SYED MOSTOFA MONSUR

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Research Domain

NLP, AI Agents, AI for Scientific Discovery, LLM for Reasoning, LLM Evaluation.

Publications (Google Scholar Profile [LINK])

EMNLP'23 BLP Workshop — **Syed Mostofa Monsur**, Md Shariar Kabir and Sakib Chowdhury. SynthNID: Synthetic Data to Improve End-to-end Bangla Document Key Information Extraction. [paper]

UIST'22 — Md Ehtesham-Ul-Haque, **Syed Mostofa Monsur** and Syed Masum Billah. *Grid-Coding: An Accessible, Efficient, and Structured Coding Paradigm for Blind and Low-Vision Programmers.* Proceedings of the 35th ACM UIST **[Best Paper Award]** [paper][video][featured]

LREC'22 — **Syed Mostofa Monsur**, Sakib Chowdhury, Md Shahrar Fatemi and Shafayat Ahmed. *SHONGLAP: A Large Bengali Open-Domain Dialogue Corpus.* [paper]

NSysS'20 — **Syed Mostofa Monsur** and Muhammad Abdullah Adnan. *Distributing Active Learning Algorithms.* In Proceeding of the *7th International Conference on Networking, Systems and Security (NSysS), December 22–24, 2020, Dhaka* [paper][video]

Honors & Awards

Computer Science Chairman Fellowship 2024, Stony Brook University
Best Paper Award in ACM UIST, 2022 [link]
Kaggle OOD ASR **31st/744 position globally** - received award $3000, Team AudioAlchemists. [link]
Champion in Inter-school Science Olympiad
Honorable Mention in Regional Math Olympiad, High School Level
Gold Medal for excellent academic records in High School

Scholarly Services

Reviewer at ACL Rolling Review 2025
Reviewer at ACM SIGCHI 2024 (alt.CHI)

Education

Stony Brook University (SUNY) — Stony Brook, NY
PhD in Computer Science — *Aug. 2024 – Current*

Courses: Machine Learning CSE512, Computer Vision CSE527, Computer Architecture CSE502, Data Science Fundamentals CSE519, Natural Language Processing CSE538, Theory of Database Systems CSE532

Bangladesh University of Engineering and Technology (BUET) — Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering — *Feb. 2015 – Apr. 2019*

Thesis: Analysis of Distributed Active Learning Algorithms. [pdf]

Research Projects

Scientific Claim Feasibility with Agents (Stony Brook University, 2025 - ongoing). Focusing on developing modular reasoning systems for scientific claim verification. Contributing to the design of LLM-driven controllers, multi-modal evidence retrieval and hybrid inferential frameworks combining deductive, abductive, analogical, and simulation-based reasoning. Collaborating with a team of scientists from UTAustin, Cambridge, UMBC and Stony Brook to build scalable, domain-adaptive AI systems for complex scientific assessments across biomedical, AI and quantum domains

LLMs for Novel Polymer Discovery. (Stony Brook University, 2025 - ongoing) This is an ongoing project where the goal is to develop new Large Language Models (LLMs) for novel polymer discovery. Goals include building AI systems that integrate scientific literature, structured data and machine learning to guide green polymer design and material discovery. We are trying to develop retrieval-augmented solutions and domain-specific language models to support data-driven innovations in biodegradable materials.

User Experience and Accessibility for Python Developers (Penn State University 2022)
Worked on a new coding paradigm, Grid-Coding, specially designed to increase accessibility for blind and low-vision programmers to Python programming and Artificial Intelligence (AI)/Data Science Development. As Python is the primary language for AI and Data Science right now, this project enabled visually impaired people to AI systems development thus increasing AI accessibility. It introduces non-visual programming on grid structure instead of text editors. Through participatory sessions and evaluation with 12 BLV programmers, it proved to enhance code navigation, context understanding, syntax error detection, unique usage patterns and overall programming productivity compared to regular text editors.

