

Md. Samiul Alim

AI FOR HEALTHCARE & NEUROIMAGING · VISION-LANGUAGE & MULTIMODAL LEARNING

Dhaka, Bangladesh

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“Advancing trustworthy AI at the intersection of language, vision, and society.”

Research Profile

Machine Learning researcher with a B.Sc. in Computer Science and Engineering (CGPA: 3.55/4.00) and a Minor in Mathematics, with six peer-reviewed publications, including **three Q1 journal articles** in *Knowledge-Based Systems*, *Neurocomputing*, and *PLOS ONE*, and an accepted paper at **AACL 2026**. My research spans **Natural Language Processing (NLP)**, **multimodal and vision-language learning**, **efficient and trustworthy AI**, and **AI for healthcare**. I am particularly interested in building robust, interpretable, and resource-efficient learning systems for language, vision, and multimodal data, with applications in low-resource and socially sensitive settings, healthcare, and real-world decision support. My experience includes large-scale NLP, multimodal representation learning, knowledge distillation, model pruning, medical imaging, and Responsible AI.

Highlights

- **3 peer-reviewed Q1 journal articles** — *Knowledge-Based Systems* (IF 8.0, first author), *Neurocomputing* (IF 6.7), *PLOS ONE* (IF 2.6), and .
- **3 peer-reviewed conference papers as first author** — AACL 2026, IEEE BigData 2025 (CORE B, 18.8% acceptance rate), and IEEE IC-CIT 2025.
- **2 manuscripts under review** at ICLR 2027 (CORE A*) and WACV 2026 (CORE A).
- Selected for the **UIUC++ SRSE 2026 Summer Research Program** at the University of Illinois Urbana-Champaign, researching Responsible AI and Human-Computer Interaction.
- **Two years as an undergraduate teaching assistant** across four mathematics courses (advanced calculus, engineering mathematics, PDEs, and numerical methods).
- Awarded a **75% merit scholarship** for sustained academic performance at North South University.

Research Interests

MY RESEARCH INTERESTS INCLUDE, BUT ARE NOT LIMITED TO:

- **AI for healthcare and neuroimaging** — diagnostic modelling on medical images, with explainability as a first-class requirement.
- **Vision-language models and multimodal learning** — cross-modal alignment, modality balancing, and tokenizer-free byte-level captioning.
- **Knowledge distillation, pruning, and model compression** — multi-teacher distillation, context-aware one-shot pruning, and efficient inference on resource-constrained hardware.
- **NLP and agentic systems** — large-scale sentiment analysis and LLM evaluation on politically sensitive text, alongside multi-agent systems, tool orchestration, and adaptive decision loops.
- **Responsible AI and human-computer interaction** — human-centred evaluation and the societal impact of deployed AI systems.

Education

North South University

Dhaka, Bangladesh

B.SC. IN COMPUTER SCIENCE AND ENGINEERING

Jul. 2021 – 2025

- Minor in **Mathematics**.
- **CGPA:** 3.55/4.00 (**Mark percentage:** 89% [[grading policy](#)]).
- **Academic Distinction:** Cum Laude.
- **Undergraduate thesis:** “Decoding Language-Agnostic Image Embeddings”.
- **Selected coursework:** Machine Learning, Pattern Recognition, Linear Algebra, Probability & Statistics, Numerical Methods, Partial Differential Equations.

Publications

Bold denotes my own name. Full list on [Google Scholar](#).

PEER-REVIEWED CONFERENCE PAPERS

- [C1] **Md. Samiul Alim**, M. S. Tamim, T. A. Khan, S. Khan, R. F. Dutti, S. Z. Ridoy, and M. A. Moni, “**Can LLMs Follow the Pulse of a Crisis? Evaluating Crisis Sentiment in Bangladesh’s July Uprising**,” in *Proc. Asia-Pacific Chapter of the Association for Computational Linguistics AACL(Main)*, Hengqin, China, 2026.
- [C2] **Md. Samiul Alim**, S. Khan, A. Biswas, F. Rahman, S. Rahman, and N. Mohammed, “**Teacher-Guided One-Shot Pruning via Context-Aware Knowledge Distillation**,” in *Proc. IEEE Int. Conf. Big Data (IEEE BigData)*, Macau, China, 2025. [CORE: B] [Acceptance rate: 18.8%] [[link](#)]
- [C3] **Md. Samiul Alim**, S. T. Mahir, R. Maisha, A. K. Tanvir, and A. Md Mushfique, “**When a Nation Speaks: Machine Learning and NLP in People’s Sentiment Analysis During Bangladesh’s 2024 Mass Uprising**,” in *Proc. IEEE Int. Conf. Comput. Inf. Technol. (ICCIT)*, 2025. [[link](#)]

