

Tanvir Ahmed Khan

Dhaka, Bangladesh • tanvirahmedkhan74@gmail.com

[Research Portfolio](#) • [Google Scholar](#) • [GitHub](#) • [ORCID](#)

Education

North South University

Bachelor of Science in Computer Science and Engineering

Dhaka, Bangladesh

2021 – Dec 2025

- **CGPA: 3.80/4.00** | *Summa Cum Laude*
- Degree requirements completed December 2025.
- Relevant Coursework: Machine Learning, Pattern Recognition, Numerical Methods, Probability and Statistics, Introduction to Linear Algebra, Design and Analysis of Algorithms

Research Interests

Multimodal learning; retrieval, memory, and evidence-aware reasoning; video understanding; 3D vision and neural rendering; audio-driven facial animation; low-resource natural language processing.

Ongoing Research

ERL — Emergent Retrieval Landmark

2026 – Present

Study of candidate access, evidence selection, and reading in multi-hop QA. Preliminary findings motivate stronger-baseline comparisons; manuscript in preparation. [Research overview](#)

RIFT — Recoverability-Gated Implicit Facial Dynamics

Sep 2026 – Present

Exploratory study of speech-predictable motion and rendered articulation. Following a negative predictive pilot, the current RIFT-M focus is measurement reliability. [Research overview](#)

RSI — Capacity Growth in Verified Self-Improvement

Oct 2026 – Present

Investigating model expansion during verified self-training. Current work establishes reliable training data and experiment recovery; the growth hypothesis remains untested. [Research overview](#)

Publications and Manuscripts

- [1] Mahir Shahriar Tamim, Md. Samiul Alim, **Tanvir Ahmed Khan**, Maisha Rahman, and Md Musfique Anwar. “Ensemble and Temporal Feature-Based Framework for Rainfall Classification in Bangladesh.” *PLOS ONE*, 21(3): e0342646, 2026. [DOI](#).
- [2] Mahir Shahriar Tamim, Sharjil Khan, Md. Samiul Alim, **Tanvir Ahmed Khan**, Shafin Rahman, and Nabeel Mohammed. “CAT-GS: Balanced Multimodal Learning via Calibrated Gating and Fusion Surgery.” *Neurocomputing*, article 135392, 2026. [DOI](#); [Publisher](#).
- [3] Md. Samiul Alim, Mahir Shahriar Tamim, **Tanvir Ahmed Khan**, Sharjil Khan, Rafia Ferdous Duti, Shahriyar Zaman Ridoy, and Mohammad Ali Moni. “Can LLMs Follow the Pulse of a Crisis? Evaluating Crisis Sentiment in Bangladesh’s July Uprising.” *AACL-IJCNLP 2026*, Main Conference, accepted, 2026. [Open-Review](#); [arXiv](#).
- [4] Md. Samiul Alim, Mahir Shahriar Tamim, Maisha Rahman, **Tanvir Ahmed Khan**, and Md Mushfique Anwar. “When a Nation Speaks: Machine Learning and NLP in People’s Sentiment Analysis During Bangladesh’s 2024 Mass Uprising.” In *2025 28th International Conference on Computer and Information Technology (ICCIT)*, pp. 413–418, IEEE, 2025. [DOI](#).

Research Experience

Machine Intelligence Lab (MILab) | North South University

Mar 2025 – Present

- **Research Assistant.** Advisors: [Dr. Nabeel Mohammed](#) and [Dr. Shafin Rahman](#).
- Contribute to research in multimodal learning, low-resource NLP, and speech-driven visual systems, including the publications listed above.
- Developed distributed multi-GPU inference and chunked execution for collaborative talking-avatar systems; investigated Audio2Face–Three.js integration and ARKit blend-shape recovery.
- Collaborated with Niloy on the PersonaPlex–IMTalker pipeline deployed and evaluated on Jetson AGX Orin, including streaming, renderer studies, and acceleration.
- Distinguished renderer acceleration from end-to-end latency through profiling. Exploring a research-manuscript direction; client-side A/V timing and long-session behavior need further evaluation.

Selected Research and Engineering Projects

PNEUMA — Video Memory for Long-Form Question Answering Completed Dec 2025

Four-person undergraduate thesis under Dr. Nabeel Mohammed, integrating pretrained perception with SQL, multi-aspect vector retrieval, and temporal memory. Retrieval and visual grounding need further evaluation. [Research overview](#)

Saliency Detection via Knowledge Distillation Aug 2024 – Dec 2024

Knowledge-distillation prototype using a Peekaboo/DINO teacher and UKAN student with mask-supervised and teacher–student objectives. [GitHub](#)

DynApex: Dynamic CPU/GPU Parallelization Aug 2024 – Dec 2024

C++ prototype for dependency and cycle analysis, pragma injection, and OpenMP-based CPU and target execution. [GitHub](#)

Industry Experience

Tuctuc | Spain (Remote)

Jan 2022 – Jun 2026

- **Junior Software Engineer.** Maintained and extended Odoo-based ERP systems and developed cross-platform mobile applications using React Native.

Technical Skills

Machine Learning: PyTorch, Hugging Face Transformers, Knowledge Distillation, Multimodal Fusion

Vision & Avatar Systems: 3D Gaussian Splatting, FLAME/3DMM, NVIDIA Audio2Face, ARKit Blend Shapes

Retrieval & Memory: Retrieval-Augmented Generation, FAISS, SQL, Temporal Graphs, Sentiment Analysis

Systems & Deployment: Multi-GPU Inference, TensorRT, Docker, Linux, NVIDIA Jetson AGX Orin, FastAPI, Git

Programming: Python, C++, JavaScript, React Native

Languages: Bangla (Native), English (C1)

Awards & Honors

Academic Scholarship, North South University 2023

Participant, ICPC Asia Dhaka Preliminary Contest 2021