




Ismail Hossain

Ph.D. Student | Research Assistant

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Academic Credentials

PhD in Computer Science

Computer Science's PhD Program

Fully Funded Scholarship

University of Texas at El Paso, TX, USA

Fall 2024 – Present

PhD in Computer Science

School of Computing's PhD Program

Fully Funded Scholarship

CGPA: 3.91 out of 4

Southern Illinois University Carbondale, IL, USA

Fall 2022 – Summer 2024

BS in Computer Science & Engineering

Bachelor's degree program

Major: Computer Science & Engineering

Final CGPA: 3.47 out of 4

Chittagong University of Engineering & Technology (CUET)

Mar. 2014 – Nov. 2018

Technical Skills

Languages : C, C++, Java, Python, TypeScript

Libraries : Numpy, Pandas, Scikit-learn, NLTK, Matplotlib

Frameworks : PyTorch, Spring Boot, Node.js, Angular, AgGrid, JUnit, Mockito

Dataset : RDBMS (MySQL, PostgreSQL), NoSQL (Mongo)

Others : RESTful API, Git, GitHub, Swagger, VS Code, Inkscape, Android

Comfortable : Machine Learning, Deep Learning, LLM, Power BI, R, RStudio, Anaconda, MatLab, TensorFlow, Keras, Flower, Flask, Selenium, BeautifulSoup, ReactJs, JavaScript

Familiar : Databricks, AWS (EC2, Lambda, Cloud9, S3, DynamoDB, SageMaker), Web (Next.js, Express.js, Django), Firebase, Jenkins, GraphQL, Cybersecurity (Nmap, Nessus, Wireshark)

Professional Experience

Security and Privacy-Enhanced Machine Learning Lab

Research Assistant

Aug. 2022 – Present

- Conduct comprehensive literature reviews to explore existing research and methodologies.
- Collaborate with fellow researchers to design, develop, and optimize advanced algorithms.
- Collect and analyze data using R and Python for experimental studies, simulations, and data-driven research.
- Develop Python code to fine-tune machine learning and deep learning models.
- Write and maintain code for research projects, including feature engineering, model evaluation, and optimization.
- Work with models such as LLMs (GPT), Transformers, BERT, CNN, RNN, LSTM, YOLO, KNN, K-means, Random Forest, Decision Trees, Boosting, and Bagging.
- Collaboratively write research papers in Overleaf and prepare presentations for conferences and journal submissions.
- Assist in training and mentoring junior research assistants and undergraduate students.
- Conduct weekly brainstorming and knowledge-sharing sessions.
- Participate in online machine learning and NLP competitions (e.g., Kaggle).
- Competed in Cyberforce22 and Cyberforce23.

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

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.

Awards & Achievements

Student Travel Award (\$1300)	: ICWSM Conference, Buffalo, NY, USA, 2024
Distinguished Student Service Award	: Southern Illinois University, Carbondale, 2024
Team rank 16th in the USA and 4th in Illinois	: U.S. Dept. of Energy CyberForce Competition, 2022
Outstanding Collaborator Award	: Quarter 1, Samsung R&D Institute, Bangladesh, 2021
Business Travel Award (\$960)	: Samsung Digital City, Suwon, South Korea, 2020
Winner, Silver Category	: Quarter 4, Software Code Review Contest 2020, Network Global R&D Centers, Samsung Electronics
Advance Level Certificate	: Samsung Global Software Certificate on Competitive Programming Contest, 2019

Research Experience

Conference Papers

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

- “An Evolutionary Population Census Application Through Mobile Crowdsourcing”
Conference: **ICICO’20**, Publisher: Springer (Lead Author)
- “Towards Federated Learning-based Contraband Detection within Airport Baggage X-Rays”
Conference: **ICMLANT’22**, Publisher: IEEE

