Syed Mehedi Hasan Nirob

Prospective PhD Student | AI Engineer

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Summary

Computer Science graduate and AI engineer with experience building production LLM systems and conducting machine learning research. My recent research includes AI-generated code/image detection, robustness evaluation, and question classification. I am interested in trustworthy AI, language model evaluation, multilingual NLP, and AI-assisted software engineering, with the goal of pursuing a PhD in Computer Science.

Education

Bachelor of Science in Computer Science and Engineering
Shahjalal University of Science and Technology 2012–2016
CGPA: **3.53/4.00** (Final-year/last two semester GPA: **3.70/4.00**)
WES-evaluated GPA: **3.60/4.00**

Research Interests

ML/AI Systems, Software Engineering, NLP, Generative AI, Trustworthy AI, and Human-Centered Systems

Research Projects and Publications

1. **Evaluating Handcrafted Features and Gradient-Boosted Classifiers for AI-Generated Image Detection**
   S. M. H. Nirob et al. | *iCONEECT 2026 — Accepted and presented* | Earlier preprint
   - Benchmarked handcrafted spatial, texture, and frequency features with classical and gradient-boosted classifiers on CIFAKE, evaluating detection performance and probability calibration.
   - LightGBM with feature fusion improved **F1 from approximately 0.90 to 0.94** over baseline features.
2. **Beyond Whitespace: Evaluating Machine-Generated Code Detectors Under Formatting Shifts**
   S. M. H. Nirob et al. | *Under review, 2026* | Earlier preprint
   - Compared handcrafted feature models, CodeBERT-based classifiers, and score-level fusion, using feature ablations and dataset checks to investigate detection reliability.
   - Achieved **F1 $\approx$ 0.97**; controlled formatting tests revealed substantial sensitivity to Black formatting and AST normalization, highlighting limitations of benchmark accuracy.
3. **Question Classification Using Support Vector Machine with Hybrid Feature Extraction Method**
   S. M. H. Nirob, M. K. Nayeem, and M. S. Islam | *IEEE ICCIT, 2017 — Published* | Publication DOI
   - Developed an SVM classifier for Bangla factoid-question including Wikipedia data collection.
   - Evaluated unigram and question-structure features through five-fold cross-validation, achieving **89.14% mean classification accuracy** using the 380 most frequent unigram features.
4. **Impact of AI-Assisted Software Development Tools on Software Engineers in Bangladesh** *(Ongoing)*
   Conducting a survey-based empirical study on how AI-assisted software development tools affect productivity, skill development, and career perceptions among software engineers in Bangladesh.

Relevant Professional Experience

Recruit | Full-Stack Software Engineer 2024–Present

- Contributed to healthcare and developer-productivity platforms focusing on system architecture, usability, maintainability, and scalable user-facing systems.
- Developed AI-enabled applications and responsibilities included software architecture, AI integration, backend systems, and technical leadership.

Toptal | AI Engineer 2025–2026

- Developed LLM-based customer service systems integrating WhatsApp conversational interfaces, product recommendations, and structured business data retrieval.
- Designed, developed, and deployed production-scale privacy-sensitive AI systems, administrative dashboards, developer platforms, and cloud applications across multiple client projects.

Retune (retune.so) | Founding Engineer 2022–2024

- Built and scaled a production LLM/RAG chatbot, solved practical challenges in generative AI, including hallucination reduction, retrieval reliability, response quality, and user trust in AI-generated answers.
- Worked closely with users through demos, technical onboarding, and community support, gaining practical insights into human-AI interaction (HCI).

iHealthScreen (ihealthscreen.org) | Intern 2018

- Contributed to software and research for diabetic screening by supporting retinal image processing workflows, gaining early experience with applied AI/healthcare technology.

Projects and Additional Research Experience

- **Language Identification from Text Documents:** Applied Multinomial Naive Bayes and Logistic Regression to character and word n-gram features from the DSL dataset for language identification.
- **Data Harmonization Dashboard:** Built a pre-RAG platform to map inconsistent source data into a standardized schema and index harmonized records in Pinecone with embeddings for downstream retrieval.
- **AnyConnect:** Collaborated on integrating AI-enabled edge devices focusing real-time communication.

Technical Skills

- **Programming:** JavaScript/TypeScript, Python, C/C++, Java, SQL
- **Software and Infrastructure:** React, Next.js, Node.js, Docker, databases, cloud deployment
- **Generative AI:** AI agents, LangChain/LangGraph, prompt engineering, vector search, chatbot workflows
- **Machine Learning:** PyTorch, scikit-learn, Hugging Face, XGBoost, LightGBM, CatBoost, pandas
- **Research Methods:** Experimental design, survey, feature engineering, statistical analysis, model evaluation

Teaching and Community Leadership

- **Trainer:** Trained more than 100 university students in competitive programming. Solved more than 1,000 problems across platforms including UVA, Codeforces, and Topcoder.
- **Hackathon and Contest Judge:** Designed programming problems for 5 national inter-university contests (500+ teams), helped sponsor a national hackathon and served as a judge.

Competitions and Awards

- **Scholarships:** Monthly stipend for sustained academic excellence, first-year university scholarship.
- **Contests:** Three Top-10 in national and a top-20 finish at the ICPC Asia Dhaka Regional contests.

Test Scores

TOEFL: 99 (R-22, L-26, S-25, W-26) **GRE:** 311 (Verbal-154, Quant-157, AWA-3)