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Arnab Nath

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ABOUT ME

Computer Science graduate specializing in AI and Machine Learning with strong research experience in climate and environmental modeling. Skilled in comparative evaluation of ML models, time-series forecasting, and explainable AI, with hands-on experience building reproducible ML pipelines and GenAI systems in production environments.

EDUCATION AND TRAINING

Bachelor of Technology

Haldia Institute of Technology [02/11/2020 – 02/07/2024]

City: Haldia | **Country:** India | **Website:** https://hithaldia.ac.in/ | **Field(s) of study:** Computer Science and Engineering (AI and ML) | **Final grade:** 9.02/10.00

Machine Learning, Artificial Intelligence, Probability and Statistics, Linear Algebra, Data Structures and Algorithms, Database Systems, Operating Systems, Signals and Systems, Computer Networks, Software Engineering, Soft Computing, Discrete Mathematics

PUBLICATIONS

Comparative Analysis of Machine Learning Algorithms for Temperature Prediction in Lisbon, Portugal Presents a large-scale comparison of nine ML regression models for daily temperature forecasting using long-term meteorological data, highlighting the superior performance of nonlinear and ensemble methods through rigorous, leakage-aware evaluation.

Authors: Arnab Nath, Ayeeshique Ishaan, Biswadeep Bhattacharjee, Sayak Sarkar | **Publisher**: Preprint, Research Square, 2025. Manuscript submitted to journal

PROJECTS

Content-Based Product Recommendation System Built a TF-IDF and cosine-similarity–based recommendation system with a Flask interface, containerized using Docker and monitored via Prometheus and Grafana.

AI-Assisted Health Information Web Application Built a TypeScript-based web application with Gemini models to deliver structured, context-aware health information through an interactive UI. Focused on responsible AI usage by restricting outputs to non-diagnostic, educational content.

Machine Learning–Based Temperature Prediction — North 24 Parganas, India (2015–2023) *Final Year B.Tech Thesis (Supervised)*Conducted a comparative study of nine ML regression models for daily temperature forecasting using multi-year meteorological data (2015-2023). Applied domain-aware preprocessing and Mutual Information–based feature selection, achieving high accuracy with ensemble models (XGBoost, LightGBM; $R^2 \approx 0.98–0.99$).

WORK EXPERIENCE

LTIMindtree – Kolkata, India

Software engineer

[18/10/2024 – 01/12/2025]

- Built and evaluated GenAI/LLM-based systems for code translation, risk forecasting, and document analysis
- Automated documentation and analysis workflows to improve reliability and reduce manual effort
- Focused on model consistency, accuracy, and production readiness in enterprise environment

RESEARCH INTERESTS

Topics

- Time-Series Forecasting and Spatio-temporal Data Analysis
- Explainable AI and Model Interpretability
- Integration of Simulation, Imaging, and Data in XR
- Human–Computer Interaction in XR Environments
- Machine Learning for Imaging and Sensing Systems
- Machine Learning for Interactive and Immersive Systems
- Responsible and Explainable Machine Learning in XR Applications
- Multimodal Data Fusion for Imaging and XR Systems

SKILLS

Programming Languages

Python / Java / HTML / CSS / SQL / JavaScript / TypeScript

Machine Learning

Scikit-learn / Numpy / Pandas / Matplotlib / PyTorch / TensorFlow / Time-Series Modeling / Model Evaluation Metrics

AI and LLM Frameworks

LangChain / LlamaIndex

Databases and Vector Stores

PostgreSQL / MySQL / Pinecone / FAISS / AstraDB

LANGUAGE SKILLS

Mother tongue(s): Bengali

Other language(s):

English

LISTENING C2 **READING** C2 **WRITING** C2

SPOKEN PRODUCTION C2 **SPOKEN INTERACTION** C2

Hindi

LISTENING C2 **READING** B2 **WRITING** B1

SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

CERTIFICATIONS

[Microsoft, 30/08/2025]
Microsoft Certified: Azure Fundamentals Core cloud concepts, Azure services, security, and pricing models.

[Oracle, 22/08/2025]
Oracle Cloud Infrastructure 2025 Certified AI Foundations Associate Fundamentals of AI, ML, and GenAI on OCI, including model lifecycle concepts.

[Google, 06/09/2024]
Prompt Engineering in Vertex AI Designing effective prompts and workflows for LLM-based applications using Google Vertex AI.

HACKATHONS AND OPEN SOURCE CONTRIBUTIONS

Hackathons

- Participant, Google DeepMind – Vibe Code with Gemini 3 Pro (AI Studio Hackathon).
- Participant, Zerve AI Hackathon
- Participant, AI Mathematical Olympiad - Progress Prize 3

Open Source Contributions

- Active contributor to GitHub projects related to AI workflows and ML experimentation.
- Completed Hacktoberfest 2025 with open-source contributions.

RESIDENCE HISTORY

[01/01/2020 – 31/03/2020]
Kolkata, West Bengal, India (Class 12 ISC exams)

[02/11/2020 – 02/07/2024]
Haldia, West Bengal, India (Undergraduate studies, Haldia Institute of Technology)

[18/10/2024 – 01/12/2025]
Kolkata, West Bengal, India (Software Engineer, LTIMindtree)