

Rifat Rafiuddin

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OBJECTIVE Aiming to build a career in Research and Development with a focus on Machine Learning and solving complex challenges that bridge theoretical foundations with practical applications.

EDUCATION **Ph.D. in Computer Science** August 2022 - Present
[Department of Computer Science](#)
[Oklahoma State University](#)

- Machine Learning
- Data Structures and Algorithms II
- Design and Implementation of Operating Systems II
- Cloud Computing and Distributed Systems
- Big Data Analytics
- Introduction to Computer Security
- Computer Organization and Architecture
- Numerical Computation
- Formal Language Theory

Master of Science in Computer Science and Engineering Ongoing
[Department of Computer Science and Engineering \(CSE\)](#)
[Bangladesh University of Engineering and Technology \(BUET\), Dhaka.](#)

Theory Courses Taken:

- [Bioinformatics Algorithms](#)
- [Computational Biology](#)
- [Advanced Algorithms](#)
- [Meta-Heuristics](#)
- [Graph Theory](#)
- [Advanced Artificial Intelligence](#)

Ongoing Thesis: Semi-supervised Image Generation and Augmented Classification using Deep Convolutional Generative Adversarial Networks.

Under the supervision of [Dr. Muhammad Abdullah Adnan](#).

B.Sc. in Computer Science and Engineering January 2012 - October 2016
[Department of Computer Science and Engineering](#)
[Rajshahi University of Engineering and Technology](#)
CGPA: 3.53 out of 4.00

RESEARCH INTEREST

- Machine Learning
- Deep Learning
- Natural Language Processing
- Pattern Recognition

EXPERIENCE

Graduate Teaching Assistant
Department of Computer Science
Oklahoma State University

August 2022 - Present

- ***Introduction to Computer Security (Fall 2022)***: Facilitated learning for 50+ students through interactive discussions, enhancing their understanding of key security principles and practices.
- ***Design and Implementation of Operating Systems I (Spring 2023, Spring 2024)***: Led weekly sessions and provided one-on-one mentoring to students, significantly improving their practical skills in OS development.
- ***Data Structures and Algorithm Analysis II (Fall 2023)***: Designed and graded complex assignments and exams to assess and reinforce students' problem-solving skills in advanced algorithms.
- ***Discrete Mathematics for Computer Science (Fall 2024)***: Supported instruction and managed coursework to reinforce students' understanding of formal logic, set theory, and mathematical reasoning.
- ***Social Issues in Computing (Spring 2025)***: Provided grading assistance and logistical support for course materials and assignments.

Lecturer

October 2018 - July 2022

Department of Computer Science and Engineering (CSE)

University of Asia Pacific - UAP

74/A Green Road, Farmgate, Dhaka 1215.

(Host of the 45th International Collegiate Programming Contest World Finals, 2022)

- Led theory and lab classes in the undergraduate Computer Science program, including question preparation, script evaluation, and result compilation.
- Supervised undergraduate projects and coached the Competitive Programming team at RUET IUPC 2019, enhancing practical and competitive skills.
- Actively participated in IQAC workshops and implemented Outcome Based Education (OBE) strategies, contributing to curriculum development and quality assurance.

Lecturer

February 2017 - October 2018

Department of Computer Science and Engineering (CSE)

Uttara University

- Conducted theory and sessional classes for undergraduate Computer Science, encompassing question preparation, script evaluation, and result compilation.

STANDARDIZED TEST SCORES

- GRE General Test (Verbal Section - 152, Quant Section - 160, AWA - 3.5)
- TOEFL iBT Test (Reading - 23, Listening - 26, Speaking - 21, Writing - 26)
- *International Teaching Assistant (ITA) Exam* (280/300)

TECHNOLOGY SKILLS

Programming Languages: C, C++, Java, Python.

Operating System: Linux.

Version Control and Development: Git.

Web Technologies: HTML, CSS, JavaScript, PHP, Django.

Cloud Technologies: Amazon AWS, Docker.

Database Technologies: Oracle, MySQL, PL/SQL.

Technical Writing: L^AT_EX.

Editing and Design: Adobe Photoshop, Adobe Illustrator.

Library/Framework: NumPy, pandas, Matplotlib, NLTK, ScikitLearn, TensorFlow, PyTorch, Seaborn.

Simulator: Matlab, Octave, Multisim, CISCO Packet Tracer, Unity, Blender.

