Niloy Sarker

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Education

Shahjalal University of Science and Technology (SUST) 2022 –

B.Sc. in Computer Science and Engineering

- CGPA: 3.51

SKILLS

AI/ML, LLM & RAG, PostgreSQL, FastAPI, IoT, Problem Solving, Object-Oriented Programming, Data Structures & Algorithms, **Leadership & Coordination (**3 years of experience as President and former R&D Secretary of RoboSUST.)

Projects

PaperSense–Research Paper Assistant | *FastAPI, Qdrant, Sentence-Transformers, Ollama, PostgreSQL* Link

- Built a production-ready **RAG system** for academic papers with section-aware PDF parsing, semantic chunking, Qdrant-based retrieval, and citation-grounded LLM responses via scalable APIs.

HackMatch | *FastAPI, Python, SQLAlchemy, PostgreSQL* Link

- A backend focused, centralized hackathon platform for Bangladeshi universities where companies actively scout and recruit talent, featuring smart discovery, team workflows, and a scalable FastAPI-PostgreSQL backend.

Code Samurai Hackathon 2024 | *React, MongoDB, JavaScript, CSS* Link

- Collaborative project developing a smart end-to-end waste management system for Dhaka, React-based citizen-facing features for reporting, tracking, and engagement.

Machine Learning Experience

- Top performer (**1st among SUST) in DL ENIGMA** Object Detection by optimizing real-world data pre-processing, adopting RT-DETR for deployment readiness, and applying WBF ensembling, **yielding a 4% accuracy boost.**
- Developed an OCR–VLM multimodal analysis pipeline, experimenting with multiple OCRs before adopting NanoNet **(achieving 78% accuracy)** and fine-tuning a VLM with self-curated processed data and CoT-based prompting for CUET PoliMeme Kaggle Datathon.
- Developed an **ASR-LLM pipeline**, evaluating STT models to finalize Tugstugi and fine-tuning an LLM for regional-to-standard text conversion, yielding **85% accuracy** for SHOBDOTORI CUET Datathon.
- Built end-to-end fraud detection pipeline having extensive feature engineering, and GPU-accelerated XGBoost ensemble, achieving **90.4% accuracy with robust data wrangling.**

Research Experience

- **First-author** paper accepted at 2nd IEEE Conference on Computing Applications and Systems (COMPAS 2025): Bangla Speech to IPA Transcription: A Multi-Stage Transformer-Based Approach
- Ongoing thesis research: **Transformer-based sign language recognition from video with gloss sequence generation, and Bangla tabular OCR for structured table reconstruction.**

Achievements

- **Ranked 1st among SUST students** in Object Detection (DL ENIGMA, SUST CSE Carnival); placed 4/46.
- **Finalist (was in top 10 % out of 400+ teams)** in CODE SAMURAI Bangladesh's largest hackathon.
- **Finalist (top 15%)** in UIU Bhashamul, with skill of **IPA-to-text conversion, data pre-processing, sequence modeling.**