

ADITYA KUMAR

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EDUCATION

VIT Chennai

B.Tech Computer Science and Engineering

CGPA: 7.6/10

2023 – 2027

St. Xavier's High School

Senior Secondary (CBSE)

2021 – 2023

SKILLS

Programming Languages

C++, Python, Java, JavaScript, SQL, C

Frameworks & Libraries

Next.js, React.js, Node.js, Axios, Tailwind CSS, Pandas, NumPy, Scikit-learn

Tools & Databases

Git, GitHub, Supabase, PostgreSQL, MySQL, Prisma, FastAPI, Postman

COURSEWORK

- Data Structures & Algorithms
- Object Oriented Programming
- DBMS & Operating Systems
- Computer Networks
- Machine Learning

ACHIEVEMENTS

- Top 10 Finisher, Bitwars 2.0:** High-stakes competitive coding competition by IEEE Computer Society (Sep 2024).
- #10/49 Teams, Paradox CTF:** Cybersecurity Capture The Flag by IEEE Computer Society (Aug 2024).
- HackerRank Certified:** Problem Solving validation.

PROFESSIONAL EXPERIENCE

Summer Intern

Jun 2026 – Jul 2026

South East Central Railway (SECR), Bilaspur

Railway Asset Management System

Next.js, React, Express, MySQL, Prisma, FastAPI, Scikit-learn

- Designed a normalized MySQL database using Prisma ORM to efficiently manage railway assets, stations, inspections, and maintenance history, ensuring strong relational data integrity.
- Developed a Python FastAPI microservice integrated with Scikit-learn to analyze sensor readings and predict maintenance needs, enabling proactive servicing and reducing unexpected failures.
- Implemented RESTful APIs, role-based access control, interactive dashboards, and predictive analytics within an offline-first architecture to streamline complex railway monitoring operations.

TECHNICAL PROJECTS

Spatiotemporal Deepfake Detection System

Python, PyTorch, ResNet50, LSTM, MTCNN, Grad-CAM, OpenCV

- Engineered a hybrid deep learning architecture combining ResNet50 for spatial feature extraction and LSTM networks for temporal sequence analysis, achieving a detection accuracy of **93%** on FaceForensics++ and Celeb-DF datasets.
- Optimized video preprocessing by integrating an MTCNN pipeline for real-time, frame-by-frame face detection and alignment, ensuring temporal consistency.
- Implemented Explainable AI (XAI) using Grad-CAM to generate dynamic visual heatmaps, rendering transparent, pixel-level verification of manipulated facial regions.

Video Game Discovery Engine (RAWG Clone)

React.js, TypeScript, Vite, Chakra UI, REST APIs, Axios

- Engineered a type-safe discovery platform using React and TypeScript, leveraging custom interfaces to handle complex asynchronous data payloads from the RAWG REST API.
- Implemented advanced search, genre-based filtering, and dynamic sorting logic to optimize user exploration of a comprehensive gaming database.
- Optimized frontend performance through lazy-loading media assets and efficient state management, resulting in a highly responsive, mobile-first experience.