Mashiat Amin Farin

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Education

University of Texas at Dallas, PhD in Software Engineering **Expected:** May 2028
Advisor: Dr. Bhavani Thuraisingham
University of Texas at Dallas, MS in Software Engineering
University of Dhaka, BS in Software Engineering

Research Interests

SE for AI and LLMs, Empirical Software Engineering, Software Ecosystems and Socio-Technical Systems, Human Factors in SE

Publications

"Towards Reliable AI-Assisted Behavioral Modeling: Evaluating Prompting, Retrieval, and Repair Strategies for UML State Transition Diagram Generation", MM Faria, **MA Farin**, Y Sazid, A Kabir, ESEM 2026.

"Mapping Decentralized Autonomous Organization Governance Across Chains: An Updated, Multi-Platform Dataset", **MA Farin**, S Hassan, J Arroyo, MSR 2026.

"A Four-Axis Systematization of AI and Cybersecurity in the Era of Large Language Models", **MA Farin**, B Thuraisingham, IEEE BigDataSecurity 2026.

"HealthChain: A Blockchain-Based Framework for Electronic Health Record Management System", **MA Farin**, et al., IEEE/ACM WETSEB 2025.

"Unlocking DeFi Literacy: Understanding NFT Market Microstructure in the Decentralized Finance Landscape", S Sikder, **MA Farin**, MA Islam, T Tahlil, MT Ahmed, IEEE ICBC 2024.

Under review: "Mapping WCAG Success Criteria to COGA Objectives and Patterns", CMR Sanchez, **MA Farin**, S Wei.

Development Skill Set

Languages:	Python, Java, C++, R, SQL, Solidity
LLMs & AI Tools:	RAG (ChromaDB), Ollama, Llama, Mistral, Qwen, DeepSeek, prompting, PlantUML
Software Engineering & Data Science:	Pandas, NumPy, Scikit-Learn, GraphQL, Jupyter, Docker, Git
Web & Distributed Systems:	React, Node.js, Flask, Hyperledger FireFly, Hyperledger Besu, PostgreSQL, MongoDB

Research Experience

University of Texas at Dallas | *Research Assistant* ***Jan 2026 - Present***
- Systematized 422 studies (PRISMA) into a four-axis AI and cybersecurity taxonomy mapped to MITRE ATT&CK and NIST CSF.
- Studied trustworthy LLM integration patterns in SE workflows, shaping recommendations for reliable human-AI collaboration.
- Analyzed AI software systems to identify reliability and security failure modes, informing risk-mitigation research.

Universidad Complutense de Madrid | *Research Assistant* ***Apr 2025 - Present***
- Built a DAO governance dataset of 86K DAOs, 339K proposals and 67M votes across 6 platforms, released on Zenodo.
- Analyzed voting dynamics across 85K DAOs, revealing power concentrated in 15% of participants.
- Investigating software ecosystem health, structural risk, and decentralized socio-technical networks for the CATALYST project.

Data & Design Lab, CSE, University of Dhaka | *Research Intern* ***Nov 2023 - Feb 2025***
- Analyzed load data from 4 Dhaka substations, flagging quality issues limiting forecast reliability.
- Improved seasonal load forecast accuracy 25% by developing and evaluating ML models.

IIT, University of Dhaka | *Research Associate* ***Jan 2023***
- Contributed to research on machine-learning-based cyberattack prediction and threat intelligence systems.
- Conducted experimental evaluations of machine learning models and analyzed performance across multiple datasets.
- Presented research findings through workshops and technical demonstrations.

IIT, University of Dhaka | *Undergraduate Student Researcher – Computer vision under Dr. Mohammad Shoyaib* ***Aug – Dec 2022***
- Surveyed activity recognition and computer vision techniques for industrial applications.
- Analyzed contemporary research directions and methodological trends in computer vision systems.

IIT, University of Dhaka | *Undergraduate Student Researcher – NLP under Dr. Ahmedul Kabir* ***May 2022 – May 2023***
- Investigated Bangla language resources including word embeddings, stemming techniques, and hate speech datasets.
- Conducted literature reviews and exploratory analyses of NLP methodologies for low-resource languages.

