

# Md Nafiu Rahman

📍 Dhaka, Bangladesh 📩 nafiu.rahman@gmail.com 📞 +88 01933-002218 💻 nafiu-rahman.vercel.app  
👤 mdnafurahman 🎓 Md Nafiu Rahman 💬 nafurahman00

## About Me

I am a curious and driven computer science student and researcher with a keen interest in software engineering and LLMs. I enjoy the art of teaching.

## Education

<b>Bangladesh University of Engineering &amp; Technology (BUET)</b> , Dhaka	<i>Feb 2020 – Mar 2025</i>
B.Sc. in Computer Science & Engineering CGPA: 3.81 / 4.00 (Final year: 3.94 / 4.00)	
○ Relevant coursework: Data Structures & Algorithms, Object Oriented Programming, Software Engineering, Database Systems, Numerical Methods, Machine Learning.	
<b>Notre Dame College</b> , Dhaka	<i>Jan 2017 – Jan 2019</i>
Higher Secondary Certificate	GPA: 5.00 / 5.00
<b>Bir Shrestha Noor Mohammad Public College</b> , Dhaka	<i>Jan 2009 – Dec 2016</i>
Secondary School Certificate	GPA: 5.00 / 5.00

## Professional Experience

<b>Lecturer, Department of CSE, BRAC University</b> , Dhaka	<i>July 2025 – Present</i>
○ Teaching undergraduate courses including Numerical Methods and Software Engineering. I design course materials, assignments, and practical labs with an emphasis on clear, reproducible programming and sound engineering practices.	
<b>Research Assistant, Department of CSE, BUET</b> , Dhaka	<i>Mar 2025 – June 2025</i>
<i>Supervisor: Dr. Anindya Iqbal</i> ○ Worked on a pipeline to generate detailed test cases from web user interfaces using Large Language Models.	

## Research Experience

**Secret Breach Detection in Source Code with Large Language Models.**  
Authors: Md Nafiu Rahman, Sadif Ahmed, Zahin Wahab, Rifat Shahriyar, S. M. Sohan.  
[\(ESEM 2025 Technical Track\)](#)

*Accepted at ESEM 2025 Technical Track*

We propose a hybrid LLM-based framework for secret detection in source code, combining regex-based extraction with LLM classification to reduce false positives. Fine-tuned open-source models, including LLaMA-3.1 8B and Mistral-7B, achieve up to 0.985 F1 and 0.982 accuracy on a large GitHub benchmark.

**Contributions:** Developed the complete end-to-end pipeline, conducted experiments across all evaluation settings, and formulated detailed analyses.

**BanglaForge: LLM Collaboration with Self-Refinement for Bangla Code Generation.**

Authors: Mahir Labib Dihan, Sadif Ahmed, Md Nafiu Rahman.

[\(Code\)](#)

*Accepted at BLP Workshop at ACL-IJCNLP 2025*

We introduce BanglaForge, a framework to generate executable code from Bangla natural language descriptions using retrieval-augmented dual-model collaboration and iterative self-refinement. The system achieves 84.00% Pass@1 accuracy on the BLP-2025 benchmark.

**Contributions:** Contributed to developing the pipeline, created the glossary for language translation and prepared the dataset for RAG-based approach.

**Secret Leak Detection in Software Issue Reports using LLMs: A Comprehensive Evaluation.**

Authors: Sadif Ahmed, Md Nafiu Rahman, Zahin Wahab, Rifat Shahriyar, Gias Uddin.

[\(arXiv\)](#)

*Submitted at MSR 2026 Technical Track*

We introduce a hybrid pipeline for detecting secret leaks in GitHub issue reports using regex extraction and contextual LLM classification. Fine-tuned models such as Qwen and LLaMA achieve up to 94.49% F1 and generalize well to real-world repositories (81.6% F1).

**Contributions:** Conducted the motivational survey, curated and annotated the dataset, developed the full detection pipeline, ran experiments across all models and settings, and formulated the evaluation and analysis.

#### **ISSUEGUARD: Real-Time Secret Leak Prevention Tool for GitHub Issue Reports.**

Authors: Md Nafiu Rahman, Sadif Ahmed, Zahin Wahab, Rifat Shahriyar, Gias Uddin.

([Code](#)) ↗

*Accepted at SANER 2026 Tool Track*

We introduce IssueGuard, a real-time tool that detects sensitive information in GitHub issues before posting. Leveraging a fine-tuned CodeBERT model, LRU caching, and AMP precision, the system offers fast and accurate inference. A user study with 50 participants demonstrates its effectiveness and usability.

**Contributions:** Developed the complete tool, designed an efficient backend with caching, asynchronous threading, and mixed precision inference, and implemented the end-to-end browser extension.

#### **A Survey on Agentic Security: Applications, Threats and Defenses.**

Authors: Asif Shahriar, Md Nafiu Rahman, Sadif Ahmed, Farig Sadeque, Md Rizwan Parvez.

([arXiv](#)) ↗

*Submitted at EACL 2026*

The first comprehensive survey of agentic security, reviewing 150+ papers from 2024 and 2025. The work organizes the field into three pillars, Applications, Threats, and Defenses, providing a unified framework to understand LLM agents in cybersecurity contexts.

