Ibrahim Mohammed Sayem

Toronto, ON, Canada

📞 +1519-851-5434   ✉ isayem@uwo.ca   Website ↗   in ↗ GitHub ↗

RESEARCH INTEREST

My research broadly focuses on the intersection of machine learning in Security & Privacy, Data Privacy & Security, particularly System & Software Security, and ML Security & Trustworthiness. I applied ML to Security Problems in the network & Software domain and used Statistical & Deep Sequence models for 5G QoS analysis.

EDUCATION

University of Western Ontario   *January 2021 – December 2022*
M.Sc in Computer Science (Thesis-based), GPA: 4.00 out of 4.00   *London, Ontario, Canada*

University of Chittagong   *January 2013 – October 2018*
B.Sc in Computer Science and Engineering, CGPA: 3.60 out of 4.00   *Chittagong, Bangladesh*

RESEARCH EXPERIENCE

University of Western Ontario   **January 2021 – August 2022**
Graduate Research Assistant   *London, Ontario, Canada*

Worked in AI-based cyber-security and 5G traffic forecasting projects in the WING LAB ↗ lead by Dr. Anwar Haque.

- **WING5GQoS** : 5G QoS Data Collection and Forecasting Tool [under embargo] *(5G, QoS, Time-series Forecasting)*

  We partnered with Bell Canada to develop WING5GQoS, a 5G QoS data collection and forecasting tool. Using a file-sharing strategy, we gathered key QoS metrics and applied data windowing to forecast throughput and latency with 87.89% accuracy. Deep models like LSTM and LSTM encoder-decoder were used to optimize resource utilization.

- **ENIDS** : Ensemble Network Intrusion Detection System *(Security, Deep Learning, Ensemble Approach)*

  We utilized two network traffic datasets, applied optimal feature selection, and addressed class imbalance using SMOTE+ENN. We proposed an ensemble model with CNN, LSTM, and GRU in the first layer, followed by a DNN, achieving 90.4% and 99.6% accuracy on UNSW-15 and CICIDS-2017 datasets, respectively, while reducing attack detection time by 30%.

University of Chittagong   **June 2017 – October 2020**
Undergrad Research Assistant   *Chittagong, Bangladesh*

- Developed IoT-based Security Camera and ML-based Credit Card Fraud Detection

PUBLICATIONS

- Advancing Software Security and Reliability in Cloud Platforms through AI-based Anomaly Detection, **ACM CCSW, CR: A1**, 2024. [Accepted] ↗

- ENIDS: A DL-Based Ensemble Framework for Network Intrusion Detection System, **IEEE TNSM, IF: 5.3**, 2024. ↗

- WING5GQoS: QoS Performance Analyzer Tool and Pattern Prediction Using AI, **currently embargo**, 2024.

- Exploring Artificial Intelligence (AI) Techniques for Forecasting Network Traffic: Network QoS and Security Perspectives, **Master's Thesis**, 2022. ↗

- A Multi-Classifier for DDoS Attacks Using Stacking Ensemble Techniques, **IEEE IWCMC, CR: A2**, 2022. ↗

- Analysis of machine learning techniques for credit card fraud detection, **Google Scholar**, 2019. ↗

- Integrating Face Recognition Security System with the Internet of Things, **Google Scholar**, 2018. ↗

TECHNICAL SKILLS

- **Languages**: Python, Java, C/C++, JavaScript
- **Databases**: SQL, MySQL, PostgreSQL, MongoDB
- **DS and ML Tools**: Pandas, Numpy, Tensorflow, Scikit-Learn/Image, OpenCV, NLTK, spaCy, PyTorch, PIL
- **Tools**: Git, Docker, AWS, BitBucket, Azure, GCP, Terraform, CI/CD.

TEACHING EXPERIENCE

Humber College   **January 2024 – Present**
Instructor   *Toronto, Ontario, Canada*
- Teaching a variety of courses, such as Web Programming, Network Programming, Data Structures, and Application Development (.NET). Provided student mentorship and support in course projects and experiments, as well as designed and delivered lectures, assignments, and exams.

Seneca Polytechnic   **May 2023 – December 2023**
Adjunct Professor   *Toronto, Ontario, Canada*
- Designed and implemented course curriculum, assignments, and assessments. Delivered lectures, seminars, and labs on subjects such as OOP, Data Structures, Computer Networks, and Information Security.

University of Western Ontario   **January 2021 – December 2022**
Graduate Teaching Assistant   *London, Ontario, Canada*
- Performed TA duties for undergraduate Computer Science courses like Data Structures and Computer Networks. Assist professors in delivering lectures and conducting lab sessions. Graded assignments and exams with constructive feedback.

International Islamic University, Chittagong   **November 2018 – December 2020**
Adjunct Faculty   *Chittagong, Bangladesh*
- Developed and implemented course curriculum and conducted classes and labs on structured programming languages, Computer Networks, data structures and algorithms, compiler design, and computer simulation.

PROFESSIONAL EXPERIENCE

Community of Guardians   **April 2023 – December 2023**
Full Stack Developer(Full-time)   *London, ON*
- **Responsibilities:** Ensured a robust user experience and seamless user experience by developing and maintaining web applications using front-end and back-end technologies. Collaborated with cross-functional teams to develop, execute, and optimize scalable solutions.
- **Tech stack:** Node.js, Express.js, React.js, HTML, PostgreSQL, Tailwind, CI/CD, Jira, GitHub

Rankmylist Bangladesh Ltd.   **Dec 2018 – April 2020**
Web and Mobile Application Developer   *Chittagong, Bangladesh*
- **Interactive Ranking Module:** Created a core ranking module for rankmylist⏷Optimized MySQL queries, contributed to the design of the system for efficient data storage, and developed a ranking module and automated data visualization using D3.js.
- **Tech stack:** Vanilla JavaScript, PHP, d3.js, MySQL, CSS, HTML, Python, BitBucket.

PROJECTS

Currently working on Cloud and Software Security Projects, and exploring the Trustworthiness of Gen AI along with its Safety and Security.

ACCOMPLISHMENTS and AWARDS

- Secured the third position in UWORCS 2022 for the Traffic Forecasting project.
- WGRS(Western Graduate Research Scholarship); awarded by Western University, for research.

REFERENCES

Available Upon Request