Research grants

CATALYST: Strengthening Collaboration in Socio-economic Networks with Explainable Graph Intelligence ***2026–2029***
Spanish State Research Agency (AEI), PID2025-168174OB-I00

- Research Collaborator investigating AI-driven methods for analyzing software ecosystems and socio-technical networks.
- Contributing to empirical software engineering research on ecosystem mapping, health metrics, and structural risk modeling.

Academic Programs

Summer School in the Security and Governance of Collective Digital Infrastructures (SGCDI 2026) ***Jul 2026***
Max Planck Institute for Security and Privacy, Germany

- Attended lectures and discussions with researchers in SE, security, digital governance, and collective digital infrastructures.
- Analyzed participant-generated artifacts to assess learning outcomes and interdisciplinary knowledge exchange.

Awards and Honors

2026 SIGSOFT CAPS Award for MSR 2026
2026 8th place, 2026 Spring IEEE International Contest on Software Testing
2024 Finalist at International Blockchain Olympiad 2024
2024 Honorable mention at National Blockchain Olympiad 2024
2022 Bronze medal at SDG:3 Category in International Blockchain Olympiad

Professional Experience

Brain Station 23 | *Associate Software Engineer* ***Jan - Nov 2024***

- Cut smart contract transaction costs 15% by benchmarking optimization techniques for production deployments.
- Strengthened pre-deployment security review by researching auditing approaches, surfacing 7 vulnerability classes.
- Cut query latency 37% by researching GraphQL-based blockchain indexing and retrieval.

Grameen Communications | *Blockchain R&D Intern* ***Jun-Jul 2023***

- Researched the existing microcredit system to assess blockchain's potential for enhancing security.
- Developed a blockchain prototype of the microcredit system with custom smart contracts to secure transactions.

Selected Projects

LLM-Based UML State Diagram Generation | Python, LLM APIs **Mar 2026**

- Evaluated zero/one/few-shot prompting, RAG (4 corpus setups), and iterative repair across 4 local LLMs via Ollama.
- Built an automated validator (PlantUML syntax + 11-rule graph analysis) scoring 1,169 diagrams; human-rated 120.
- Few-shot prompting lifted syntactic validity 28.7% to 93.5%; repair lifted DeepSeek's structural validity 22.2% to 88.9%.
- Findings accepted for publication at ESEM 2026.

FinCube | Solidity, Hardhat, The Graph, NestJS, React **Mar 2024**

- Designed a decentralized governance model for cross-border currency exchange to cut cost and improve transparency.
- Built smart-contract mechanisms for currency swaps, voting, and business registration, enabling secure P2P transactions.
- Implemented blockchain indexing infrastructure bridging decentralized and traditional systems.

DriveChain | Solidity, Hyperledger FireFly, React **Jun 2023**

- Designed a blockchain architecture for transportation licensing, registration, and taxation, replacing manual paper records.
- Built smart-contract automation and document authentication, reducing tampering/forgery risk.
- Explored NFT-based vehicle ownership to modernize registration and asset transfer.

HealthChain | Solidity, Hyperledger FireFly, React **Mar 2022**

- Led a four-member team in designing a distributed healthcare record system for large-scale patient record management.
- Conducted an extensive review of healthcare infrastructure challenges and blockchain-based healthcare solutions.
- Developed a decentralized framework for secure and auditable electronic health record management.

Hate speech analysis from social media comments | Pandas, NLTK, NumPy, Google Colaboratory, Python **Jul 2022**

- Evaluated machine learning models for Bangla hate speech classification using a corpus of 50,000 social media comments.
- Compared multiple learning approaches including Logistic Regression and SVM using TF-IDF feature representations.
- Achieved 89% classification accuracy on the evaluation dataset.

LEADERSHIP & SERVICE

Shadow Program Committee Member, ICSE 2027 (International Conference on Software Engineering)
Junior Program Committee Member, MSR 2027 (International Conference on Mining Software Repositories)
IEEE Computer Science Student Branch University of Dhaka | *General Secretary for Fiscal year 2023*
IIT Software Engineering Community | *Vice President for Fiscal year 2023*