

Ridwanul Hasan Tanvir

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EDUCATION

Pennsylvania State University Ph.D. in Computer Science and Engineering Department of Computer Science and Engineering	January 2024 - Present
Bangladesh University of Engineering and Technology Bachelor of Science in Computer Science and Engineering Department of Computer Science and Engineering	April 2018 - May 2023 CGPA: 3.86/4.00
Notre Dame College Higher Secondary Certificate (HSC)	July 2015 - June 2017 CGPA: 4.00/4.00

PUBLICATIONS

- **Using Large Language Models to Generate JUnit Tests: An Empirical Study**
28th International Conference on Evaluation and Assessment in Software Engineering ([EASE 2024](#))
Authors: Mohammed Latif Siddiq, Joanna CS Santos, **Ridwanul Hasan Tanvir**, Noshin Ulfat, Fahmid Al Rifat, and Vinicius Lopes

RESEARCH EXPERIENCE

Bangladesh University of Engineering and Technology, Bangladesh	May, 2023 - December, 2023
<ul style="list-style-type: none">• Supervisor: Dr. Anindya Iqbal, Professor, Department of CSE, BUET• Develop machine learning algorithms that automatically generate test cases for both positive and negative testing.• Automatic creation of Expected Result of Test Case Execution.	
Bangladesh University of Engineering and Technology, Bangladesh	May, 2022 - June, 2023
<ul style="list-style-type: none">• Supervisor: Dr. Atif Hasan Rahman, Associate Professor, Department of CSE, BUET• Unsupervised probabilistic clustering method of single-cell RNA-sequencing• Takes dropout into account by associating a dropout rate with each gene	

PROFESSIONAL EXPERIENCES

Pennsylvania State University <i>Research Assistant</i>	January, 2024 - Present
<ul style="list-style-type: none">• Supervisor: Dr. Syed Rafiul Hussain, Assistant Professor, Department of Computer Science and Engineering, School of EECS• 4G and 5G protocol improvement.• Analyze Protocol designs using Natural language processing.	
Bangladesh University of Engineering and Technology <i>Research Assistant</i>	June, 2023 - December, 2023
<ul style="list-style-type: none">• Machine Learning-Based Test Case Autocreation and Execution project	
University of Notre Dame, Indiana, USA <i>Voluntary Student Research Assistant</i>	December, 2022 - Present
<ul style="list-style-type: none">• Volunteered for S²E lab on effectiveness of Large Language Models in Generating Unit Tests.• Empirical Investigation of API Biases in Generated Code.	

LEADERSHIP EXPERIENCES

- President of Student Council in High School
 - Collaborated with students and faculty to enhance the school community.
- High School Debate Team Champion
 - Led the debate team to victory in regional and national competitions.
 - Developed strong public speaking and critical thinking skills.

NOTABLE PROJECTS

Grammatical Error Detection | *Bhashabhrom Hackathon* — **Champion** March, 2023

- To detect sub-strings of a Bangla text that contain grammatical, punctuation, or spelling errors.

Bangla Named Entity Recognition | *NLP Hackathon Bangladesh* — **2nd Runner Up** January, 2023

- Two-day hackathon was conducted by Amazon Alexa Applied Scientist [Sudipta Kar](#) and [Dr. Farig Yousuf Sadeque](#).

DealFinder | *Django, JavaScript* February, 2022

- A platform for users to access and stay informed about all the latest technology deals and promotions.
- Automatically applies coupon codes and discounts to online purchases.

ACADEMIC PROJECTS

BUET Photographic Society | *React, Django, Bootstrap* August, 2022

- High-Quality Photography community and marketplace Customizable portfolio to showcase your work. Community engagement through comments, likes, shares, and challenges Opportunities to participate in various photo challenges and contests organized (Quest). Prizes offered for top-performing entries that vary from challenge to challenge. Access to feedback from judges and other photographers which can help improve your photography skills. [\[Source Code\]](#)

- Supervisor: [Dr. Anindya Iqbal](#), Professor, Department of CSE, BUET

Retransmission Timeout Weighted Median | *Network Simulator 3(NS3), C, Python, GNUPlot* February, 2022

