

SAIKAT BARUA

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EDUCATION

North South University

2023

B.Sc. in Computer Science and Engineering

CGPA: 3.7/4.0

Courses: Machine Learning, Deep Learning, Data Mining, Pattern Recognition, Artificial Intelligence, Algorithms, Data Structure, Database Management System, Digital Logic Design, Compiler Design, Computer Networks, Operating System.

Chittagong College

2017

Higher Secondary Certificate (HSC)

GPA: 5.00/5.00

Group: Science

Ispahani Public School and College

2015

Secondary School Certificate (SSC)

GPA: 5.00/5.00

Group: Science

TEACHING EXPERIENCE

Research Assistant — North South University

2023 - Present

- Guided 50+ undergraduate students in research courses (CSE 499A, CSE 499B, and CSE 498R), providing mentorship and support throughout the research process.
- Assist faculty members with their ongoing research projects, contributing to data collection, analysis, and literature reviews.
- Assume primary responsibility for various research tasks, including experimental design, implementation, and results interpretation.

AI Research Instructor — MRA

2024 - Present

- Teach participants the fundamental concepts and methodologies of Artificial Intelligence research.
- Mentor 200+ participants in their individual research projects, providing guidance on project design, implementation, and evaluation.
- Collaborate with 50+ participants on research projects, contributing to idea generation, experimentation, and manuscript preparation.

Quantum Computing Research Instructor — MRA

2024 - Present

- Instruct participants in the core principles of Quantum Error Correction and Quantum Machine Learning research.
- Mentor 200+ participants in their research endeavors, providing guidance and support throughout the project lifecycle.
- Collaborate and Supervised 50+ participants on research initiatives, fostering a collaborative environment for knowledge sharing and innovation.

Teaching Assistant — North South University

2022 - 2023

- Mentored 250+ students in Machine Learning and Natural Language Processing courses, providing guidance on concepts and practical applications.
- Evaluated student quizzes and assignments, providing constructive feedback to enhance learning outcomes.

- Conducted online sessions to reinforce key course concepts and improve students' problem-solving abilities.

WORK EXPERIENCE

SpontAlign

Founder and Chief Scientist

2024 – Present

Dhaka, Bangladesh

- Define and drive the strategic direction of SpontAlign Research Lab, with the goal of establishing it as a global leader in Artificial Intelligence.
- Lead the design and development of innovative AI products and oversee all research publications originating from the lab.
- Cultivate and manage relationships with industry partners and clients, developing tailored enterprise AI solutions to meet their specific needs.

SpontHuman (NonProfit Organization)

Founder and Chief Scientist

2025 – Present

Dhaka, Bangladesh

- Lead research initiatives focused on the social impact of AI, exploring strategies to ensure equitable access and benefits for all (democratizing AI).
- Develop and execute AI awareness campaigns across various social media platforms by hosting podcasts, writing newsletters and generating reports on AI and society.
- Champion AI education by initiating and promoting open source AI projects, creating educational content on YouTube and Github.

PUBLICATIONS

Published Papers and Preprints

- **S. Barua** and S. Momen, “KAXAI: An Integrated Environment for Knowledge Analysis and Explainable AI,” *arXiv preprint arXiv:2401.00193*, 2023.
- **S. Barua**, S. E. U. Shubha, M. Rahman, A. J. Uchash and M. R. C. Mahdy, “RESCUED: Robust Quantum Error Correction with Surface Code in Noisy Channels using Ensemble Decoder,” *The 5th IEEE International Conference on Telecommunications and Photonics (ICTP) 2023*, 2024.
- **S. Barua**, M. Rahman, M. U. Saad, R. Islam and M. J. Sadek, “ELMAGIC: Energy-Efficient Lean Model for Reliable Medical Image Generation and Classification using Forward Forward Algorithm,” *The 3rd International Conference on Computing and Machine Intelligence (ICMI 2024)*, 2024.
- **S. Barua**, “Exploring autonomous agents through the lens of large language models: A review,” *arXiv preprint arXiv:2404.04442*, 2024.
- **S. Barua**, M. Rahman, M. J. Sadek, R. Islam, S. Khaled and M. S. Hossain, “PyGen: A Collaborative Human-AI Approach to Python Package Creation,” *arXiv preprint arXiv:2411.08932*, 2024.
- **S. Barua**, M. Rahman, M. J. Sadek, R. Islam, S. Khaled and A. Kabir, “Guardians of the Agentic System: Preventing Many Shots Jailbreak with Agentic System,” *arXiv preprint arXiv:2502.16750*, 2025.

Papers Under Review

- R. Abdullah, **S. Barua**, and M. R. Chowdhury, “Decoding Distress: An Explainable AI Approach to Suicide Risk Detection and Peer Support Analysis on Reddit,” *Under Review*.
- **S. Barua**, N. Tabassum, and S. Momen, “Predicting the Perception of transportation safety amongst Women commuters using Machine learning and Explainable AI,” *Under Review*.
- **S. Barua** and N. Innan, “QuXAI: Explainers for Quantum Machine Learning Models,” *Under Review*.
- **S. Barua**, Q. Xu, and T. Shariar “AI Agents for ALL: Multilingual Agentic System,” *Under Review*.

AWARDS AND HONORS

- 50% Merit-Based Scholarship, North South University.
- Magna Cum Laude Award for Excellent Academic Result, North South University.
- North South University Internal Research Grant, 2023-2024.
- Emerging Communication Technology Award, *The 5th IEEE International Conference on Telecommunications and Photonics (ICTP) 2023*.
- Presented Talks at *The 5th IEEE International Conference on Telecommunications and Photonics (ICTP) 2023* and *The 3rd International Conference on Computing and Machine Intelligence (ICMI 2024)*.
- Google Generative AI Best Volunteer Award (Online).
- Green Paper Award in ICMI 2024
- Top ten teams in EconProdigy 5.0
- Won 2000 dollars worth of prize money across multiple Kaggle Competitions

PRODUCTS DEVELOPED

- **Deep Research Arxiv:** The tool functions to automate complex literature review processes across the Arxiv repository for scientific researchers. Through automation the tool conducts an automatic search among relevant papers for synthesis into a Nature journal-formatted literature review.
- **Open DeepResearch:** The application supports detailed research activities on any selected subject. Open DeepResearch performs automatic information collection then analyzes and merges different sources into comprehensive reports which use proper citations.

TECHNICAL SKILLS

Programming Languages	Python, C, C++, Java
Frameworks/Libraries	NumPy, Matplotlib, Scikit-learn, SymPy, SciPy, Qiskit, Cirq, Pytorch, Langchain Pymatching, HuggingFace, Pydantic
AI	Supervised Learning, Unsupervised Learning, Deep Learning, Reinforcement Learning, Natural Language Processing, Explainable AI (XAI), Agentic AI, Responsible AI
Quantum Computing	Quantum Error Correction, Quantum Machine Learning, Quantum Algorithms
Tools	Git, Linux, Docker, Jupyter Notebook, VS Code
Databases	MySQL, PostgreSQL, MongoDB

REFERENCES

- **Dr. Mahdy Rahman Chowdhury**
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Department of Electrical and Computer Engineering
North South University
PhD, National University of Singapore
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- **Dr. Sifat Momen**
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PhD in Computer Science, University of Sheffield, UK
MSc in Electronics and Information Technology, Sheffield Hallam University, UK
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