Nathnael Tesfaw

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Education

Cornell University, College of Engineering — Ithaca, NY

B.S. in Computer Science, Minor in Artificial Intelligence (GPA: 3.5) — *Aug 2023 – May 2027*

Coursework: Data Structures, Functional Programming, Algorithms, Machine Learning, Deep Learning, Cybersecurity

Experience

Workday — Pleasanton, CA

Software Engineer Intern — *May 2026 – Present*

- Led a solo proof of concept adopting **GUAC** for vulnerability blame assignment across Workday's containers, approved by leadership for phased fleet-wide rollout.
- Designed the architecture to pin each vulnerability to its owning team: cross-referencing **SARIF** scan findings against GUAC's dependency graph and a package-ownership database.
- Built a **full-stack visualization tool** to demo the POC: explores GUAC's dependency graph and, per package, separates its native vulnerabilities from those inherited through its dependencies.
- Deploying **Build Doctor** to production, a **Python** tool that fixes broken builds blocking security scans – **41/41 repos** diagnosed with zero misses, expected to cut Snyk's build failure rate from **30% to 10%**.

Rethink Food (Hack4Impact Cornell) — Ithaca, NY

Lead Software Developer — *Aug 2025 – Dec 2025*

- Led a **team of 7 developers and designers** to deliver a **production web application from requirements through deployment** for a nonprofit combating food insecurity across New York City.
- Built an interactive **data visualization platform** using **Mapbox** to display data from **10,000+ restaurants and community organizations**, improving transparency and donor engagement.

Carnegie Mellon University — Pittsburgh, PA

Software Engineer Intern — *May 2025 – Aug 2025*

- Engineered a **GPT-4–powered cybersecurity extension** that guides users toward secure behaviors, presented to **hundreds of Pennsylvania state government representatives**.
- Designed large-scale data processing pipelines in **Python (NumPy)** to analyze **6,000+ LLM outputs**, improving response actionability by **50%** through prompt iteration and scoring.

Projects

DevAudit | *TypeScript, Next.js, Node.js, Claude API, PostgreSQL, Redis, Docker, AWS* — *Jan 2026 – Present*

- Built a full-stack **AI security-auditing agent** that clones a GitHub repo, runs **Semgrep, Bandit, and Gitleaks in parallel**, and streams **Claude**'s live reasoning and triaged findings to the browser as it works.
- Wrote **88 automated tests** (Vitest, run against a real Postgres) across API, worker, and frontend, wired into a **GitHub Actions** pipeline that runs lint, typecheck, and the full suite on every push.
- Root-caused production bugs through controlled experiments: traced a silent Semgrep timeout to **AWS burstable-CPU throttling**, and a truncated AI response to an undersized max_tokens.

DreamBooth Re-implementation | *PyTorch, Diffusers, HuggingFace* — *Mar 2026 – May 2026*

- Re-implemented **DreamBooth** (Ruiz et al. 2023) from scratch, fine-tuning **Stable Diffusion v1.5** for subject-driven image generation from as few as **3–5 reference photos**.
- Built **full UNet fine-tuning and LoRA variants** with prior-preservation loss, **matching the paper's benchmark** for prompt fidelity (CLIP-T 0.30 vs. 0.305 reported).

Greenzone (Hack4Impact Cornell) | *Next.js, Node.js, Express.js, PostgreSQL, Git* — *Jan 2025 – May 2025*

- Developed a **carrying-capacity early-warning web app** to monitor rangeland degradation affecting **300,000+ herders** and **71 million livestock** across Mongolia.
- Implemented secure **RESTful APIs** and integrated Supabase to **ingest and visualize large-scale** remote-sensing and biomass datasets in real time, enabling data-driven land management decisions.

Technical Skills

Languages: Python, Java, TypeScript, C, SQL, Bash, HTML/CSS
Frameworks & Libraries: React.js, Next.js, Node.js, Express.js, Flask, PyTorch, NumPy, Pandas
Databases & Cloud: AWS, Google Cloud Platform, PostgreSQL, Redis, MongoDB, Supabase
Tools: Docker, Git, GitHub Actions, Nginx, Linux, Vercel