

VANSH GUPTA

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EDUCATION

B.E. in Information Science and Engineering - *The National Institute of Engineering, Mysuru (2024-2028) | CGPA: 8.51/10*

Relevant Coursework: Data Structures and Algorithms, Advanced Java, Design and Analysis of Algorithms, Graph Theory, Operating Systems, Database Management Systems

TECHNICAL SKILLS

Programming Languages: Java, Python, JavaScript, TypeScript, C

Web Development and Full Stack: HTML5, CSS3, Flask, MERN Stack, Firebase, REST APIs, Cloudflare Workers, Service Workers (PWA), Cheerio (Web Scraping), FCM (Firebase Cloud Messaging)

Databases and Cloud: MySQL, Firebase (Auth, Realtime DB, Firestore), MongoDB Atlas

Tools and Developer Platforms: Git, GitHub, Linux CLI, NPM, Postman, Wrangler CLI

Deployment and Cloud Platforms: Vercel, Netlify, Render, Railway

Core Computer Science: Data Structures, Algorithms, OOP, Serverless Architectures, Web Scraping

PROJECTS

NIEdge - Student Academic Resource Platform (Aug 2025 - March 2026) | *HTML, CSS, JavaScript, Firebase Database* | niedge.vercel.app

- **Serverless Backend & Web Scraping Pipeline:** Engineered a full-stack academic platform serving 1200+ users (28,000+ views), using a serverless Cloudflare Workers API gateway and Cheerio scrapers to securely fetch and synchronize real-time college portal data.
- **Offline PWA, FCM Alerts & Sandboxed IDE:** Built an offline-first client using Service Workers for instant caching, Firebase Cloud Messaging (FCM) for background push notifications, and a sandboxed in-browser programming playground with runtime output redirection.

Alpha Engine X - Algorithmic Stock Market Simulation Platform (March 2026 - May 2026) | *Python, Flask, React.js, MongoDB Atlas, Firebase* | alphaenginex.vercel.app

- **Built a production-grade trading platform** with real-time price updates every 30 seconds, atomic MongoDB transactions for order processing, and demand-driven volatility modeling across 15 companies - handling concurrent user portfolios with rate limiting and duplicate order prevention.
- **Architected scalable backend** using Flask blueprints with strict layered architecture (routes to services to repositories), 7-collection MongoDB schema with admin audit trails with automated P&L calculation and brokerage fee logic.

HyperThread OS - CPU Scheduling and Process Management Simulator (April 2026 - May 2026) | *FastAPI, React.js, TypeScript, Python, Groq API* | hyperthread-os.vercel.app

- Architected a decoupled full-stack simulator implementing 7 scheduling algorithms (FCFS, SJF, SRTF, Priority, Round Robin, Multilevel Queue, Lottery) with custom Min-Heap and Circular Queue structures, cutting task-selection complexity from $O(n)$ to $O(\log n)/O(1)$.
- Modeled OS-level safety systems - Ring 0/Ring 3 privilege separation, priority aging, and a starvation watchdog trap - validated through a 20-scenario test suite that surfaced and fixed two production-grade defects, then visualized live via tick-by-tick Gantt playback with Groq-powered AI narration.

CERTIFICATIONS & ACHIEVEMENTS

- **Technical Certifications (Coursera):** Completed comprehensive coursework in Data Structures and Algorithms, Introduction to Cybersecurity, Linear Algebra.