

# Mahfuzur Rahman Emon

Lecturer, Institute of Information and Communication Technology

Shahjalal University of Science and Technology

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 [SUST Profile](#) |  [Portfolio](#) |  [LinkedIn](#) |  [Github](#) |  [Google Scholar](#)

## EDUCATION

### • Shahjalal University of Science and Technology

Feb 2018 - Jan 2023

Bachelor of Science in Software Engineering

Sylhet, Bangladesh

CGPA: 3.89/4.00

- Graduated with distinction, securing 2nd position in a class of 50
- Relevant coursework: Data Structures and Algorithms, Software Requirements Engineering, Software Architecture and Design Patterns, Software Verification and Validation, Data Science, Artificial Intelligence, Machine Learning

## RESEARCH INTEREST

Software Engineering automation: intelligent bug detection and repair, test case generation, code completion, and AI/LLM-based tools to enhance developer productivity.

## RESEARCH EXPERIENCE

### • Undergraduate Research Supervisor


Mar 2024 - Present

Software Engineering, IICT, Shahjalal University of Science and Technology

- Supervising and have supervised 4 undergraduate research groups on diverse topics in software engineering and artificial intelligence.
- Advising students on idea development, literature review, research methodology, modeling techniques, and academic writing.

### • Research Assistant

Oct 2021 - Jan 2023

Bengali.AI 

- Directed a team of 13 annotators in creating BaDLAD, the most extensive multi-domain Bengali Document Layout Analysis Dataset, featuring 33,700 document images and over 710,000 polygon-based annotations.
- Standardized annotation exports, conducted in-depth data analysis and visualizations, and optimized the dataset for machine learning compatibility and validation workflows.

## PUBLICATION

1. MIH Shihab, MR Hassan, **M Rahman**, +14 authors. BaDLAD: A Large Multi-Domain Bengali Document Layout Analysis Dataset. In *International Conference on Document Analysis and Recognition (ICDAR)*, pages 326-341, August 2023. DOI: [https://doi.org/10.1007/978-3-031-41676-7\\_19](https://doi.org/10.1007/978-3-031-41676-7_19).

## RESEARCH IN PROGRESS

### • Comparisons of Large Language Models for JavaScript Test Case Generation

Apr 2025 - Present

Ongoing

- Investigating the effectiveness of LLMs in generating Jest and Selenium test cases under different prompt conditions. The work involves dataset construction, prompt engineering, mutation testing, and coverage analysis with two undergraduate students.

### • Evaluating LLM-Generated Commit Messages with Code and Issue Context

May 2025 - Present

Ongoing

- Exploring how LLMs generate commit messages using code diffs and issue descriptions. The project includes dataset curation, prompt design, metric development, and validation with expert feedback, involving two undergraduate students.

## • Early Detection of Task Failures in Cloud Computing

Jan 2025 - Jul 2025

*Submitted for review (Vietnam Journal of Computer Science), under peer review*

- Proposed and implemented a machine learning framework in collaboration with two undergraduate students to predict task failures in cloud computing using the Google Borg Cluster Trace dataset.

## PROFESSIONAL EXPERIENCE

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### • Lecturer - Software Engineering

Nov 2023 - Present

*Institute of Information and Communication Technology - Shahjalal University of Science and Technology*

Sylhet, Bangladesh

- Teaching a diverse range of courses including Software Verification and Validation, Software Architecture and Design Patterns, Algorithm Design and Analysis, and Introduction to Software Engineering.
- Mentoring students on their software engineering academic projects while also familiarizing them with industry-standard practices and techniques.
- Collaborating with students and colleagues on research initiatives.
- Conducted training on Python programming and basic data science for undergraduate students without a technical background under the EDGE project by the Government of Bangladesh.

### • Adjunct Faculty

Jun 2023 - Present

*Army Institute of Business Administration, Sylhet*

Sylhet, Bangladesh

- Teaching the “Computer and Its Application in Business” course, covering fundamental topics such as number systems, operating systems, cyber awareness, basic networking, and computer hardware/software. Conducting lab sessions on practical IT skills.

