Md. Samsuddoha

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 Portfolio   Publications   ResearchGate Profile

Research Interests

My research interests lie in the collaboration and coordination of **Software Engineering** and **Machine Learning** with a view to improving software engineering practices by implementing machine learning techniques.

Education

M.Sc. in Software Engineering **CGPA:** 3.92 / 4.00	Institute of Information Technology (IIT), University of Dhaka	2015 – 2016
B.Sc. in Software Engineering **CGPA:** 3.67 / 4.00	Institute of Information Technology (IIT), University of Dhaka	2011 – 2014

Research Experience

Assistant Professor, Department of Computer Science and Engineering   University of Barishal, Bangladesh

- Actively engaged in teaching, supervising undergraduate theses, and conducting research in **Software Engineering, Software Testing, Machine Learning, Deep Learning, and Programming Languages**.

- Currently, working on **AI-generated text and code detection** using CNN, GRU, hybrid LSTM–CNN, and transformer-based architectures to distinguish human written and LLM generated text and code.

- Another ongoing work is **code smell detection in Python** through machine learning models such as XGBoost, LightGBM, AdaBoost, and class balancing techniques such as SMOTE and SMOTEENN to detect Large Class and Long Method code smells.

- Conducted analytical projects on **algorithm design and performance evaluation**, including improvements to Round Robin scheduling and reducing computational time on classical sorting algorithms.

Selected Research Projects

AI-generated Text and Code Detection (Ongoing)

- Developing deep learning–based detectors to distinguish LLM generated and human written text and source code.

- Implementing CNN, GRU, hybrid LSTM–CNN, and transformer architectures such as DistilBERT for semantic and structural representation learning.

- Evaluating models using accuracy, precision, recall, and F1-score on a diverse dataset containing essays, stories, and code produced by both humans and LLMs.

- Aiming to contribute to **AI safety**, content authenticity verification, and academic integrity tools.

Code Smell Detection in Python (Ongoing)

- Building ML-based classifiers for detecting **Large Class** and **Long Method** code smells in Python programs.

- Applying XGBoost, LightGBM, AdaBoost, and resampling strategies such as **SMOTE** and **SMOTEENN** to address class imbalance and enhance detection accuracy.

- Extracting structural, complexity, and size related features to support automated software quality assessment.

- Targeting integration with modern static analysis workflows for improved maintainability and refactoring support.

Autism Spectrum Disorder Detection

- Developed ML based models for early prediction of **Autism Spectrum Disorder (ASD)** using behavioral and social communication indicators (AQ1–AQ10).

- Addressed **heterogeneity**, **class imbalance**, and **feature sparsity** using advanced preprocessing and feature selection.

- Evaluated over **271 classifiers**, determining the top-performing nine models achieving 97.2%–99.1% accuracy.

- Demonstrated the potential of ML-based behavioral screening to support early intervention and clinical decision-making.

Round Robin Scheduling Algorithm Analysis

- Conducted analytical and experimental studies on the **Round Robin scheduling** algorithm focusing on time quantum optimization.

- Performed comparative analysis on response time, waiting time, and turnaround time under varying loads.

- Designed simulations to measure computational efficiency and refine scheduling behavior in multi-process environments.

- Highlighted performance trade-offs and proposed improvements for fairer CPU allocation.

Publications

Selected Journals and Conferences

1. Biswas, D., **Samsuddoha, M.**, Erfan, M., & Faisal, R. H. (2024). *Autism Spectrum Disorder Detecting Mechanism on Social Communication Skills Using Machine Learning Approaches.* In Proceedings of SAI Intelligent Systems Conference (pp. 591–609). Springer Nature Switzerland.

2. Biswas, D., Jahan, S., Saha, S., **Samsuddoha, M.** (2024). *A succinct state-of-the-art survey on green cloud computing: Challenges, strategies, and future directions.* Sustainable Computing: Informatics and Systems, 44, 101036.

3. Sifath, S., Islam, T., Erfan, M., Dey, S. K., Islam, M. M. U., **Samsuddoha, M.**, & Rahman, T. (2024). *Recurrent neural network based multiclass cyber bullying classification.* Natural Language Processing Journal, 9, 100111.

4. Hossain, M. I., Jahan, S., Al Asif, M. R., **Samsuddoha, M.**, & Ahmed, K. (2023). *Detecting tomato leaf diseases by image processing through deep convolutional neural networks.* Smart Agricultural Technology, 5, 100301.

5. **Samsuddoha, M.**, Biswas, D., & Erfan, M. (2023). *User Similarity Computation Strategy for Collaborative Filtering Using Word Sense Disambiguation Technique.* In *The Fourth Industrial Revolution and Beyond: IC4IR+* (pp. 87–101). Springer Nature Singapore.

