Ethan Joseph

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EDUCATION

Bachelor of Engineering – Engineering 1

McMaster University   **Graduation Date: June 2030**

PROJECTS

Sentinel Security Auditor – [View Live Site](#) | Python • TypeScript • Gemini API • Git • GitHub Actions • Vercel • Static Code Analysis • Vulnerability Detection (SQLi, XSS) • SARIF Reporting

November 2025 – March 2026

- Built an AI-driven application security auditor that analyses entire local or GitHub repositories using Gemini to generate structured vulnerability findings, visualize attack-flow graphs, and surface remediation guidance across Python and TypeScript codebases.
- Designed a repository ingestion and batching pipeline for large codebases, enabling analysis of projects **exceeding 50k LOC** under strict file size and context limits.
- Developed repository-aware vulnerability analysis that **reduced false positives by ~35%** vs rule-only scanners (benchmarked across 40+ open-source repos).
- Implemented automated remediation with structured Git patch generation, achieving **~70% validated fix rate** through post-scan verification and rescanning. Integrated SARIF reporting and GitHub Actions CI, enabling automated security checks with sub-5 second incremental rescans.
- Optimized prompt architecture and context compression, **reducing token usage ~28%** while maintaining detection accuracy.
- Deployed a production web interface on Vercel, averaging **~800 monthly visits** from users scanning their repositories for security vulnerabilities.

WORK EXPERIENCE

Founder & Organizer   **August 2024 – November 2024**

Eclipse Hackathons - [**View Devpost**](#)

- Founded and led a multi-school hackathon addressing globally relevant challenges, attracting **80+ participants** from 15+ schools across Ontario.
- Secured corporate sponsorship from **HCLTech (~$1000 value)** and recruited industry judges from AMD, Dropbox, Fractal Analytics, and SAP Concur, coordinating structured scoring across 20+ project submissions.
- Designed and developed the complete digital infrastructure for the event, including the public-facing website, registration system, submission portal, automated email workflows, and sponsor integrations, supporting 80+ registered users with zero downtime during live judging.
- Engineered backend workflows for application review and project uploads, reducing manual coordination overhead by **~60%** compared to form-based event systems.
- Led end-to-end marketing strategy (social media outreach, targeted school campaigns, email distribution), generating 3,000+ website visits and **converting 4% of visitors** into registered participants.
- Directed event operations and awarded top teams based on innovation, feasibility, and technical execution, managing logistics for mentors, sponsors, and judges across multiple time zones.

TECHNICAL SKILLS

Languages | Python, C, C++, TypeScript, Java, Arduino (Embedded C/C++) SQL

Software Architecture | Data Structures & Algorithms, Object-Oriented Programming, REST API Development, Unit Testing, Debugging, Prompt Engineering, Context Optimization

Systems & Infrastructure | Git, GitHub Actions (CI/CD), Linux, CLI Development, Cloud Deployment (Vercel), Docker, LLM API Integration (Gemini)

Security Systems | Static Code Analysis, AST Parsing (Tree-sitter), Vulnerability Detection (SQLi, XSS), Secure Coding Practices, SARIF