

Aspiring Software Engineer and Machine Learning Researcher with a robust foundation in full-stack development and deep learning architectures. Adept at bridging the gap between complex AI research and scalable, production-ready software solutions. Proven track record in architecting end-to-end applications, ranging from intelligent IoT-based simulations to sophisticated, data-driven web platforms. Passionate about leveraging advanced optimization techniques and machine learning frameworks to build efficient, user-centric technology that addresses real-world challenges.

SKILLS

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|-------------------|--|
| Languages & Tools | Python (PyTorch, TensorFlow, XGBoost), C++, SQL, HTML, CSS, IoT |
| Data Science / AI | ML, DL (CNN, ResNet), Knowledge Distillation, Prompt Engineering, AI Tools |
| Frameworks & DB | Scikit-learn, MediaPipe, OpenCV, MongoDB, System Design |

TECHNICAL EXPERIENCE

Intern — MNNIT Allahabad

June 2025 — July 2025

Project: Swarm-based Node Localization in IoT WSNs [\[Link\]](#)

- **Reduced localization error by 58% (to 2.03m)** via Chaotic Chimp Optimization.
- **Achieved 92% node coverage** by integrating XGBoost for initial node position estimation.
- **Spearheaded** a hybrid swarm-intelligence simulation framework (Chimp, Dung Beetle, Aquila).

Intern — IIT Patna

Jan 2025 — June 2025

Project: Lightweight Satellite Air Quality Forecasting via Knowledge Distillation [\[Link\]](#)

- **Achieved 300x model compression (99.6% reduction)** using Knowledge Distillation, shrinking an 11.3M-parameter Teacher to a 37.5k-parameter Student for Edge AI deployment.
- **Surpassed Teacher accuracy** (Student R^2 : 0.818 vs Teacher: 0.806) while **reducing training time by 56%** using custom Huber and KL-Divergence loss functions.
- **Architected** a hybrid Teacher–Student DL system (Modified ResNet-18) to forecast 5 air pollutants from satellite NetCDF imagery and geospatial metadata.

Intern — Tripura University

June 2024 — July 2024

Project: Real-time Hand Mudra Recognition

- **Achieved 96% validation accuracy** using a custom CNN with Transfer Learning (InceptionV3, VGG16).
- **Built** a real-time Mudra recognition system (25 classes) using MediaPipe and OpenCV with skeletal landmark features.

EDUCATION

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| B.Tech in Computer Science and Engineering North Eastern Regional Institute of Science and Technology (NERIST) | 2022 — Present CGPA: 8.16/10 |
| Higher Secondary (CBSE) Secondary (TBSE) Shishu Bihar HS School, Agartala | 2022 2020 86.8% 88.8% |

PROJECTS

Web Development Suite

GitHub

- **Personal Portfolio:** [\[Link\]](#)
- **AI-Image Sharing:** Face recognition-enabled platform. [\[Link\]](#)
- **Node Localization:** Swarm-based IoT simulation. [\[Link\]](#)
- **VoiceFlow:** AI text-to-speech platform. [\[Link\]](#)
- **Document Matching:** OCR-based document scanner. [\[Link\]](#)

Android Development — Media Vault

Java / Android Studio

- **Launched** an encrypted media-hiding Android app with a stealth calculator-style UI.