- Implemented recursive weighted median (RWM) using NS3 which yields significantly tighter RTT bounds than Jacobson's algorithm over Internet traffic with heavy tailed statistics. The RWM filters are more effective in impulsive signal environments, which is often the case with RTT signals with heavy tailed statistics. [\[Source Code\]](#)

Scheduling and Memory Management in xv6 January, 2022

- Implemented lottery scheduling algorithm and page replacement algorithms: FIFO and LRU. [\[Source Code\]](#)

Drone-based Hardware | *C, AtMega32, Atmel Studio, Proteus 8, Arduino* September, 2021

- Microcontroller project for Drone and Flight Controller

- Designed a fully functional software simulation and later, built a working hardware prototype. [\[Source Code\]](#)

- Supervisor: [Dr. A. B. M. Alim Al Islam](#), Professor, Department of CSE, BUET

Yet-Another-C-Compiler | *Flex, Bison, EMU 8086* July, 2021

- Symbol Table, Lexical Analysis, Syntax and Semantic Analysis and Intermediate Code Generation which as a whole translates computer code written in C into Assembly. [\[Source Code\]](#)

Security Tool: Data Loss Prevention May, 2021

- Support for regular expressions and keyword matching to identify sensitive data. Configurable scanning options for individual computers or entire networks. [\[Source Code\]](#)

Bikroy Maven | *Django, Bootstrap, Python, Oracle SQL*

December, 2020

- Sellers can post ads and buyers can contact them directly to make a purchase. Allows employers to create and publish job openings for their organization. Allows candidates to accept job offers from prospective employers. Chat messaging feature for direct communication between buyers and sellers. Location-based search functionality to help users find products or services in particular area. [\[Source Code\]](#)

Skyfall Savior | *C,iGraphics Custom Library*

July, 2018

- A simple 2D graphical shooting adventure game with multiple levels. Built using a custom graphics library written in C. Supports system collision, ranking and extra life system.

ReciproCity | *Java, JavaFx, Socket Programming*

January, 2019

- Promotes sustainability and collaborative consumption. Peer-to-peer sharing system. Sharing of products including books, jackets, electronics, musical instruments, and sports equipment. Convenient and accessible for university students. [\[Source Code\]](#)

- Supervisor: [Dr. Mohammad Saifur Rahman](#), Associate Professor, Department of CSE, BUET

CERTIFICATES

Deep Learning Specialization (offered by DeepLearning.AI)

CS50W: CS50's Web Programming with Python and JavaScript (offered by HarvardX)

Machine Learning Foundations: A Case Study Approach (offered by University of Washington)

Convolutional Neural Networks (offered by DeepLearning.AI)

SD3x: Algorithm Design and Analysis (offered by PennX, University of Pennsylvania)

ACHIEVEMENTS AND AWARDS

Notre Dame College: 2015, 2016

Perfect Attendance for 2 Years at Notre Dame College

Research Grant, 2023

RISE-(Research and Innovation Center for Science and Engineering) Grant: Of BDT 81000

CUET Admission Test, 2017

Acquired merit position 2 in the whole country

Inter University Cyber Drill, 2022

Position: 13th

Bangla Grammatical Error Detection Challenge, 2023

Position: **Champion**

Bangladesh's First NLP Hackathon, 2023

Position: 2nd **Runner Up**

National Undergrad Math Olympiad, 2021

Position: 7th

Dean's List, 2019

Faculty of Electrical and Electronic Engineering, BUET

University Merit Scholarship, 2019

Government Scholarship, Bangladesh: 2022, 2017, 2015, 2013

REFERENCES

Syed Rafiul Hussain [[Website](#)]

Assistant Professor

Department of Computer Science and Engineering, School of EECS

Pennsylvania State University

Email: hussain1@psu.edu

Md. Abul Hassan Samee [[Google Scholar](#)]

Assistant Professor

Department of Integrative Physiology

Baylor College of Medicine

Email: samee@bcm.edu

Joanna C. S. Santos [[Website](#)]

Assistant Professor

Department of Computer Science and Engineering

University of Notre Dame

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