- [J1] **Md. Samiul Alim**, M. S. Tamim, S. Sarkar, M. A. Yousuf, A. S. Al-Moisheer, S. A. Alyami, and M. A. Moni, “**Multi-Teacher Knowledge Distillation and Ensemble Algorithm for Efficient Brain Tumor Classification in Resource-Constrained Environments With Explainable AI**,” *Knowledge-Based Systems*, 2025. [Q1] [IF: 8.0] [link]
- [J2] M. S. Tamim, S. Khan, **Md. Samiul Alim**, T. A. Khan, S. Rahman, and N. Mohammed, “**CAT-GS: Calibrated Adaptive Gating for Balanced and Robust Multimodal Learning**,” *Neurocomputing*, 2026. [Q1] [IF: 6.7] [link]
- [J3] M. S. Tamim, **Md. Samiul Alim**, T. A. Khan, M. Rahman, and M. M. Anwar, “**Ensemble and Temporal Feature-Based Framework for Rainfall Classification in Bangladesh**,” *PLOS ONE*, 2026. [Q1] [IF: 2.6] [link]

MANUSCRIPTS UNDER REVIEW

- [U1] “**Where the Cache Lives: Diagnosing Memory-Space Geometry in Cache-Based CLIP Test-Time Adaptation**,” submitted to Conf. (ICLR), 2027. [CORE: A*] Under review.
In collaboration with [Prof. Pietro Liò](#), *University of Cambridge*.
- [U2] “**SphereAD: Hyperspherical Self-Reference for Training-Free Anomaly Localization Across Diverse Domains**” submitted to *IEEE/CVF Winter Conf. Applications of Comput. Vis. (WACV)*, 2026. [CORE: A] Under review.
- [U3] “**When Bytes Take It All: CLIPByte for Tokenizer-Free Captioning via Byte-Level Vision–Language Bridging**,” submitted to *IEEE/CVF Winter Conf. Applications of Comput. Vis. (WACV)*, 2026. [CORE: A] Under review.

MANUSCRIPTS IN PREPARATION

- [P1] “**Harness Recession: When Guidance Helps and When It Gets in the Way**” *In preparation*.
- [P2] “**Constructive KAN: Growing Kolmogorov–Arnold Networks for Symbolic Regression**” *In preparation*.
Neuroevolutionary optimization strategies for adaptive architecture and parameter learning in Kolmogorov–Arnold Networks (KANs).

Research Experience

University of Illinois Urbana-Champaign

Remote

SUMMER RESEARCH INTERN

Jul. 2026 – Present

- Selected for the **UIUC++ SRSE 2026 Summer Research Program**, a four-month fully remote research program at the University of Illinois Urbana-Champaign.
- Conducting research in **Responsible AI** and **Human–Computer Interaction (HCI)**. Supervised by [Dr. Sharifa Sultana](#).
- Collaborating with an international cohort of researchers from diverse backgrounds.

Computational Intelligence and Operations Laboratory (CIOL)

Remote

RESEARCH INTERN — VISION, LANGUAGE & AGENTIC SYSTEMS

Jan. 2026 – Present

- Supervised by [Dr. Dong-Kyu Chae](#) (Assistant Professor, Hanyang University), working across **computer vision**, **natural language processing**, and **agentic systems**: training-free visual anomaly localisation, LLM evaluation on politically sensitive text, and the design of reliable tool-using agents.
- Co-author (equal contribution) on **SphereAD**, a hyperspherical self-reference method for training-free anomaly localisation that transfers across domains without per-domain fitting. Under review at **WACV 2026** (CORE A).
- First author on **Harness Recession**, studying when scaffolding around a language model improves task performance and when it constrains an already capable model.

Apurba-NSU R&D Lab, North South University

Dhaka, Bangladesh

RESEARCH ASSISTANT

Dec. 2025 – Jun. 2026

- Supervised by [Dr. Nabeel Mohammed](#) and [Dr. Shafin Rahman](#), working on **multimodal learning** and **model compression**.
- Lead author on *Teacher-Guided One-Shot Pruning via Context-Aware Knowledge Distillation*, published at **IEEE BigData 2025** (CORE B, 18.8% acceptance), which uses context-aware knowledge distillation from a teacher to prune a network in a single shot, avoiding iterative prune-and-retrain cycles.
- Co-author (equal contribution) on **CLIPByte**, a tokenizer-free vision–language model for multilingual open-vocabulary image captioning across six typologically diverse languages, aligning a CLIP ViT-B/32 visual encoder with a ByT5-small byte-level decoder to remove tokenizer-induced out-of-vocabulary bottlenecks; submitted to **WACV 2026** (CORE A) as *When Bytes Take It All: CLIPByte for Tokenizer-Free Captioning via Byte-Level Vision–Language Bridging*.
- Also contributed to *CAT-GS: Calibrated Adaptive Gating for Balanced and Robust Multimodal Learning* (**Neurocomputing**, Q1) with the same group.