### • Assistant Software Engineer

July 2023 - Nov 2023

*Dynamic Solution Innovators*

Dhaka, Bangladesh

Tools: [Typescript, ReactJS, JQuery, Java, Spring Boot, ActiveMQ, Redis, MongoDB]

- Worked on a large-scale Spring MVC project for managing campaign-driven offers, ads, and direct mail operations for the InfoReach application.
- Developed RESTful services using Spring Boot, Express.js, and Node.js to support advanced AJAX-based functionalities, and contributed to building a custom React.js editor for creating targeted email, SMS, and ad campaigns.

### • Junior Software Engineer

Mar 2022 - Jun 2023

*Dynamic Solution Innovators*

Dhaka, Bangladesh

Tools: [Java, Spring Boot, OpenHIM, Docker, MongoDB, MySQL, JavaScript, ReactJS, fhir]

- Designed and implemented core elements of the Health Data Architecture (HDA) project, including a microservice bus powered by OpenHIM, to enable smooth data exchange and interoperability between healthcare systems, along with the patient portal.
- Contributed to the OpenCRVS platform by improving the Client Microservice (e.g., Record Audit, Work Queue, Configuration) and supporting development of the User-Management and API-Gateway microservices, including writing unit tests and performing code reviews.

### • Software Engineer Intern

Sep 2021 - Feb 2022

*Dynamic Solution Innovators*

Dhaka, Bangladesh

Tools: [Typescript, ReactJS, GraphQL, Jest, MongoDB]

- Created a simple ToDo application and a mock E-Commerce website with mock API.
- Worked on OpenCRVS and performed bug fixes on a client microservice, contributed to the development of a component library, and implemented enhancements to the user profile and form-field generator features.




## TECHNICAL SKILLS

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- **AI Development Toolkit:** LLMs, Pandas, NumPy, Matplotlib, Scikit-learn, Jupyter Notebook
- **Languages:** JavaScript, Typescript, Java, C, C++, Python
- **Web Technologies:** ReactJS, Angular, HapiJS, NodeJS, GraphQL, Rest, Spring Boot, Redux, MongoDB, ActiveMQ, Redis, JQuery
- **Other Tools & Technologies:** Git, Docker, Github, Postman, fhir, OpenHIM, NGINX

## PROJECTS

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- **e-School** Apr 2019 - Jul 2019  
Tools: [Javascript, ReactJS, Python, Django]   
The platform that enables students and teachers to work smarter and more efficiently.
  - Developed intuitive front-end interfaces for courses, classes, enrollment, and profile management to enhance the student user experience.
  - Implemented class management features for teachers, including student approval and grading, while overseeing overall UI consistency and quality.
- **Metal Slug** Apr 2019 - Jul 2019  
Tools: [Java, libGDX, Box2D]   
A 2d shooting game
  - Developed the full core gameplay, including player controls, enemy behavior, collision detection, and game mechanics.
  - Integrated game elements using Java with libGDX and Box2D frameworks.
- **FileHub** Mar 2021 - Jun 2021  
Tools: [Python, tkinter, Socket programming]   
A simple tcp file sharing system
  - Developed user-friendly GUI using the tkinter library, which provides an intuitive interface for users to interact with.
  - Implemented the file upload and connection functionalities.

## HONORS AND AWARDS

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- Codeforces Specialist | Max Rating - 1427 2020
- University Merit Stipend | Shahajalal University of Science & Technology 2020
- Ranked among the Top 5 teams in the "ITverse, Dhaka University" Hackathon Competition 2020
- National Higher Secondary School Merit Scholarship | Government of Bangladesh 2017
- National Secondary School Merit Scholarship | Government of Bangladesh 2017

## VOLUNTEER EXPERIENCE

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- **General Secretary** Feb 2022 - Feb 2023  
SWE Society, SUST
  - Led SWE Technovent, a national tech event with 400+ participants; managed sponsors, logistics, judging panels, and event hosting.
  - Organized departmental Sports Week involving all student batches in various indoor and outdoor games.
  - Conducted programming and development bootcamps for junior batches.
- **Secretary of Science and Technology** June 2021 - Present  
Grow For Future
  - Conducted programming and career guidance sessions for school and college students in rural areas.
  - Helped connect underprivileged students with resources and mentors to support continued education.
  - Built networks between established professionals and local students to foster inspiration and support.

## REFERENCES

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**Dr. M. Shahidur Rahman**

Professor

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Shahjalal University of Science and Technology

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