

# Satyam Vatsal

Portfolio: [satyamvatsal.me](https://satyamvatsal.me)

Github: [github.com/satyamvatsal](https://github.com/satyamvatsal)

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## EDUCATION

- Maulana Azad National Institute of Technology** Bhopal, India  
*Bachelor of Technology - Computer Science and Engineering; CGPA: 9.16* Aug 2023 – Present  
*Courses: Data Structures, Analysis Of Algorithms, Object-Oriented Programming (OOP), DBMS*
- Mother Teresa Vidyapeeth School** Muzaffarpur, India  
*CBSE - Class XII (Science); 92%* 2022 – 2023
- Mother Teresa Vidyapeeth School** Muzaffarpur, India  
*CBSE - Class X; 94%* 2021 – 2022

## PROJECTS

- ChefTalk** | *React.js, Node.js, WebSocket, Redis, IndexedDB, libsodium* [chat.satyamvatsal.me](https://chat.satyamvatsal.me) | [Repository](#)
  - ChefTalk: End-to-End Encrypted Real-Time Chat Application:** Designed and developed a fully end-to-end encrypted chat application, ensuring message confidentiality even from the server.
  - WebSockets:** Built a real-time messaging system using WebSockets, with Redis used for message queuing and temporary buffering, enabling asynchronous delivery in case of temporary disconnection.
  - End-to-End Encryption:** Used sender's private key and receiver's public key to send encrypted message to server.
  - IndexedDB:** Integrated IndexedDB (via Dexie.js) on client-side for offline message persistence.
  - Redis Caching:** Optimized public key lookup with a Redis-based caching layer, reducing database load and improving connection establishment speed.
- Price Drop** | *React Native, ExpressJS, NodeJS, PostgreSQL* [track.satyamvatsal.me](https://track.satyamvatsal.me) | [Repository](#)
  - React Native (Expo) Mobile App:** Cross-platform client built using Expo, leveraging file-based routing and native UI components.
  - ExpressJS + NodeJS Server:** RESTful API endpoints to create, read, update, and delete product tracking records.
  - Firebase Cloud Messaging (FCM):** Sent over 200 price alerts with sub-200ms latency using FCM
  - Security Considerations:** Secure connection to PostgreSQL using parameterized queries to prevent SQL injection.
  - Scheduling with Node Cron:** Automated periodic price checks using lightweight cron jobs.
  - Hosting and Deployment:** Hosted both frontend and backend on Azure Cloud using Nginx as reverse proxy.
- Quiz Master** | *ReactJS, ExpressJS, WebSockets, Redis* [quiz.satyamvatsal.me](https://quiz.satyamvatsal.me) | [Repository](#)
  - Multiuser quiz platform:** Designed and developed a collaborative quiz platform enabling authenticated users to take timed quizzes, view results, and track high scores and history.
  - Express Backend:** Architected a RESTful API to support: auth (JWT-based), quiz creation, retrieval, submission, and score history endpoints.
  - Frontend (React & Tailwind):** Maintained responsive design throughout using Tailwind, ensuring accessibility across desktop and mobile devices.
  - WebSockets:** WebSocket engine (Socket.IO) for real-time broadcasting of questions and syncing user responses.
  - Redis :** Broadcasts quiz questions across horizontally scaled server instances during live sessions. Buffered user responses during quiz to offload writes from the database and prevent response loss under high concurrency.
  - Scalability:** Designed for horizontal scalability—Redis Pub/Sub ensures cross-instance quiz synchronization.

## SKILLS SUMMARY

- Languages:** C, C++, JavaScript, SQL, Python
- Frameworks:** React.js, Express.js, React Native, REST APIs
- Tools:** Linux, Git, Nginx, Docker, Redis, Azure (Basics)
- Soft Skills:** Leadership, Teamwork, Conflict Resolution, Communication

## ACHIEVEMENTS

- Secured AIR 12,133 (Top 1%) in JEE Advanced 2023, among 1.2 million+ candidates.
- Reached 3-Star rating (1663) on CodeChef by solving diverse DSA problems in rated contests.
- Led a team that ranked in the top 10 among 100+ entries in the internal round of Smart India Hackathon (SIH).

## POSITION OF RESPONSIBILITY

- Technical Executive, VISION CSE, MANIT** Bhopal, India  
*Developed and deployed a registration portal for college-wide hackathon for 300+ participants.* Aug 2024 - Present
- Member, Zenith – The Programming Club, MANIT** Bhopal, India  
*Mentored juniors in web development, including frontend/backend technologies, deployment.* May 2025 - Present

## HOBBIES & INTERESTS

- Tinkering with Raspberry Pi and networking scripts; passionate Arch Linux user.
- Regularly practice touch typing (75+ WPM), which helps with faster coding and clearer writing.
- Curious about personal finance and investing fundamentals.