Charles Sturt University

Remote

RESEARCH ASSISTANT

Jan. 2024 – 2025

- Research in **AI for healthcare and neuroimaging**, supervised by [Dr. Mohammad Ali Moni](#) in collaboration with [Dr. Mohammad Abu Yousuf](#).
- Led work on **multi-teacher knowledge distillation for brain-tumor classification** with explainable-AI overlays for resource-constrained deployment. Published as first author in **Knowledge-Based Systems** (Q1, IF 8.0).
- Led work on **LLM evaluation of crisis sentiment** during Bangladesh’s July Uprising, testing whether large language models can track public sentiment on social media through the course of a national crisis. Published as first author at **AACL 2026** (Main): *Can LLMs Follow the Pulse of a Crisis? Evaluating Crisis Sentiment in Bangladesh’s July Uprising*.

Teaching Experience

Department of Mathematics and Physics, North South University

Dhaka, Bangladesh

UNDERGRADUATE TEACHING ASSISTANT

Jan. 2024 – Jan. 2026

- Teaching assistant for **MAT250** (Advanced Calculus), **MAT350** (Engineering Mathematics), **MAT480** (Partial Differential Equations), and **MAT481** (Numerical Methods).
- Maintained **20 hours per week** of office hours, guiding students through assignments and exam preparation.
- Assisted faculty members with preparing and grading assignments and designing course materials.
- Proctored **over 300 exams** across the two-year appointment.

Honors & Awards

2024 **Merit Scholarship (75%)**, North South University, for sustained academic performance

Dhaka, Bangladesh

2022 **2nd Runner-Up**, NSU ACM SC Programming Contest, NSU ACM Student Chapter [\[certificate\]](#)

Dhaka, Bangladesh

Technical Skills

Programming	Python, C, C++, Java, SQL (MySQL), HTML, CSS
ML / Research Stack	PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Matplotlib
Tooling	Git, Linux, LaTeX, MERN stack
Languages	English (fluent — academic and professional proficiency), Bangla (native)

Volunteer Experience

[Biggani.org](#)

Bangladesh

SCIENCE COMMUNICATION VOLUNTEER

2025 – Present

- Interview leading Bangladeshi scientists across the global research community, highlighting their research contributions, career journeys, and perspectives on careers in STEM.
- Develop accessible science-communication content that helps connect academic research with Bangladeshi students, early-career researchers, and the broader public.
- Contribute to Biggani.org's mission of promoting scientific literacy and increasing public engagement with impactful research and innovation. [\[link\]](#)

Academic Peer Review Service

PEER REVIEWER

2025 – Present

- Reviewed manuscripts for *Knowledge-Based Systems* (**Q1**, IF 8.0), Elsevier, 2026.
- Reviewed manuscripts for *Array* (**Q1**, IF 5.0), Elsevier, 2026.
- **NeurIPS Workshop Reviewer**: *SLM-Agents: 1st NeurIPS Workshop on SLMs for Agentic Systems*, 2026.
- Reviewed manuscripts for *PLOS ONE* (**Q1**, IF 2.3), 2025.

References

Dr. Mohammad Ali Moni, Ph.D. (University of Cambridge)

Brisbane, QLD, Australia

ARTIFICIAL INTELLIGENCE & DIGITAL HEALTH DATA SCIENCE

- School of Health and Rehabilitation Sciences, Faculty of Health and Behavioural Sciences.
- The University of Queensland, St Lucia, QLD 4072, Australia.
- Email: m.moni@uq.edu.au | Phone: +61 414 701 759.

Dr. Md. Mamun Molla, Ph.D. (University of Glasgow, UK)

Dhaka, Bangladesh

CHAIRMAN, DEPARTMENT OF MATHEMATICS & PHYSICS

- North South University, Dhaka, Bangladesh.
- Associate Fellow, Bangladesh Academy of Science (BAS).
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Dr. Mohammad Abu Yousuf, Ph.D. (Saitama University, Japan)

Savar, Dhaka, Bangladesh

PROFESSOR, INSTITUTE OF INFORMATION TECHNOLOGY

- Jahangirnagar University, Savar, Dhaka, Bangladesh.
- Former Professor, North South University.
- Former Vice-Chancellor, University of Frontier Technology, Bangladesh (UFTB).
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