Anirban Saha Anik

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SUMMARY

Motivated Ph.D. applicant in Computer Science with a 4.0 GPA in MS Data Science and a proven publication record in NLP, misinformation detection, and retrieval-augmented generation. Experienced in applying LLMs (LLaMA, GPT, Mistral) for real-world challenges, particularly in crisis response and public health communication. Skilled in research, teaching, and cross-disciplinary collaboration. Seeking to contribute to cutting-edge research in NLP, human-centered AI, and responsible generative models.

RESEARCH STATEMENT

My research centers on Natural Language Processing (NLP) and Large Language Models (LLMs), with a focus on making AI systems more controllable, context-aware, and socially responsible. I explore retrieval-augmented generation, misinformation detection, and the interplay between AI outputs and user understanding—especially in health and crisis domains. I aim to develop techniques that enhance factual grounding and alignment in LLMs, advancing both technical capabilities and societal impact. My Ph.D. goal is to design interpretable, adaptive, and human-aligned AI models that serve public communication and decision-making needs.

EDUCATION

University of North Texas — **Denton, TX**
Master of Science, Data Science (GPA: 4.0/4.0) — *Dec 2025(Expected)*

American International University-Bangladesh — **Dhaka, Bangladesh**
Bachelor of Science, Computer Science and Engineering (CGPA: 3.59/4.0) — *Dec 2021*

TECHNICAL SKILLS

NLP & Large Language Models: Transformers, Hugging Face, RAG, LLaMA, GPT, Mistral
Programming Languages: Python, R
Libraries & Tools: PyTorch, TensorFlow, Sklearn, Pandas, Numpy, Matplotlib, Seaborn
Data & Visualization: SQL, Power BI, Tableau, Excel

WORK EXPERIENCE

Graduate Research Assistant
University of North Texas (UNT), Denton, TX — *May 2025 – Present*

- Conducting research under Dr. Lingzi Hong on LLM-based counter-speech generation for combating health misinformation.
- Developing AI-driven solutions that generate context-aware recommendations during public health and crisis scenarios.
- Designing multi-agent retrieval-augmented frameworks for fact-grounded and personalized responses.

Graduate Teaching Assistant
University of North Texas (UNT), Denton, TX — *Aug 2024 – May 2025*

- Assisted in *INFO 4709: Data Visualization and Communication*, guiding students in Power BI, Tableau, and Python visualizations.
- Previously supported *Introduction to Data Science* course with R programming, EDA, and machine learning basics.
- Held office hours, provided assignment feedback, and supported student learning through 1-on-1 academic assistance.

Research Assistant
KI Research Lab, American International University-Bangladesh (AIUB), Bangladesh — *May 2022 – Dec 2022*

- Worked under Dr. Md. Kishor Morol on medical data analysis using deep learning for disease detection and classification.
- Assisted undergraduate students with research methodology, literature reviews, and project development.

Intern – Enterprise Applications (Microfinance)
BRAC, Dhaka, Bangladesh — *Mar 2022 – May 2022*

- Conducted UAT testing and software QA for microfinance enterprise applications.
- Visited 5+ branches to interview field officers and gather user feedback for software enhancements.
- Documented user requirements and proposed interface improvements to the dev team.

Teaching Assistant
American International University-Bangladesh (AIUB), Bangladesh *Sep 2021 – Dec 2021*

- Assisted in *Introduction to Database* course with SQL queries, relational schema design, and debugging.
- Supported students through regular consultations and academic help sessions.

PUBLICATIONS

- **Dynamic Fusion of Large Language Models for Crisis Communication**, Xiaoying Song, **Anirban Saha Anik**, Vanessa Frías-Martínez, Lingzi Hong. *Information Systems for Crisis Response and Management (ISCRAM 2025)*. DOI: 10.59297/nqysjq45 Link
- A Hybrid Attention-Guided Fusion Network with Grad-CAM for MPox Skin Lesion Classification, Mithila Arman, Naheyan Prottush, Maher Ali Rusho, Arup Datta, **Anirban Saha Anik**, Din Mohammad Dohan, Md. Ashiq Ul Islam Sajid, Intezab Alam Sheikh, Md. Khurshid Jahna. *4th International Conference on Computing and Machine Intelligence (ICMI 2025)* (Accepted).
- Outcome-Based Education: Evaluating Students' Perspectives Using Transformer, Shuvra Smaran Das, **Anirban Saha Anik**, Md. Kishor Morol, Mohammad Sakib Mahmood. *27th International Conference on Computer and Information Technology (ICCIT 2024)* (Accepted).
- A Study on Future Lockdown Predictions Using ANN, Shuvra Smaran Das, **Anirban Saha Anik**, Md. Muzakker Hossain, Md. Kishor Morol, Fariha Jahan, Md. Abdullah-Al-Jubair. *2023 International Conference on Next-Generation Computing, IoT and Machine Learning (NCIM)*, Gazipur, Bangladesh, 2023, pp. 1–6. DOI: 10.1109/NCIM59001.2023.10212686 Link
- A Comparative Analysis for the Detection of COVID-19 from Chest X-ray Dataset, **Anirban Saha Anik**, Kowshik Chakraborty, Bishowjit Datta, Abdul Kader, and Md. Kishor Morol. *2022 International Conference on Recent Progresses in Science, Engineering and Technology (ICRPSET)*, Rajshahi, Bangladesh, 2022, pp. 1–6. DOI: 10.1109/ICRPSET57982.2022.10188570. Link

RESEARCH PROJECTS

- **Integrating Real-Time Context into Language Models for Dynamic Response Generation** – Investigating how to augment LLMs with live, user-generated data (e.g., from social media) for real-time crisis response. The project explores methods such as entity extraction and retrieval-augmented generation (RAG) to ground model outputs in current spatiotemporal information. (Ongoing)
- **Controlled Counterspeech Generation Against Health Misinformation: Tailoring Responses to Diverse Health Literacy Levels** – Contributed as a co-author to this work exploring personalized LLM-generated counterspeech grounded in users' health literacy. *(Submitted to EMNLP 2025)*.
- **A Dynamic Fusion Model for Consistent Crisis Response** – Co-authored this study on combining multiple LLMs to generate context-aware and consistent outputs during evolving crisis scenarios. *(Submitted to EMNLP 2025)*.
- **Multi-Agent Retrieval-Augmented Framework for Evidence-Based Counterspeech Against Health Misinformation** – Developed a multi-agent pipeline combining retrieval, LLM prompting, and evidence-based reasoning for factually grounded counterspeech. *(Submitted to Conference on Language Models (COLM) 2025)*.
- **ClaimIQ at CheckThat! 2025: Comparing Prompted and Fine-Tuned Language Models for Verifying Numerical Claims** – Developed a system for Task 3 of CLEF 2025 that verifies numerical and temporal claims using retrieved evidence. Compared zero-shot prompting of instruction-tuned LLMs with supervised fine-tuning using LoRA. *(Submitted to CLEF 2025 Working Notes, Madrid, Spain)*

AWARDS AND HONORS

- **1st Place - Day of Health Informatics and Data Science (Poster Presentation)**, University of North Texas Recognized for research on: *"Enhancing Health Communication: Developing LLM-based Models to Generate Effective Counter-Speech Against Health Misinformation."*