

Tanmoy Shome

AI Engineer | AI-for-Communications & Automation

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RESEARCH INTERESTS

Multimodal learning, Natural Language Processing, Signal Processing, Large Language Model, Reinforcement Learning, Low-Resource Language.

RESEARCH EXPERIENCE

Cohere Labs, Cohere

Community Researcher(Remote)

Toronto, Ontario, Canada

10/ 2025 — Present

Lead: Marzieh Fadaee

- Contribute to open research on training large language models for low-resource South Asian languages, improves overall model performance, with a South-Asian-language LLM
- Co-developing a location-aware navigation agent that interprets natural-language queries about nearby services and returns ranked results under constraints (distance, category, preferences), fusing location data with contextual signals.

BRAC Universtiy

Research Assistant

Dhaka, Bangladesh

07/ 2025 — 10/ 2025

PI: Dr. SM Taiabul Hoque

- Design an end-to-end AI chatbot, **UnmadBot** trained on a dataset from Unmad's past magazine content supervised by **Prof. S M Taiabul Haque**
- Fine-tuned **Qwen2.5-7B-Instruct** with LoRA on Bangla instruction-tuning and distillation data, deploying on Azure ML/AKS with containerized model serving.
- Investigate how foundation model can understand and generate culturally grounded satire and humor.

Bengali.AI

Research Assistant

Dhaka, Bangladesh

03/ 2023 — 03/2025

- Benchmark & fine-tuned **3k Critical Bangla** Newspaper layout dataset by detectron2, YOLO, SwinDocSegmenter and **100+ hour** of Bangla regional Speech with dialect variations dataset with Wav2Vec2 and Whisper
- Contributed to the development of a Cross-Domain **10k Hour** Bengali Speech Corpus, designed to advance state-of-the-art technologies in Bengali Speech Recognition, Diarization, and Synthesis, funded by **RSGI**
- Co-ordinated to the development of a Bengali document layout analysis system in the newspaper domain, funded by **Institute for Advance Research**
- Co-ordinate with team members and **18-annotators(Roboflow)**, Validate annotation, Write project documentation, Project status report and Organized Datathon Challenge Competition
- **200k hour** of Bangla Speech data scrap, pre-process, and Co-supervise Undergraduate students to their Bachelor's Dissertation

PROFESSIONAL EXPERIENCE

VISIE Limited

AI Engineer

Dhaka, Bangladesh

04/ 2024 — Present

- Optimized AI-agent and RAG pipelines using query routing, semantic caching, hybrid search, HNSW-based retrieval, lightweight re-ranking, and context compression, reducing average latency from **2.1s to 850ms**
- Built conversational AI agents for customer, product, payment, and retention-risk analysis, reducing manual reporting **turnaround by 60%** across **20+ business KPIs**
- Developed recommendation and customer analytics workflows, improving product-fit **ranking by 18%** and supporting customer segmentation for targeted decision-making
- Developed a credit-risk scoring ML pipeline for repayment/default risk prediction, addressing imbalanced data with class weighting, resampling, threshold tuning, PR-AUC/F1 evaluation, and explainable risk scoring

TEACHING EXPERIENCE

National Forum of Organisations Working with the Disabled (NFOWD)

Volunteer Instructor (Digital Skills)

Dhaka, Bangladesh

12/ 2022 — 08/ 2023

- Designed and delivered hands-on training to **20+ NFOWD teachers** on MS Excel, PowerPoint, and Word, improving their day-to-day productivity, reporting, and content preparation.

Taqwa Academic & Medical Admission Coaching

Instructor (ICT & English)

Dhaka, Bangladesh

10/ 2019 — 01/2021

- Taught ICT and English to O-Level and A-Level students, designing lesson plans and hands-on sessions and adapting technical concepts for learners at different levels.

EDUCATION

Daffodil International University, Dhaka, Bangladesh.

01/2020 — 12/2023

Bachelor of Science in Software Engineering (Major in Data Science)

Cumulative GPA: 3.19/4.00

Bachelor's Dissertation: BCD3+ Bangla Complete Document Deconstruction Dataset.

PUBLICATIONS & PREPRINTS

IJCNLP-AACL 2025

- TT Dipto, A Hossain, RS Faruque, R Hassan, K Fatema, **Tanmoy Shome**, R Naswan, F Zihad, M Anam, N Tasnim, H Mahmud, MK Hasan, MH Shawon, F Sadeque, T Reasat. ***Are ASR foundation models generalized enough to capture features of regional dialects for low-resource languages?***

SKILLS

Programming Languages: Python, C/C++, Java, JavaScript, SQL, Rust, Data Structures & Algorithms

ML Libraries: Scikit-learn, NLTK, BNLTK, Transformers, OpenCV, NumPy, Pandas, Matplotlib, Plotly

ML Frameworks & Tooling: PyTorch, TensorFlow, Keras, Detectron2, YOLO, SAM, LangChain, LangGraph, LangSmith, LlamaIndex, CrewAI

ML Practices & Concepts: MLOps, LLMops, RAG, Agentic AI, ZenML

Web Frameworks & APIs: Next.js, React.js, Node.js, Flask, Laravel, Webhooks, WebSockets

Databases: MySQL, PostgreSQL, MongoDB, Vector Databases

Cloud & DevOps: Docker, Kubernetes, Microservices, GitHub Actions, CI/CD, AWS, GCP, Azure, Nginx

Developer Tools: VS Code, PyCharm, Android Studio, Jupyter Notebook, Kaggle, Overleaf, Apache Tomcat, Postman

Version Control: Git, GitHub

Operating Systems: macOS, Linux, Windows

Soft Skills: Leadership, Public Speaking

SELECTED AWARDS & ACHIEVEMENTS

ACCELERATOR CUP '23 Awarded **AgriCo** Project as **Chairman Nominated** in startup category.

CO-CURRICULAR ACTIVITIES

Organize

- **Vasha-Bicitra** — ASR for Bangla Regional Dialects, IUT 04 /2024
- **Datathon Challenge** — Regional Text to IPA Transcription, UIU 02 /2024 — 03 /2024
- **DataVerse Challenge** — ITVerse 2023, IPA Recognition, DU 10 /2023 — 11 /2023
- **Bengali.AI Speech Recognition** — Kaggle Research Grant 07 /2023 — 10 /2023
- **DL Sprint 2.0** — BUET CSE Fest 2023, Document Layout Recognition, BUET 06 /2023 — 08 /2023
- **Third Data Science Summit**, DIU 11 /2022