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# Subhradip Nandi

Portfolio: Portfolio/Demo
github.com/codingplugin
linkedin.com/in/subhradip-nandi-038b3a2b7

**Aspiring Software Engineer and Machine Learning Researcher** with a strong foundation in full-stack development and deep learning architectures. Engineered a knowledge distillation pipeline using the PyTorch framework; compressed an 11.3M parameter teacher model to a 37.5k student model, achieving a 300x size reduction. Proven track record in constructing end-to-end applications, from IoT-based swarm simulations to OCR-integrated web platforms.

## Skills

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

## Technical Experience

**Intern — IIT Patna** **Jan 2025 — June 2025**

*Project: Lightweight Satellite Air Quality Forecasting via Knowledge Distillation*

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

**Intern — MNNIT Allahabad** **June 2025 — July 2025**

*Project: Swarm-based Node Localization in IoT WSNs*

- **Reduced average localization error by 58% (to 2.03m)** by engineering a Chaotic Chimp Optimization algorithm compared to standard evolutionary baselines.
- **Attained 92% node coverage** (138/150 nodes) in high-density network environments by integrating XGBoost machine learning for initial position prediction.
- **Spearheaded** a WSN simulation framework using hybrid swarm intelligence algorithms (Chimp, Dung Beetle, Aquila) to optimize sensor positioning.

**Intern — Tripura University** **June 2024 — July 2024**

*Project: Real-time Hand Mudra Recognition via Skeletal Landmark Detection*

- **Secured 96% validation accuracy** by engineering a custom CNN architecture and implementing Transfer Learning (InceptionV3, VGG16) with extensive data augmentation.
- **Constructed** a real-time system classifying 25 distinct Mudras using MediaPipe and OpenCV, reducing background noise via a novel skeletal landmark feature extraction pipeline.

## Education

**B.Tech in Computer Science and Engineering** **2022 — Present**
North Eastern Regional Institute of Science and Technology (NERIST) *CGPA: 8.16/10*

**Higher Secondary (Class 12, CBSE) | Secondary (Class 10, TBSE)** **2022 | 2020**
Shishu Bihar HS School, Agartala *86.8% | 88.8%*

## Projects

**Web Development Suite** GitHub

- **AI-Image Sharing:** Platform with integrated face prediction. [Link]
- **Node Localization:** Swarm-based simulation for IoT. [Demo]
- **VoiceFlow:** AI text-to-speech conversion website. [Link]
- **Document Matching:** OCR-based scanning system. [Link]

**Android Development: Media Vault** **Java / Android Studio**

- **Launched** an encrypted media hiding application featuring a stealth calculator-style user interface.