Tuhin Subhra De

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Education

Khoury College of Computer Sciences, Northeastern University — Boston, MA
Master of Science in Artificial Intelligence | GPA: 4.0/4.0 — Sep 2025 - Dec 2027 (expected)
- Relevant Courses: Algorithms, Foundations of AI, Deep Learning

Indian Institute of Technology Kharagpur (IIT) — West Bengal, India
Bachelors and Masters of Technology in Civil Engineering | GPA: 8.75/10 — Jul 2019 - Apr 2024
- Relevant Courses: Machine Learning, Deep Learning, Big Data Processing

Work Experience

ICICI Bank Pvt. Ltd (Technology Group) — Mumbai, India
Software Development Manager-1 — Jul 2024 - May 2025
- Optimized credit card and loan application platforms using machine learning by leveraging prior fraud estimates.
- Enhanced the credit sales by **4%** and reduced the credit default rate by **6.8%** in the Q4 of financial year 2024.
- Managed teams and technically resolved production issues within stipulated time minimizing performance breaks.
- Collaborated with product teams to implement business requirements by integrating different services via API.

Udaan.com (Hiveloop Technologies) — Bangalore, India
Data Science Intern — May 2023 - Jul 2023
- Extracted important model input features from raw data using SQL, driven by insights from business teams.
- Devised a method by stacking the XGBoost Classifier and Poisson-Gamma distribution to recommend products.
- Increased the Bi-Weekly sale by **13.4%** using the proposed method in real-time E-commerce. (Publication no. 3)

Indian Institute of Management Mumbai — Mumbai, India
Machine Learning Research Intern (NITIE Research Lab) — Sep 2021 - Dec 2021
- Improved profit rate by **23%** in a cargo booking scenario using dynamic programming and deep learning.
- Estimated the minimum cost of operation using Neural Networks trained on data from Vehicle Routing Problems.
- Used dynamic programming to find the optimal acceptance of cargo requests using results from the above model.

Publications

1. *Preprint:* Improving Conditional VAE with approximation using Normalizing Flows. **Tuhin Subhra De** (2025) https://arxiv.org/abs/2511.08946
2. A Non-Linear LASSO and Explainable LSTM approach for Estimating Tail Risk interconnectedness. **Tuhin Subhra De**, Madheti Kartikeya, Sujoy Bhattacharya (2024). Applied Economics Journal.
3. A Machine learning and Empirical Bayesian approach for predictive buying in B2B e-commerce. **Tuhin Subhra De**, Pranjal Singh, Alok Patel (2024). International Conference on Machine Learning and Soft Computing.

Projects

Improving Conditional VAE with approximation using Normalizing Flows — Sep 2025 - Present
Course Project for Foundations of AI, Northeastern University
- Implemented a conditional variational autoencoder to generate faces with different features using Celeb-A dataset.
- Parametrized the variance of the decoder and estimated the conditional prior using Non-Volume Preserving Flows.
- Obtained **5%** better FID score and **8%** more log likelihood than the existing models using the new method.

Estimating risk interconnectedness in global banks using deep learning — Jun 2023 - Jan 2024
Bachelor's Thesis Project, IIT Kharagpur (Publication no. 2)
- Analyzed financial risks within global large banks by identifying the features steering the stock price predictions.
- Improved the model performance by **4x** than the existing literature using residual networks and LSTM models
- Proposed a novel and more consistent gradient based metric for quantifying the risk interconnectedness.

Achievements

JEE Advanced 2019: Secured **5542** national rank in Joint Entrance Examination (JEE) among **22,000** candidates.
INMO 2017: Selected for Indian National Mathematics Olympiad (pre-stage of IMO) among **14,000** national students.

Technical Skills

Languages/Frameworks: C, C++ (STL), Python, JavaScript, HTML/CSS, SQL, Git
ML Libraries: PyTorch, TensorFlow, Scikit Learn, PySpark, OpenCV, Seaborn
ML Architectures : CNNs (Computer Vision), RNNs (NLP), LLMs, Transformers, Diffusion models, GANs.