

Niraj Kumar

2nd year Undergraduate
Computer Science and Engineering
Indian Institute of Technology Gandhinagar

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ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
B.Tech.	Computer Science and Engineering	IIT Gandhinagar	2024-Present	8.37
Class XII	Physics, Chemistry, Maths	L.M. High School, Bihar	2022-2024	88.4
Class X		JNV Sitamarhi, Bihar	2021-2022	94.8

PROJECTS

- **End-to-End Adversarial ML: Attacking and Defending Explainable AI (LIME/SHAP)** [Jan 2026 -Present]
(Advisor: Prof. Manisha Padala, Computer Science and Engineering, IIT Gandhinagar)
 - Architected an end-to-end adversarial Machine Learning pipeline to simulate security vulnerabilities in **Explainable AI (XAI)** frameworks (LIME/SHAP) and evaluated algorithmic fairness metrics on tabular datasets (COMPAS).
 - Developed an **adversarial Watchdog attack** using a **Random Forest Out-of-Distribution** detector to intercept off-manifold perturbations, successfully forcing explainers to mask underlying bias behind a synthetic decoy variable.
 - Engineering a **generative defense mechanism** by designing and training a **GAN/VAE** in PyTorch to map the dataset's mathematical manifold and generate strictly correlated, highly realistic synthetic queries.
 - Bypassing the **adversarial OOD detector** by snapping VAE/GAN outputs to strict tabular logic, systematically reducing the attacker's detection rate of **LIME perturbations** significantly.
- **Hostel Management System with B+ Tree Indexing and ACID Validation** [Jan 2026 - Present]
(Advisor: Prof. Yogesh K. Meena, Computer Science and Engineering, IIT Gandhinagar) | [Github Link](#)
 - Designing a relational database schema and application backend for hostel management system using **SQL and UML-based modeling**, with a focus on scalable data organization and query support.
 - Implementing a **B+ tree index** to enable efficient search, insertion, and range queries on large students datasets (up to 10 thousands records), and evaluate its impact on query latency and update performance.
 - Developing **transaction handling** and testing **ACID properties** under concurrent workloads, and experimenting with **Data Sharding** in a simulated distributed environment to analyze performance-consistency trade-offs.
- **Personal Portfolio Website** [March 2025]
[Project Website Link](#) | [Github Link](#)
 - Designed and developed a **responsive personal portfolio website** to showcase projects, skills, and professional details, with **well-structured** sections like About, Skills, Projects, and Contact for clear navigation.
 - Applied responsive design principles to ensure **compatibility** across devices, while strengthening skills in **frontend development, UI design**, and overall website structuring through hands-on implementation.
- **GUI-Based Real-Time Weather Application using Python** [March 2025]
[Project Link](#)
 - Developed a GUI-based Weather Application using Python and Tkinter, integrating the **OpenWeatherMap API** to fetch real-time data using **HTTP requests** with proper **error handling** for invalid inputs.
 - Implemented a **CSV-based system** to store and manage search history, while gaining hands-on experience in **API integration**, file handling, and modular Python development.

ACHIEVEMENTS

- Ranked in the top 3.24% out of 250,000+ candidates in the AlgoUniversity Tech Fellowship (ATF) 2025.
- Top 0.19% in JEE Mains 2024 and secured an All India Rank of 3022.
- Secured an All India Rank of 3585 in JEE Advanced 2024.

POSITIONS OF RESPONSIBILITY

- **EII IIT Gandhinagar - Tech Lead & Events Coordinator** [July 2025 - Present]
 - Part of the Entrepreneurship Cell at IIT Gandhinagar, contributing to technical and organizational initiatives.
 - Serving as Tech Lead for EII 2025, responsible for maintaining, updating, and deploying the official EII website.
 - Coordinating with event organizers to integrate event details, registrations, and announcements on the website.
 - Core team member involved in organizing workshops and guest lectures, handling technical logistics while developing leadership, communication, and cross-functional coordination skills under real-world deadlines.

TECHNICAL SKILLS

- **Programming Languages:** Python, C++, C, JavaScript
- **Web:** HTML, CSS, Node.js
- **ML / Data:** PyTorch, NumPy, Pandas, Scikit-Learn, Matplotlib
- **Tools:** Autodesk Inventor Professional, Xilinx Vivado, Git, Github