

Vinod Akshat

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Education

National Institute of Technology Srinagar, J&K

Bachelor of Technology in Computer Science & Engineering

August 2023 – May 2027

Senior Secondary, JNV Udhampur (CBSE Board)

Major Subjects: Major subjects: Mathematics, Physics, Chemistry, Computer Science(Python language focused), English

Overall Grade: 93%

2022

Experience & Competitions

Mined Hackathon (2025)

- **Led a team of 3 members** to develop *SmartRoute Optimizer*, an AI/ML-powered solution for optimizing delivery routes using Python, Flask, K-Means clustering, and Folium.
- Spearheaded **project planning, task delegation, and technical implementation**, ensuring seamless collaboration and timely delivery.
- Designed and deployed a Flask API for **real-time vehicle allocation and route optimization**, improving delivery efficiency.
- Gained hands-on experience in **ML clustering, API development, and team leadership**, refining problem-solving skills under pressure.

Web Developer

May 2024 – October 2024

Techvaganza, NIT Srinagar

- Assisted the registration team in deploying a Python-based Tkinter registration system.
- Supported the deployment of a JavaScript-based QR code scanner for real-time event registrations.
- Managed servers for over 1000 users, addressing registration issues.

Projects

Anonymous Messaging platform - TypeScript + Next.js, MongoDB, Resend email, next-auth, Gemini GitHub | Live Link

- Engineered an anonymous messaging website with next-auth, AI integration and email OTP verification
- Included Dashboard, SignIn and SignUp page, and a functioning backend with mongodb aggregation pipelines to fetch messages for a user
- Encountered challenges with OTP verification due to limitations with the free domain setup for email delivery; exploring a custom paid domain solution to enhance reliability.

AI Agents - JavaScript + Gemini Models GitHub

- Implemented a suite of AI agents using Gemini models.
- **Weather AI Agent:** Employs a chain-of-thought approach (Plan → Action → Observation → Output) to fetch real-time weather data via the Tomorrow.io API.
- **Todo AI Agent (Planned):** Envisions integration with Google Tasks and voice control for task management.
- **Calendar AI Agent (Planned):** Designed to work as a personal assistant by integrating with Zapier and Google Calendar for scheduling meetings and reminders.

Custom Memory Allocator - C GitHub

- Engineered a slab allocator for dynamic memory management using a free-list mechanism to reduce fragmentation.
- Ensured thread-safe allocation and deallocation with `pthread_mutex`, preventing race conditions.
- Designed slab lifecycle management with functions to create, track, and destroy slabs.

cf-vscode-extension - VS Code Extension for Competitive Programming GitHub

- **Under Construction:** Developing a VS Code extension that parses Codeforces problems and test cases, streamlining the competitive programming workflow.
- Integrated with the Competitive Companion browser extension for automated extraction of problem details.
- Leveraging TypeScript and JavaScript to build an intuitive tool, currently under active development with planned feature enhancements.

Spotify to YouTube Playlist Migration Tool - React.js, Node.js GitHub

- Automated playlist migration between Spotify and YouTube using OAuth 2.0 for secure authentication.
- Utilized Spotify and YouTube APIs to synchronize playlist data for up to 1000 tracks.
- Encountered deployment challenges with OAuth 2.0 integration, as both Spotify and Google require a verified (paid) domain for secure authentication; currently exploring alternative solutions.

Custom Shell - Rust GitHub

- Built a custom shell supporting built-in commands (`cd`, `pwd`, `echo`, `exit`) and execution of external commands.
- Developed a `type` command to differentiate between built-in and external commands.
- Incorporated robust error handling and streamlined input parsing.

Custom HTTP Server - Java GitHub

- Developed an HTTP 1.1 server to handle client requests, including GET, POST, PUT, and DELETE methods.
- Implemented route-based handling for endpoints (e.g., /, /about, /submit) ensuring dynamic functionality.
- Included detailed error responses (e.g., 404, 405) to enhance client feedback.

SmartRoute Optimizer- Python, Flask, AI/ML, K-Means, Folium GitHub

- Developed during the Mined Hackathon (my first hackathon) – a valuable learning experience, despite not winning.
- AI/ML solution to optimize delivery routes for grocery/essential deliveries.
- Automates grouping shipments into trips considering time slots, vehicle capacity, and locations.
- Employs K-Means clustering and interactive map visualization using the folium library.
- Provides a Flask API with endpoints for vehicle allocation prediction and route optimization.

Next js Boilerplate - TypeScript + Next.js, MongoDB, Resend email, next-auth GitHub

- Designed a boilerplate with next-auth, AI integration and OTP verification
- Included Dashboard, SignIn and SignUp page, and a functioning backend with mongodb aggregation pipelines

QR Code Scanner - Node.js, MySQL, HTML5, CSS3 GitHub

- Deployed a web app to verify event registrations using real-time QR code scanning.
- Integrated QuaggaJS and jsQR libraries for high-accuracy QR code decoding.
- Designed a secure backend for event data storage and management.

Technical Skills

Languages: C, C++, Java, Rust, Python, JavaScript, TypeScript, React, HTML5, CSS3

Frameworks: Next.js, Node.js, Express.js, Tailwind

Developer Tools: Git, VS Code, Bash, Vercel, Render, Neovim

Databases: MongoDB, MySQL, PostgreSQL, Prisma

Soft Skills: Problem-Solving, Analytical Thinking, Team Collaboration

Subjects

Data Structures and Algorithms, Object Oriented Programming, Discrete Mathematics, Database Management Systems

Interests

Creative Writing, Full-Stack Development, Systems Programming, Open Source Contribution