End-to-end Bengali document key information extraction using AI. We propose a synthetic document image generation framework to finetune AI models for Bengali documents. We fine-tune end-to-end AI models and report the key information extraction performances on real datasets. Paper accepted in BLP Workshop at EMNLP'23.

Low-resource Dialogue Systems Evaluation and Document Understanding, Celloscope Limited (2021-22)
Collaborators: Shafayat Ahmed (Virginia Tech), Sakib Chowdhury (now at Stevens Institute of Technology), Shahrar Fatemi (now at Stony Brook University)
Prepared raw dialogues from political talk-shows, debates. Curated using speech-to-text, diarization, speaker-role labeling (weak-supervised). Fine-tuned BanglaBERT with our dataset on downstream tasks. Synthetic document image generation framework for Bengali documents. Fine-tuned end-to-end AI models and reported the key information extraction performances on real datasets.

Professional Employments

Stony Brook University — NY, USA
Teaching Assistant, Department of Computer Science — *Aug. 2024 – Current*

Celloscope Limited — Dhaka, Bangladesh
Lead AI Research Engineer, AI/ML Team (NLP, Speech and Vision R&D) — *Jun. 2023 – Aug. 2024*
AI Research Engineer, NLP and Speech (R&D) — *Sept. 2020 – Jun. 2023*

CoKreates Limited — Dhaka, Bangladesh
Software Engineer, DevOps and Deployment (GRP Project, ICT Division) — *Jul. 2019 – Sept. 2020*

Industry Projects

NIST Benchmarking	Led the evaluation of Celloscope (the company I worked for) Facematch application designed to verify identities by matching faces from national ID cards. Guided Celloscope AI/ML team in conducting experimental runs and prepared documentation for enlisting the system in the US Government's National Institute of Standards and Technology (NIST) Face Recognition Technology Evaluation (FRTE) 1:1 Verification benchmark, ensuring compliance with rigorous industry standards. [published report]
Agrani AI Chatbot	Led the development of *Agrani Voice Banking*, Bangladesh's pioneering Voice-based AI Banking Chatbot for seamless banking activities, serving thousands of real users. *Agrani Bank* is Bangladesh's one of the largest state-owned banks with a huge number of users who have very little access to information. Agrani Voice Banking makes banking services accessible to everyone. It is powered by Bengali ASR and a finetuned NLU engine.
Document AI	Finetuned large multimodal document question answering AI model with Bengali synthetic and real data. The model can perform question answering on various types of scanned/unstructured documents beating several benchmarks including commercially available OCR products.
NLU ChatBots	Developed task-oriented bots for businesses; intent detection, slot-filling using Dual Intent and Entity Transformer; training data augmentation using unsupervised paraphrasing model (*t5*-based, fine-tuned on *TaPaCo*).
Bengali Speech Tools	Collected and pre-processed 400+ hrs of Bengali audio and transcription. Trained end-to-end high-quality ASR models. Trained industry-grade TTS for Bengali language with 40+ hours of curated data and improved generated audio quality with Vocoders (naturalizing audio) Integrated with Natural Language driven User Interfaces including speech-driven chatbots. Developed industry-grade speaker verification system using ensemble of pre-trained unispeech-sat, wavlm and ecapa-tdnn.

Skills

Research	Experiment Design, Technical Writing, System Design, Quick-Prototyping
Tools & OS	Huggingface, PyTorch, Tensorflow, Jax, Spacy, Docker, AWS, GCP, Linux
Languages & Frameworks	Python, Java, C++, SQL, Shell, LaTeX, Spring, FastAPI, React
Databases	PostgreSQL, Redis, BerkeleyDB

Reference

Dr. Niranjan Balasubramanian	Associate Professor, Department of Computer Science, Stony Brook University
Dr. Muhammad Abdullah Adnan	Professor, Department of CSE, BUET
Dr. Faizul Bari	University of Waterloo, Chief Technology Officer at SSCL