6. Biswas, D., **Samsuddoha, M.**, Al Asif, M. R., & Ahmed, M. M. (2023). *Optimized round robin scheduling algorithm using dynamic time quantum approach in cloud computing environment.* International Journal of Intelligent Systems and Applications, 13(1), 22.

7. Biswas, D., **Samsuddoha, M.**, & Chakraborty, P. (2022). *An Efficient Data Preparation Strategy for Sentiment Analysis with Associative Database.* In *Machine Intelligence and Data Science Applications (MIDAS 2021)* (pp. 11–23). Springer Nature Singapore.

8. Roy, H., Shafiuzzaman, M., & **Samsuddoha, M.** (2019). *SRCS: A new proposed counting sort algorithm based on square root method.* In *2019 22nd International Conference on Computer and Information Technology (ICCIT)* (pp. 1–6). IEEE.

9. Biswas, D., & **Samsuddoha, M.** (2019). *Determining proficient time quantum to improve the performance of round robin scheduling algorithm.* International Journal of Modern Education and Computer Science, 10(10), 33–40.

10. **Samsuddoha, M.**, & Faisal, R. H. (2018). *An approach for measuring similarity of UML class diagrams.* Barishal University Journal, 5(1/2), 179–193.

Teaching Experience

Assistant Professor, Dept. of CSE University of Barishal, Bangladesh (Dec 2020 – Present)
Lecturer, Dept. of CSE University of Barishal, Bangladesh (Jan 2017 – Dec 2020)

Role and Responsibilities:

- Designing and updating course materials, lecture content, and lab modules aligned with program outcomes.
- Delivering lectures, supervising lab sessions, and mentoring undergraduate and graduate students.
- Actively contributing to administrative initiatives within the department and university.
- Supervising final-year software and research projects, especially in ML/DL, medical imaging, and software engineering.

Courses Taught:

- Structured Programming
- Object Oriented Programming
- Data Structures
- Database Management System
- Web Engineering
- Software Engineering & Information System Design
- Software Quality Assurance and Testing
- Technical Writing & Presentation
- Mobile Computing
- Artificial Intelligence and Machine Learning

Industry Experience

Senior Software Engineer Samsung R&D Institute Ltd., Bangladesh (Aug 2016 – Jan 2017)

- Worked in the **Android Development Team** under the **Mobile Solution Group**.
- Contributed to the **Artecture** Android and VR platform.
- Achievement: **Samsung Global Software Certificate on Competitive Programming (Advanced Level)**, Dec 2016.

Software Engineer (Intern) GraphicPeople Ltd., Dhaka, Bangladesh (Jan 2014 – Jun 2014)

- Worked on **HR & Finance Management System** and **Trustpilot**-related projects.
- Technologies: ASP.NET (MVC), jQuery, Bootstrap, SQL Server.
- Achievement: **Best Intern Award** for outstanding performance, Jun 2014.

Additional Services

System Analyst (In Charge), Office of Networking and IT University of Barishal (Oct 2024 – Present)

- Guiding the development of digital solutions for core academic and administrative modules, including admission management, result processing, and student information systems.

Student Advisor, Dept. of CSE University of Barishal (Apr 2020 – Apr 2022)

- Provided guidance regarding students' personal and educational issues, career planning, and academic development.

Assistant House Tutor, Sher-E-Bangla Hall University of Barishal (Nov 2017 – Feb 2020)

- Managed accommodation for residential students, and helped organize seminars, annual functions, sports, and counseling activities.

Advisor, Programming Club Dept. of CSE, University of Barishal (2022 – Present)

- Motivating and guiding students to participate in competitive programming.
- Serving as coach of different teams for contests such as **ICPC** and **IUPC**.

Advisor, CSE Students Welfare Association Dept. of CSE, University of Barishal (2019 – 2022)

- Guiding and monitoring students to arrange seminars, workshops, study tours, and annual functions.

Technical Skills

Programming: Python, Java, PHP, C++
Database & Web: MySQL, Oracle, Bootstrap, PHP, Laravel
Tools: Git/GitHub, LaTeX, Jupyter Notebook, Google Colab
Research Concepts: Software Engineering, Software Testing, Machine Learning, Algorithm Analysis

Awards and Certifications

- **Research Grant**
  University Grants Commission (UGC), Bangladesh (Fiscal year: 2017–18, 2019–20, 2022–23, 2023–24)

- **Samsung Global Software Certificate on Competitive Programming (Advanced Level)**
  Samsung R&D Institute Ltd., Bangladesh, Dec 2016.

- **Best Intern Award**
  GraphicPeople Ltd., Bangladesh, Jun 2014.

- **Board Scholarships**
  Junior Secondary, Secondary, and Higher Secondary Government Scholarships in 2004, 2007, and 2009.

Interests

Reading books, traveling, playing cricket, and exploring new ideas.

References

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