Alexander Freedman

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EDUCATION

New York University (NYU) — Tandon School of Engineering *Brooklyn, NY*
Bachelor of Science (B.S.) in Computer Science — Dean's List (multiple semesters) *Sep. 2023 – May 2027*

- **Minors:** Mathematics, Cybersecurity
- **Relevant Coursework:** Design & Analysis of Algorithms, Data Structures, OOP, Operating Systems, Computer Architecture, Databases, Computer Networking, Computer & Network Security, Trust & Safety, Linear Algebra, Discrete Mathematics

SKILLS

Languages: TypeScript, JavaScript, Python, Java, SQL, C, C++, PHP, Bash, PowerShell, Assembly (x86)
Frameworks & Libraries: Express.js, React, Next.js, Vue.js, Flask, Node.js, Vite, Tailwind CSS, Bootstrap, Jest, GraphQL
Databases: PostgreSQL, MySQL, MongoDB, Redis, Firebase, SQLite
Tools: Linux, Docker, Kubernetes, Git (version control), CI/CD (GitHub Actions), Proxmox, NGINX, Apache, Cloudflare, Grafana, AWS (EC2, S3, Lambda, API Gateway), Google Cloud (Compute Engine, Cloud SQL)

EXPERIENCE

New York University *New York, NY*
Teaching Assistant & Web Dev Committee Head — Intro to Engineering & Design *Sep. 2024 – Present*

- Directed and shipped a full-stack rebuild (Express.js, MySQL, React, TypeScript), managing **12 developers** as Head of the Web Dev Committee through Agile/Scrum sprints with GitHub Actions CI/CD.
- Reviewed and debugged **40+ pull requests** across the SDLC using Git version control, enforcing Jest unit testing and XSS/CSRF hardening; achieved **zero production merge conflicts**.
- Improved LMS performance **300%** via SQL tuning and WebP optimization; architected a LAMP-stack platform on Google Cloud Platform (Compute Engine, Cloud SQL, Cloud Storage), serving **500+ students and 100+ faculty**.
- Mentored **500+ students** through embedded systems and IoT development capstone projects using C++, Python, Arduino, Raspberry Pi, and ESP32, including Wi-Fi/Bluetooth, systemd, and cron automation.

Liege LLC *Miami, FL*
Software Engineer, Contractor (Technical Lead) *May 2024 – Present*

- Protected **70,000+ users** by building Threat Evaluations, a scalable Docker/Node.js auto-moderation platform (TypeScript); engineered a heuristic reputation scoring algorithm on account age, infractions, bot-likelihood signals, and standing.
- Developed GearMail, a concurrent full-stack Node.js support platform that cut Tier-1 agent workload via fuzzy-matched auto-replies, real-time push notifications, and anti-spam filtering with custom CAPTCHA.

Digital Dimensions LLC *Atlanta, GA*
Co-Founder, CTO & Lead Software Developer *Jun. 2021 – Jan. 2024*

- Spearheaded Azrael with **10 engineers**, protecting **1M+ users** at **99% uptime** and sub-100ms p99 latency, a machine learning-powered anti-phishing and spam-detection RESTful API (NLP, VirusTotal, Docker; microservices architecture).
- Engineered a zero-downtime incident-response platform (Grafana, Atlassian Statuspage, Twilio, Zoho Social) with automated SLA alerting, reducing outage notification time to **under 60 seconds**.
- Maintained **99.9% availability** for **100+ API consumers** by architecting an automated WHMCS/Stripe subscription pipeline; managed **10 Linux VPS instances** with automated SSL renewal.

PROJECTS

AJNX Banking *May 2025*

- Architected a full-stack, object-oriented banking platform (Express.js, React/Vite, TypeScript, MySQL/InnoDB) with RBAC authentication and authorization, ACID-compliant transactions, bcrypt hashing, and Node.js cluster multithreading.
- Deployed on Proxmox via Cloudflare Tunnel with Brotli compression and React lazy loading; achieved top Web.dev scores for performance, accessibility, and SEO.

SkyAssist *Jun. 2024*

- Built a traffic-aware flight planning app using Express.js, Node.js, and TomTom Maps APIs, implementing traffic and routing data modeling for machine learning-based departure time optimization.
- Hardened asset serving with HMAC-signed, time-expiring URLs and request origin validation, preventing scraping and unauthorized API access.

RESEARCH

Public by Default? Digital Breadcrumbs from Posts to Passwords *May 2026*
Supervised research, Trust & Safety (NYU Tandon School of Engineering)

- Achieved **F1 = 0.83** on multimodal identity-inference by building Fauxbook, a synthetic platform (Node.js, NER, Ollama/Llama 3.2, transformer computer vision) generating a privacy-preserving dataset of **50 users and 5,000+ posts**.
- Engineered Mosaic, a layered detection pipeline (rule-based NLP, NER, transformer image classification) reconstructing authentication identity signals from social media disclosures; evaluated via precision, recall, and F1.

Subliminal Spaces: Stress Modeling in NYC Urban Transit *May 2026*
Supervised research, Guided Studies in CS (sup. Prof. Ratan Dey & Prof. Richard Stein — NYU Tandon School of Engineering)

- Implemented a Node.js ETL pipeline (natural, stopword) processing **58 survey exposures** via NLP affect normalization, bootstrap confidence intervals, and SIS-aligned statistical aggregation into research-ready JSON.
- Automated survey data aggregation via Google Sheets and Apps Script, consolidating **100+ participant** responses into an analysis-ready CSV from a MySQL-backed dynamic Qualtrics flow with randomized stimuli.