**Contributions:** Contributed to creating the taxonomy and systematically gathering and categorizing papers for the survey.

#### **Explainable Transformer-CNN Hybrid for Modeling Brain Aging from MRI Images.**

Authors: Wasif Jalal, Md Nafiu Rahman, Md Sohel Rahman.

([arXiv](#)) ↗

*In preparation for submission*

Ongoing research on hybrid Transformer-CNN models for brain-age prediction, emphasizing explainability and interpretable fusion of slice-wise and volumetric MRI representations.

**Contributions:** Contributed to pipeline design, MRI preprocessing, and running experimental evaluations.

#### **EVCC: Enhanced Vision Transformer-ConvNeXt-CoAtNet Fusion with Adaptive Routing for Classification.**

Authors: Kazi Reyazul Hasan, Md Nafiu Rahman, Sadif Ahmed, Wasif Jalal, Shahriar Raj, Mubashira Musarrat, Muhammad Abdullah Adnan.

([Paper](#))

*Ongoing*

EVCC is a multi-branch hybrid architecture combining Transformers and convolutional backbones through adaptive token pruning, gated cross-attention, and dynamic routing. The model improves accuracy-efficiency trade-offs with significant FLOP reductions.

**Contributions:** Contributed to running and managing experimental evaluations.

## **Technical Skills**

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**Data Science & ML:** Python, NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow, Torchvision.

**Databases:** PostgreSQL, PL/pgSQL, MongoDB, Firebase Firestore.

**Full-Stack:** Node.js (backend), HTML/CSS, React, Svelte, Flutter.

**Languages:** C/C++, Python, Java, JavaScript / TypeScript, PHP, Bash, Dart.

## **Language Proficiency**

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**Bengali** Native

**English** IELTS Overall 8.0 – Listening: 9, Reading: 9, Writing: 7, Speaking: 6.5

## Achievements

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- Top 20 finalists Robi Datathon 2024 (national deep learning competition).
- Deans list award and university merit scholarship at BUET.
- 5th at BLP 2025 Code Generation Challenge

## Academic Projects

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- **Machine Learning Algorithms and Neural Network from Scratch** – [github.com/nafiurahman00/CSE-472](https://github.com/nafiurahman00/CSE-472) – Implementations of core ML algorithms (logistic regression with ensembles, PCA/SVD for reconstruction, EM clustering) and a feed-forward neural network with Adam optimizer built from numpy.
- **Cryptography and Security Attacks** – [github.com/nafiurahman00/CSE-406](https://github.com/nafiurahman00/CSE-406) – Implemented AES encryption and Diffie-Hellman key exchange, socket communication demos, and reviewed a mobile pentesting framework as part of course project.
- **Network Simulation** – [github.com/nafiurahman00/CSE-322](https://github.com/nafiurahman00/CSE-322) – Implemented Congestion Control Algorithm, threaded server-client sockets, error correction algorithms and simulated wired/wireless mobility scenarios.
- **Operating System Internals with xv6** – [github.com/nafiurahman00/CSE-314](https://github.com/nafiurahman00/CSE-314) – Implemented threading and synchronization primitives, system calls, and explored scheduler internals in xv6.
- **BusBuddy (Android)** – [github.com/nafiurahman00/BusBuddy-Client-End](https://github.com/nafiurahman00/BusBuddy-Client-End) – Flutter app with Node.js backend, PostgreSQL and Firebase integration. Provided ticketing, schedules, tracking and real-time updates for university bus users.
- **Nishorgo (E-commerce)** – [Term-Project-2-2-Nishorgo](#) – Full stack e-commerce site for plant sales with filtering, cart, admin analytics and order management.
- **Compiler (subset of C)** – [github.com/nafiurahman00/Compiler](https://github.com/nafiurahman00/Compiler) – Subset-of-C compiler using Lex/Yacc and 8086-style assembly generation: lexer, parser, and intermediate code generation.
- **Catch the Egg (Game)** – [github.com/nafiurahman00/Catch-The-Egg](https://github.com/nafiurahman00/Catch-The-Egg) – OpenGL / Igraphics game for catching falling eggs; implemented game mechanics, scoring and difficulty scaling.

## References

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- **Dr. Rifat Shahriyar**, Professor, Department of CSE, Bangladesh University of Engineering and Technology (BUET) – [rifat.shahriyar@gmail.com](mailto:rifat.shahriyar@gmail.com) – [rifat@cse.buet.ac.bd](mailto:rifat@cse.buet.ac.bd)
- **S. M. Sohan**, Senior Engineer, Google – [sohan39@gmail.com](mailto:sohan39@gmail.com)
- **Dr. Md Rizwan Parvez**, Scientist, Qatar Computing Research Institute (QCRI) – [rizwan@ucla.edu](mailto:rizwan@ucla.edu) – [rizwan.inciipient@gmail.com](mailto:rizwan.inciipient@gmail.com)
- **Dr. Farig Sadeque**, Associate Professor, Department of CSE, BRAC University – [farig.sadeque@bracu.ac.bd](mailto:farig.sadeque@bracu.ac.bd)