hackathon
- Integrated a low-latency evaluation stage into the C++ search loop, optimizing hot paths
- Implemented a high-performance C++ feature extraction pipeline, sustaining 50K+ positions/s

### AssemBuddy | *Go, CLI*

- Developed a fully offline CLI in Go for querying syscalls across x86, x64, ARM, and ARM64
- Designed terminal-friendly output with pager support and JSON export for integration

### SpeedShield | *Next.js, Tailwind CSS, Supabase (Postgres)*

- Designed and implemented an interactive React-Leaflet map to visualize city-wide traffic risk predictions
- Connected frontend to Supabase/Postgres via type-safe APIs, enabling queries across **14,000+ data points**
- Optimized data loading through pagination, caching, and entity culling for near-instant map interaction

### Cognify (Hack the North) | *React, Express, Supabase, Gemini API*

- Built an AI tutoring app that converts syllabi into structured learning roadmaps
- Implemented backend services for tutoring workflows, grading, and document processing

### Crosshair Indicator | *Java, Fabric API, Git*

- Published a Minecraft mod providing combat feedback, with **680K+ downloads** on Modrinth

## EXPERIENCE

### Digital Design Member

October 2025 – Present

Waterloo, ON

*UWASIC Design Team*

- Assisting in the design of a cryptographic accelerator ASIC for AES/SHA operations for a host CPU via SPI
- Developing and verifying the SPI deserializer in SystemVerilog, converting serial input into parallel data signals
- Integrating control logic with memory, AES, and SHA submodules, ensuring protocol correctness and timing

### Web Developer

October 2023 – March 2024

Remote

*Hope for Hearing*

- Built a responsive website in Flask, HTML/CSS, and JavaScript to establish the non-profit's online presence
- Developed automated email forwarding and a live donation goal counter
- Created a CMS and statistics dashboard for staff to update content and for users to track the organization's impact

## TECHNICAL SKILLS

**Programming Languages:** Python, Java, C/C++, Typescript, Go, CUDA, SQL (Postgres)

**Frameworks & Libraries:** Tailwind CSS, React, Next.js, Flask, tRPC, Drizzle ORM

**Hardware & Embedded:** Arduino, SystemVerilog, NVIDIA Nsight/Visual Profiler

**Developer Tools:** CLI, Neovim, VS Code, Git, GitHub, Vercel, Supabase