

# Ansh Singh

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## EDUCATION

### Vellore Institute of Technology, Chennai

B.Tech in Computer Science and Engineering

Aug 2023 – Jun 2027

Chennai, TN

**Relevant Coursework:** Data Structures & Algorithms, Operating Systems, DBMS, Computer Networks, OOP, Software Engineering, Machine Learning, Data Science & Analytics, Cryptography & Network Security

## EXPERIENCE

### Centre for Smart Grid Technologies Research Intern | CSGT, VIT Chennai (Remote)

May 2026 – July 2026

- Developed a multi-class brain tumor classification framework for MRI scan analysis using **ResNet50**, **DenseNet121**, and **EfficientNetB5** architectures.
- Conducted a 12-model ablation study comparing Squeeze-and-Excitation (SE), CBAM, and Hybrid attention mechanisms, achieving a peak accuracy of **95.00%** with the **DenseNet121 + SE-Attention** configuration.
- Integrated Explainable AI (XAI) using **Grad-CAM** visual saliency maps to identify tumor boundaries and validate model decision pathways for clinical faithfulness.
- **Co-authored a research paper** presenting the proposed framework, comprehensive ablation study, and explainability analysis, and submitted it to a **Q1/Q2 international journal** for peer review.

### Power BI Intern | AICTE (Remote)

Feb 2026 – March 2026

- Built **data transformation pipelines** using Power Query, improving data consistency and reducing preprocessing errors by **~30%**.
- Utilized **DAX functions** to create optimized calculated fields, improving report refresh performance by **~25%**.
- Reduced dashboard latency by restructuring data retrieval workflows and eliminating unnecessary query executions across reporting pipelines.

## PROJECTS

### StudyNotion — EdTech SaaS Platform | MERN, Redux, Socket.IO, Razorpay

Live | GitHub

- Built a **full-stack Learning Management System (LMS)** featuring role-based dashboards (Student, Instructor, Admin), secure **JWT authentication** with HttpOnly cookies, **Redux Toolkit state management**, and scalable course management workflows.
- Integrated Razorpay Payment Gateway with custom webhook automation for secure payment verification, automatic course enrollment, invoice generation, and end-to-end course monetization.
- **Optimized platform performance and analytics** by leveraging **Cloudinary CDN for 40%** faster asset delivery and implementing Recharts-powered real-time dashboards to track student engagement, retention, and revenue metrics.

### DairyDesk — Dairy Management SaaS Platform | Flutter, Node.js, PostgreSQL, Prisma, SQLite (Drift)

GitHub

- **Built an offline-first dairy management platform** using **Flutter** and **Drift (SQLite)**, enabling 60–100 daily transactions with zero internet dependency while maintaining an immutable ledger for milk collection, payments, and inventory records.
- Engineered a **robust synchronization** architecture with bidirectional **PostgreSQL** sync, last-write-wins conflict resolution, exponential backoff retry logic, and a **Dockerized Node.js/Express backend** using **Prisma ORM** for scalable deployment.
- **Implemented secure multi-strategy authentication** supporting Google Sign-In, Email OTP, and offline PIN login with **JWT** and **SHA-256 hashing**, ensuring seamless online and offline access.

## Courses & Certifications

- **[DevOps Fundamentals]** — IBM (Coursera)
- **[DevOps, Agile and Design Thinking]** — IBM (Coursera)
- **[Structured Query Language]** — University of Colorado Boulder (Coursera)
- **[JS Intermediate]** — Hacker Rank

## ACHIEVEMENTS

- Competitive Programming: Solved 500+ problems (Leetcode, GFG, Code forces, Ninjas); **Max Rating 1700+ (Top 10% Globally)**.
- Contest Rank: Secured Global Rank 944 in Leet Code Biweekly Contest 162 and 848 in Biweekly Contest 159.
- Community: Finalist at Flutter Sprint Hackathon 2026 Google Developer Club; contributing to open-source web tools.

## TECHNICAL SKILLS

- **Languages:** C, C++, Python, Java, JavaScript (ES6+), TypeScript, SQL, Bash
- **Backend:** Node.js, Express.js, RESTful APIs, System Design (LLD/HLD), Prisma ORM, WebRTC, Socket.IO
- **ML & Data:** LightGBM, NLTK, TF-IDF, MLflow, DVC
- **Frontend:** React.js, Next.js, Redux Toolkit, Tailwind CSS, Material UI, React, HTML5/CSS3, React bits, Framer Motion
- **Databases:** MongoDB, MySQL, PostgreSQL
- **Cloud & Realtime:** AWS (S3), Cloudinary, JWT, Hugging Face
- **Tools & DevOps:** Git/GitHub, Docker, Postman, Swagger, CI/CD, Linux
- **Android Development:** Flutter, React Native, Android Studio, Firebase, SQLite
- **UI/UX Design:** Figma, Prototyping, Responsive Design, User - Centred Design