- “Machine Learning and Sentimental Analysis for Predicting Environment Lead Toxicity in Children at the ZIP Code Level”
Conference: **ICAIC’22**, Publisher: IEEE
- “Collaborative Differentially Private Federated Learning Framework for the Prediction of Diabetic Retinopathy”
Conference: **ICAIC’22**, Publisher: IEEE
- “Towards Addressing Identity Deception in Social Media using Bangla Text-Based Gender Identification”
Conference: **ASONAM’23**, Publisher: IEEE/ACM
- “Combating Identity Attacks in Online Social Networks: A Multi-Layered Framework Using Zero-Knowledge Proof and Permissioned Blockchain”
Conference: **ASONAM’23**, Publisher: IEEE/ACM
- “Monitoring Dynamics of Emotional Sentiment in Social Network Commentaries”
Conference: **ASONAM’23**, Publisher: IEEE/ACM (Lead Author)
- “EMOVIS: A Visual Approach to Tracking Emotional Sentiment Dynamics in Social Network Commentaries”
Conference: **ICWSM’24**, Publisher: AAAI (Lead Author)
- “Advancements in Multimodal Social Media Post Summarization: Integrating GPT-4 for Enhanced Understanding”
Conference: **CompSac’24**, Publisher: IEEE
- “SCAN: A HealthCare Personalized ChatBot with Federated Learning Based GPT”
Conference: **CompSac’24**, Publisher: IEEE
- “SCALE: Self-regulated Clustered federated LEarning in a Homogeneous Environment”
Conference: **CompSac’24**, Publisher: IEEE
- “Combating Echo Chambers In Online Social Network By Increasing Content Diversity In Recommendation”
Conference: **ASONAM’24**, Publisher: Springer
- “SocFedGPT: Federated GPT-based Adaptive Content Filtering System Leveraging User Interactions in Social Networks”
Conference: **ASONAM’24**, Publisher: Springer
- “SocialRec: User Activity Based Post Weighted Dynamic Personalized Post Recommendation System in Social Media”
Conference: **ASONAM’24**, Publisher: Springer (Lead Author)
- “EVOLVE: Predicting User Evolution and Network Dynamics in Social Media Using Fine-Tuned GPT-like Model”
Conference: **ASONAM’24**, Publisher: Springer (Lead Author)
- “Proactive Social Media Safety: Predicting Social Evolution to Protect Vulnerable Users”
Conference: **ICWSM’25**, Publisher: AAAI (Lead Author) - Under Review

Research Articles

Areas: Machine Learning, NLP, LLM, Generative AI, Cybersecurity

- “Federated Learning-based Contraband Detection within Airport Baggage X-Rays”
Publisher: (**ACM Digital Library**)
- “Prediction of Childhood and Pregnancy Lead Poisoning Using Deep Learning”
Publisher: (**ACM Digital Library**)
- “A Novel Hierarchical Federated Learning with Self-Regulated Decentralized Clustering”
Publisher: (**ACM Digital Library**)

Journals

Areas: Machine Learning, NLP, LLM, Generative AI, Cybersecurity

- “A Visual Approach to Tracking Emotional Sentiment Dynamics in Social Network Commentaries” (**Springer Nature - Under Review**), 2024 (Lead Author)
- “Natural Language Processing for Predictive Maintenance in Nuclear Power Plant: Digital Twin Context” (**Transaction of ANS**), 2024
- “Enhancing the Cybersecurity of Advanced Nuclear Power Plants through Generative AI and Large Language Models” (**Transaction of ANS**), 2024

Book Chapters

Areas: Machine Learning, Healthcare

- “Blockchain-Integrated Secure Framework for Enhanced E-Government Services”
Book: Building Cybersecurity Applications with Blockchain and Smart Contracts, Publisher: **Springer**
- “Differentially Private Federated Learning in Medical Context: Phenomenal Classification of Diabetic Retinopathy”
Book: Distributed Machine Learning and Optimization, Publisher: **Springer**
- “Introduction of Medical Imaging Modalities”
Book: Data Driven Approaches on Medical Imaging, Publisher: **Springer**
- “Active Learning on Medical Image”
Book: Data Driven Approaches on Medical Imaging, Publisher: **Springer**
- “AutoML Systems For Medical Imaging”
Book: Data-Driven Approaches on Medical Imaging, Publisher: **Springer**

Reviewer Experience

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

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

References

Dr. Sajedul Talukder

Assistant Professor at School of Computing

Director of SUPREME Lab.

<https://www2.cs.siu.edu/~stalukder/supremelab/>

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