

Harshul Gupta

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TECHNICAL SKILLS

Languages: C++, JavaScript, TypeScript

Relevant Coursework: Data Structures & Algorithms, Design and Analysis of Algorithms, SQL, DBMS, OOPs, Operating Systems

Backend: Node.js, Express.js, FastAPI, REST APIs, Relational & NoSQL Databases

Databases: PostgreSQL, MongoDB, SQLite, ChromaDB

Distributed Systems: RabbitMQ, Redis, BullMQ, Asynchronous Processing

Frontend: React.js, Next.js, HTML, CSS, Tailwind CSS

Developer Tools: Git, GitHub, Docker, Postman, VS Code

AI/ML: RAG, Vector Databases, Prompt Engineering

EDUCATION

Birla Institute of Technology, Mesra

Aug 2023 – May 2027 (Expected)

Bachelor of Technology in Computer Science and Engineering CGPA: 8.17/10

Ranchi, Jharkhand

EXPERIENCE

Hero MotoCorp Ltd.

June 2026 – August 2026

Software Development Intern

Jaipur, Rajasthan

- **Technologies:** Next.js, Tailwind CSS, Node.js, PostgreSQL, JWT, Redis, RabbitMQ, Gemini, VS Code
- Contributed to the development of the **VCI (Vehicle Communication Interface)** application used for **End-of-Line (EOL) firmware updates** and Proof-of-Concept (POC) vehicle diagnostics.
- Designed and built backend APIs using **Next.js API Routes** backed by a **PostgreSQL relational database**, enabling secure driver registration and face-authentication workflows.
- Implemented **Role-Based Access Control (RBAC)** using **JWT** and **Redis**-based session management to secure application access and user authorization.
- Architected asynchronous, multi-service communication using **RabbitMQ**, decoupling backend services in a **distributed, multi-tiered system** to improve fault tolerance and scalability.
- Processed and cleaned **4M+ EV telemetry records (128+ features)** at scale for an Adaptive Dynamic Time-to-Empty (DTE) prediction pipeline, improving data quality for downstream ML modeling.
- Gained working exposure to **AWS cloud infrastructure** (EC2, S3, containerization) through collaboration with the cloud engineering team on VCI's deployment architecture.

PROJECTS

ContextGrid – Multimodal RAG Platform

GitHub

Next.js | FastAPI | LangChain | ChromaDB | Gemini

- Built a full-stack **Multimodal RAG** platform supporting conversations over PDFs, images, and structured documents using semantic search.
- Designed a scalable ingestion and **vector-indexing pipeline** (FastAPI, ChromaDB) supporting distributed storage, retrieval, and query over embeddings for low-latency semantic search.
- Designed a responsive **Next.js** interface with file uploads, chat history, and real-time AI responses.

EphemChat – TTL-Based Ephemeral Chat Platform

GitHub

Next.js | Node.js | Redis | WebSockets

- Built a full-stack ephemeral chat platform where rooms, messages, and memberships auto-expire via **TTL-based Redis** keys (hashes, lists, sets), requiring no persistent storage.
- Implemented real-time messaging using **WebSockets**, with synchronized TTL expiry triggered on room start or first message sent.

PeerUP – Intelligent Coding Assistant

GitHub

JavaScript | Chrome Extension API | OpenAI API

- Built an AI-powered Chrome extension providing contextual coding hints for LeetCode using the **OpenAI API**.
- Automated DOM interactions and optimized asynchronous API requests for low-latency in-browser assistance.

RESEARCH & ACHIEVEMENTS

- Shortlisted for Round 2 of **Flipkart GRiD** among **1.5L+ participants** nationwide.
- Solved **250+ DSA problems** across LeetCode and other coding platforms.
- Published a research paper on **food wastage in Indian weddings** in the TSM Journal.

LeetCode
Paper