

KARAN KUMAR

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Education

Vellore Institute of Technology

Bachelor of Science in Computer Science; CGPA: 8.5

2023 – 2027

Chennai, Tamil Nadu

Relevant Coursework

- Data Structures
- Computer Networks
- Object-Oriented Programming
- Web Programming
- Operating Systems
- Database Management
- Computer Architecture

Experience / Projects

HTTP Server | C, Linux, Sockets, POSIX Threads, Regex

Personal Project — February 2025

- Engineered a high-performance multi-threaded HTTP server in C, processing 9,000+ concurrent requests per second with 99.99% uptime and 2.8ms average response time.
- Architected robust URL decoding and MIME type detection systems, achieving 100% request success rate across 10,000+ stress test scenarios.
- Optimized file serving mechanisms achieving 1.9 MB/s transfer speeds with 60% lower memory utilization compared to initial implementation.

HackTrail | Next.js, TailwindCSS, Hono, LangChain, Supabase, Flask

Hackathon Winner — Nov 2024

- Architected an AI-powered learning platform generating personalized skill roadmaps, leveraging LangChain for dynamic content adaptation.
- Integrated YouTube API with ReactFlow to create interactive learning paths, automatically curating relevant educational content.
- Implemented an automated assessment system using LangChain to generate personalized quiz questions from video transcripts.
- Led a team of 4 to secure **3rd place** among **250+ teams**, completing development in **10 hours**.

Puno | React Native, Nitro, Drizzle, LangChain, Pinecone, Clerk

Hackathon Finalist — Mar 2024

- Developed a mobile diary app with real-time query indexing using LangChain and Pinecone vector search.
- Engineered smart task detection algorithms to automatically convert diary entries into actionable tasks within the app.
- Optimized backend infrastructure using Nitro and Drizzle, implementing efficient caching and database queries.
- Secured **8th place** globally and **Best Freshers Team** award at GDG Devshouse, competing against 1,000+ teams.

VPrint | Next.js, TailwindCSS, Expo, React Native, Supabase, Chart.js

Hackathon Project — Apr 2024

- Architected a full-stack printing solution to streamline university print shop operations and reduce student wait times.
- Implemented secure payment processing with multi-platform support, including GPay integration and in-store payment options.
- Designed real-time dashboard analytics for print shop staff to manage and track order status efficiently.
- Selected among **top 63 teams of 243**, with solution receiving recognition for practical impact and implementation.

Technical Skills

Languages: JavaScript, TypeScript, Python, Java, C, C++, SQL, Bash, HTML/CSS

Developer Tools: VSCode, Neovim, Git, GitHub, Lazygit, Docker, Postman, tmux, ngrok

Technologies/Frameworks: Node.js, Express, Hono, Next.js, React, React Native, Cloudflare Workers, Supabase, Redis, MongoDB, Linux

Leadership / Extracurricular

- Led SIH 2024 team to 3rd place among 3200+ participants; managed critical project deliverables and coordinated cross-functional team efforts
- Oversaw and guided a team of around 10 members in developing the IEEE club website, leveraging a modern tech stack to enhance performance and user experience.
- Managed IEEE ComSoc Club Expo'24 operations, coordinating and guiding the team in preparing club expo stalls and overseeing overall marketing efforts.
- Directed VFX production for aviation documentaries at Greendot Aviation, guiding the creative team to deliver high-quality animations and streamline production processes.