PUBLICATIONS (Most Recent First)

- **Rafiuddin, S. M.** , Rakib, M., Kamal, S., & Bagavathi, A. (2024, February). [Exploiting Adaptive Contextual Masking for Aspect-Based Sentiment Analysis](#). In *Pacific-Asia Conference on Knowledge Discovery and Data Mining* (pp. 147-159). Singapore: Springer Nature Singapore.
- **Rafiuddin, S. M.** **Rafiuddin, S. M.** (2022, March). [High Cursive Complex Character Recognition using GAN External Classifier](#). In *Proceedings of the 2nd International Conference on Computing Advancements* (pp. 466-472).
- Karim, M. A., **Rafiuddin, S. M.**, Islam Razin, M. J., & Alam, T. (2022, March). [Isolated Bangla Handwritten Character Classification using Transfer Learning](#). In *Proceedings of the 2nd International Conference on Computing Advancements* (pp. 11-17).
- Razin, J. I., Abdul Karim, M., Mridha, M. F., **Rafiuddin Rifat, S. M.**, & Alam, T. (2021). [A Long Short-Term Memory \(LSTM\) Model for Business Sentiment Analysis Based on Recurrent Neural Network](#). In *Sustainable Communication Networks and Application* (pp. 1-15). Springer, Singapore.
- **Rafiuddin, S. M.** (2019, December). [Estimation of Phylogenetic Tree using Gene Sequencing Data](#). In *2019 4th International Conference on Electrical Information and Communication Technology (EICT)* (pp. 1-5). IEEE.
- **Rafiuddin, S. M.** (2017, December). [Ranking of Bangla word graph using graph based ranking algorithms](#). In *2017 3rd International Conference on Electrical Information and Communication Technology (EICT)* (pp. 1-5). IEEE.
- Mishu, S. Z., & **Rafiuddin, S. M.** (2016, December). [Performance analysis of supervised machine learning algorithms for text classification](#). In *2016 19th International Conference on Computer and Information Technology (ICCIT)* (pp. 409-413). IEEE.

Projects

- **Estimating Influenza Cases using Numerical Methods and Machine Learning (2024):** Compared SVIR-based numerical solvers (Midpoint, RK4) with deep learning models (LSTM, CNN, FTA-LSTM) and Random Forest for H1N1 prediction. Random Forest with direct forecast achieved best accuracy on real-world data. [\[GitHub\]](#)
- **Adaptive Blockchain with Dynamic Difficulty and SJF Prioritization (2024):** Designed a blockchain simulation with dynamic difficulty adjustment and SJF-based prioritization to optimize throughput and reduce queue length and waiting time. [\[GitHub\]](#)

- **Sentiment Analysis on Cloud Platforms (2022):** Compared AWS Comprehend, Google Cloud NLP, and IBM Watson for API-based sentiment analysis on real-world text datasets. [\[GitHub\]](#)
- **GO-CART – 3D Unity Game (2021):** Unity racing game with W/A/S/D player control, third-person camera, real-time scoring, collision detection, and game over trigger. [\[GitHub\]](#)
- **Breast Cancer Detection using Deep Learning (2021):** Built and evaluated multiple CNN architectures including Inception, VGG16, MobileNet, and Transformers to detect IDC from histopathology images. [\[GitHub\]](#)
- **Image Embedding with Classification by Deep Neural Networks (2021):** Built a pipeline using Xception for embedding and visualizing image features with TensorBoard 2D/3D projections. [\[GitHub\]](#) [\[Paper Link\]](#)
- **Data Augmentation with Generative Adversarial Networks (2021):** Implemented adaptive discriminator augmentation for GAN training on low-resource Bangla datasets with demo visualization. [\[GitHub\]](#) [\[Demo\]](#)
- **Protein Structure Prediction using PyRosetta (2020):** Built molecular modeling pipelines using PyRosetta for structure prediction as part of graduate thesis work. [\[GitHub\]](#)
- **Phylogenetic Tree Construction with Genetic Algorithms (2019):** Used genetic algorithms for tree estimation from gene sequencing data with modular genome dataset support. [\[GitHub\]](#) [\[Paper Link\]](#)
- **Performance Analysis of Text Classification in NLP (2016):** Compared ANN with Backpropagation and traditional classifiers on labeled datasets; developed during undergraduate thesis. [\[GitHub\]](#) [\[Paper Link\]](#)
- **Java Scientific Calculator (2014):** Built a GUI-based scientific calculator in Java supporting basic arithmetic and scientific functions with both keyboard and button input. [\[GitHub\]](#)

COURSES TAUGHT AS LECTURER

Theory Courses:

- Machine Learning (Spring 2020 UAP, Fall 2020 UAP)
- Pattern Recognition (Fall 2018 UAP, Spring 2019 UAP, Fall 2019 UAP)
- Design and Analysis of Algorithms (Fall 2018 UU, Fall 2020 UAP)
- Operating System Design (Summer 2018 UU)
- Discrete Mathematics (Fall 2017 UU)
- Programming Language and Application II (C++) (Fall 2017 UU)
- Mathematics for Computer Science (Spring 2021 UAP)
- Visual and Web Programming (Fall 2021 UAP)

Lab Courses:

- Computer Graphics Lab (Fall 2018 UAP, Spring 2019 UAP, Fall 2019 UAP, Spring 2020 UAP, Fall 2020 UAP, Spring 2021 UAP, Fall 2021 UAP)
- Pattern Recognition Lab (Fall 2018 UAP, Spring 2019 UAP, Fall 2019 UAP, Spring 2021 UAP)
- Compiler Design Lab (Fall 2020 UAP)
- Algorithms Lab (Fall 2019 UAP)

- Object Oriented Programming - II (Java) Lab (Spring 2021 UAP)
- Visual and Web Programming Lab (Fall 2021 UAP)

MOOC COURSE CERTIFICATES

ACADEMIC COURSES

- [Machine Learning](#)
Stanford Univerity, USA, course provided by Coursera
- [Algorithms: Design and Analysis, Part 1](#)
Stanford Univerity, USA, course provided by Coursera
- [Understanding Research Methods](#)
University of London, course provided by Coursera
- [Introduction to Mathematical Thinking](#)
Stanford University, course provided by Coursera
- [Deep Learning Specialization](#)
by *deeplearning.ai*
 1. [Neural Networks and Deep Learning](#)
 2. [Improving Deep Neural Networks: Hyperparameter tuning, Regularization, and Optimization](#)
 3. [Structuring Machine Learning Projects](#)
 4. [Convolutional Neural Networks](#)
 5. [Sequence Models](#)

NON-ACADEMIC COURSES

- [Photography Basics and Beyond: From Smartphone to DSLR Specialization](#) by *Michigan State University, provided by Coursera*
 1. [Cameras, Exposure, and Photography](#)
 2. [Camera Control](#)
 3. [Principles of Photo Composition and Digital Image Post-Production](#)
 4. [Photography Techniques: Light, Content, and Sharing](#)
 5. [Photography Capstone Project](#)

ONLINE PROFILES RESEARCH PROFILES

[\[LinkedIn\]](#) [\[Github\]](#) [\[Twitter\]](#)

[\[Google Scholar\]](#) [\[dblp\]](#) [\[Semantic Scholar\]](#) [\[ORCiD\]](#) [\[Scopus\]](#)

VOLUNTARY SERVICES	National High School Programming Contest (NHSPC), Rajshahi. <i>Volunteer</i>	2016
	Divisional Mathematical Olympiad, Faridpur. <i>Math Olympiad Volunteer (MOVer)</i>	2006
	Reviewed research papers for IJCNN 2024 , providing critical feedback to advance the field of neural networks and computational intelligence. <i>Peer Reviewer</i>	2024
TRAINING EXPERIENCE	The role and responsibility and ethical principle of the university teachers. <i>Conducted by the Institutional Quality Assurance Cell (IQAC), Uttara University, Bangladesh</i>	February 24, 2018
	Improving Learning and Teaching Skills (ILTS) <i>Conducted by University of Asia Pacific</i>	May 5, 2019
AWARDS	Graduate and Professional Student Government Association (GPSGA) Award – Individual Student Funds Travel Award and Research Materials Grant <i>Oklahoma State University</i> Amount awarded: USD 600 [Funding Program Link]	2024
	Honorable Mention , ICT Fest <i>Islamic University of Technology (IUT), Gazipur</i>	2014
	Honorable Mention , National Collegiate Programming Contest (NCPC) <i>Daffodil International University (DIU)</i>	2014
	Champion , ICT Olympiad – CSE Fest <i>Rajshahi University of Engineering and Technology (RUET)</i>	2012
REFERENCES	Dr. Muhammad Abdullah Adnan Associate Professor Department of Computer Science and Engineering (CSE) Bangladesh University of Engineering and Technology (BUET) Email: adnan@cse.buet.ac.bd	
	Dr. Atriya Sen Assistant Professor Department of Computer Science Oklahoma State University Email: atriya.sen@okstate.edu	