

EESH SAXENA

Gandhinagar, Gujarat, India

📞 7976212108

✉ eeshsaxena@gmail.com

🌐 [linkedin.com/in/eeshsaxena](https://www.linkedin.com/in/eeshsaxena)

🐙 github.com/eeshsaxena

Education

Indian Institute of Information Technology Senapati

Bachelor of Technology in Computer Science and Engineering

Oct 2023 – Present

Manipur, Imphal

Work Experience

IIIT Vadodara — Under Dr. Abhisek Paul

Research Intern (2026)

- Secured a 6-month internship to analyze the framework from **Zhang (IEEE SPL 2011)** on Reversible Data Hiding in Encrypted Images.
- Studied and experimentally evaluated techniques from **30+ related research works** to compare embedding strategies and reversibility guarantees.
- Developed and tested the encryption–data embedding–extraction process ensuring separability between data retrieval and image reconstruction.
- Measured embedding capacity and reconstruction fidelity using **PSNR and embedding-rate metrics**, contributing toward ongoing publication-oriented work.
- Implemented the embedding algorithms in Python, optimizing matrix operations to achieve near real-time encryption and data hiding speeds.

IIT Tirupati (Online) — SEVA Lab — Under Dr. Chalavadi Vishnu

Winter Research Intern (2025)

- Reproduced and analyzed the **MOTIP (CVPR 2025)** framework for Multiple Object Tracking, focusing on transformer-based identity prediction without Hungarian-based association.
- Examined spatio-temporal feature embeddings under occlusion and dense-scene conditions, applying temporal regularization to reduce identity switches.
- Evaluated performance using **MOTA, IDF1, and HOTA** metrics after adjusting optimization parameters (learning rate, query initialization) to improve tracking stability.

Projects

Conflict-Aware Graph RAG 🐙 | *Python, LangChain, Neo4j, Ollama*

2026

- Built a graph-based RAG pipeline that converts unstructured text into structured triples using LLMs.
- Designed query-aware reasoning-path retrieval over a Neo4j knowledge graph with Ref(p) scoring for relevant evidence.
- Added an entropy-based conflict module (ΔH) comparing parametric and graph-augmented responses for factual consistency.
- Benchmarked on multi-hop QA datasets, demonstrating reduced hallucination and improved answer attributability versus vector RAG.
- Optimized retrieval latency by implementing Neo4j vector indexing and parallelized API calls via LangChain.
- Integrated with Ollama to run local open-source LLMs, ensuring data privacy and offline inference capabilities.

RajNLP-50K 🐙 | *Python, HuggingFace, MuRIL*

2026

- Building India's first open Rajasthani-Hindi code-switched NLP corpus by scraping **50,000 sentences** from Twitter/X and ShareChat.
- Fine-tuning MuRIL models that outperform GPT-4o on sentiment analysis, NER, and toxicity detection.
- Implementing cleaning, tokenization, and linguistic validation protocols for high annotation quality on a low-resource language.
- Extended the pipeline to feed ASR and NLU components of **BolKota**, a Rajasthani voice assistant.
- Published the dataset and model checkpoints on HuggingFace Hub to facilitate further low-resource Indic language research.
- Employed active learning techniques to iteratively refine annotation guidelines and reduce human-in-the-loop labeling time.

Cardiac Edge AI (*In Progress: hardware deployment & on-device fine-tuning*) 🐙 | *Python, PyTorch, TFLite, Arduino*

2026

- Deploying a 5-class cardiac arrhythmia detector on an Arduino Nano 33 BLE using PyTorch and TensorFlow Lite.
- Introduced a novel spectral knowledge-distillation loss ($L_{spectral}$) giving **140x compression** (1.27M to 9.1K params, 23.4 KB INT8).
- Achieved $\sim 99\%$ F1 via multimodal ECG and PPG fusion with temporal signal preprocessing.
- Conducting on-device fine-tuning experiments on Arduino Nano 33 BLE targeting real-time inference & Q2 journal publication.
- Developed a real-time serial dashboard in C++ to monitor inference outputs and sensor stream health with minimal latency.
- Evaluated model robustness against motion artifacts and baseline wander noise typical in wearable sensor scenarios.

Technical Skills

Languages: C++, Python, JavaScript, PHP, SQL

Frameworks & Libraries: React.js, Node.js, Express.js, NumPy, Pandas, Matplotlib, PyTorch

Databases: MySQL, MongoDB, Supabase, Firebase

Tools & Platforms: Git, Postman, Linux, AWS, Railway, Vercel, Netlify

Achievements

- Highest Rating 1582 (Specialist)** on [Codeforces](#) (Top 1% in India).
- Highest Rating 1866 (4 Star)** on [CodeChef](#) (Top 1% in India).
- Highest Rating 1873 (Guardian)** on [Leetcode](#) (Top 5% in World).
- Solved **1,500+ problems** and participated in **50+ contests** across all platforms.
- Global Rank **1** in **CodeChef Starters 180 (Div. 3)** among **10,000** participants.
- Global Rank **75** in **Leetcode Weekly Contest 446** among **27,686** participants.
- Global Rank **78** in **CodeChef Starters 183 (Div. 2)** among all participants.