

Ismail Hossain

Ph.D. Student | Teaching Assistant | Research Assistant



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Research Interest

Federated Learning | Machine Learning | Deep Learning | Natural Language Processing | Social Networks | IoT | Cybersecurity | Software Engineering

Research Experience

Conference Papers

Areas: Social Networks, NLP, Federated Learning, Machine Learning, Differential Privacy, Mobile Crowdsourcing

- “A Visual Approach to Tracking Emotional Sentiment Dynamics in Social Network Commentaries” (AAAI ICWSM - Under Review), Jan 2024 (Lead Author)
- “Monitoring Dynamics of Emotional Sentiment in Social Network Commentaries” (IEEE/ACM ASONAM), Nov 2023 (Lead Author)
- “Combating Identity Attacks in Online Social Networks: A Multi-Layered Framework Using Zero-Knowledge Proof and Permissioned Blockchain” (IEEE/ACM ASONAM), Nov 2023
- “Towards Addressing Identity Deception in Social Media using Bangla Text-Based Gender Identification” (IEEE/ACM ASONAM), Nov 2023
- “Collaborative Differentially Private Federated Learning Framework for the Prediction of Diabetic Retinopathy” (IEEE ICAIC), Dec 2022 (Lead Author)
- “Machine Learning and Sentimental Analysis for Predicting Environment Lead Toxicity in Children at the ZIP Code Level” (IEEE ICAIC), Dec 2022
- “Towards Federated Learning-based Contraband Detection within Airport Baggage X-Rays” (IEEE ICM-LANT), Nov 2022
- “An Evolutionary Population Census Application Through Mobile Crowdsourcing” (Springer ICICO), Oct 2020 (Lead Author)

Book Chapters

Areas: Machine Learning, Healthcare

- “Differentially Private Federated Learning in Medical Context: Phenomenal Classification of Diabetic Retinopathy” (Springer), 2024
- “Introduction of Medical Imaging Modalities” (Springer), 2023
- “Active Learning on Medical Image” (Springer), 2023
- “AutoML Systems For Medical Imaging” (Springer), 2023

Reviewer Experience

Reviewed two research articles on Online & Social Networks and Machine Learning (ASONAM 2023)

Achieved experience with others' paper writing and presenting style that will remind me when writing papers

Professional Experience

Southern Illinois University Carbondale

Teaching Assistant

Jan. 2024 - Present

Illinois, USA

- Preparing lecture notes/slides on the given topic
- Conducting classes of “Design and Analysis of Algorithms” and “Learning from Data”
- Mentoring both Undergrad and Grad students
- Grading Quizzes, Assignments, Exams, Projects and Presentation

Southern Illinois University Carbondale

Research Assistant at SUPREME Lab.

Aug. 2022 – Present

Illinois, USA

- Conduct in-depth literature reviews to understand the prior arts
- Collaborate with researchers to design, develop, and optimize algorithms
- Collect and analyze data for experiments, simulations, or data-driven research projects
- Write and maintain code for research projects, including feature engineering, model evaluation, and optimization
- Work with models like Transformers (BERT, GPT), CNN, RNN, LSTM, YOLO, Traditional (KNN, K-means, Random Forest, Decision Tree, Boosting, Bagging)
- Write the research papers at Overleaf collaboratively and prepare the presentations for conferences, and journals
- Assist in training and mentoring junior research assistants, and undergraduate students
- Participate in online Machine Learning and NLP competitions (e.g. Kaggle)
- Led a team for the Cyberforce23 competition

Samsung R&D Institute Bangladesh (SRBD)

Sr. Software Engineer

Feb. 2019 – Aug. 2022

Dhaka, Bangladesh

- Specialized in web-based application development tailored for 4G and 5G technologies.
- Proficiently conducted requirement analysis, performed static analysis.
- Demonstrated expertise in enhancing and optimizing legacy software systems.
- Business trip to Suwon, South Korea, for a crucial in-person meeting and the launch of a new module.
- Took ownership of projects, from initiation to completion.
- Achieved remarkable ability to work autonomously with minimal guidance.
- Pioneered innovative ideas and actively participated in patent/ideas generation activities.
- Accomplished over 100+ Jira tasks and resolved more than 50 PLM issues.
- Recognized as the top contributor in August 2022, with an impressive record of over 800+ commits, 100+ pull requests, and 300+ code reviews.

Programming Skill

Online and Onsite Programming Contests

Competitive Programmer

2014 – 2022

Bangladesh

- Expertise in problem-solving and data structures (LinkedList, Heap, HashMap, Trie Tree, BST, Segment Tree) and Algorithms (Binary Search, Graph Theory, Dynamic Programming, Number Theory).
- Solved 1000+ problems in different Online Judges (e.g. Leetcode, Codeforces, Uva, HackerRank).
- Capability of analyzing program time and memory complexity.
- Participation, National level, Divisional level and ACM International Collegiate Programming Contest (ICPC), Dhaka Regional, 2018.

Technical Skills

Languages	: C, C++, Java, Python, TypeScript
Libraries	: Numpy, Pandas, Scikit-learn, Keras, NLTK, Matplotlib
Frameworks	: PyTorch, Spring Boot, Node.js, Angular, AgGrid, JUnit, Mockito.
Platforms	: Hugging-face, Kaggle, Weights & Biases, Android
Dataset	: RDBMS (MySQL, PostgreSQL), NoSQL (Mongo).
Others	: RESTful API, Git, GitHub, Swagger, VS Code, Inkscape
Comfortable	: Power BI, R, RStudio, GGplot, Anaconda, MatLab, Tensorflow, Keras, Flower, Flask, Selenium, Beautiful-Soup, ReactJs, JavaScript, PHP, C#, HTML, CSS
Familiar	: AWS (EC2, Lambda, Cloud9, S3, DynamoDB, SageMaker), Cybersecurity (Nmap, Nessus, Wireshark), Web (Next.js, Express.js, Django), Firebase, Jenkins, GraphQL, Pymongo, Elasticsearch

Achievements

**Team rank 16th in the USA and 4th in Illinois
Outstanding Collaborator Award
Winner, Silver Category**

: U.S. Dept. of Energy CyberForce Competition, 2022
: Quarter 1, Samsung R&D Institute, Bangladesh, 2021
: Quarter 4, Software Code Review Contest 2020, Network
Global R&D Centers, Samsung Electronics
: Samsung Global Software Certificate on Competitive Pro-
gramming Contest, 2019

Advance Level Certificate

Academic Credentials

PhD in Computer Science

School of Computing's PhD Program

Fully Funded Scholarship

CGPA: 3.91 out of 4

BS in Computer Science & Engineering

Bachelor's degree program

Major: Computer Science & Engineering

Final CGPA: 3.47 out of 4

Southern Illinois University Carbondale, IL, USA

Fall 2022 – Present

Chittagong University of Engineering & Technology (CUET)

Mar. 2014 – Nov. 2018

Undergrad Major Project

Population Census App

Android | Java | Firebase | MCS Technique

- A demo app for national census using mobile crowdsourcing. It includes data collection, worker location tracking via Google Maps, redundancy checks, two-way verification, and real-time result generation.

References

Dr. Sajedul Talukder

Assistant Professor at School of Computing

Director of SUPREME Lab.

Southern Illinois University Carbondale, IL, USA

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