NAFIZ SADMAN

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RESEARCH EXPERIENCES

Computing Graduate Research Fellow *(Big Data Analytics and Management Lab, Queens' School of Computing)*
Sept 2022 – Present

■ *Cross Affiliation with School of Computing and Faculty of Health Science, Queen's University*
Supervisor: Professor Farhana Zulkernine, Ph.D., P.Eng and Dr. Nicholas Cofie, Ph.D.

Automated the extraction and **evaluation** of student resident performance (Entrustable Professional Activities) by **analyzing textual information** from assessor notes. This includes **sentiment analysis and spearman correlation** of assessor feedback and committee comments.

■ *Cross Affiliation with School of Computing and School of Rehabilitation Therapy, Queen's University*
Supervisor: Professor Farhana Zulkernine, Ph.D., P.Eng and Assoc Professor Nora Fayed, Ph.D.

1. **Automated literature filtration with domain-specific BERT**, **information extraction**, and **information classification from 8,000 clinical RCT articles with specificity 95%** using domain-specific large language model.

2. Contributed to **grant writeup** (under review).

■ *Internship at Pfizer Canada (with MITACS Accelerate* | Oct 2022 - Feb 2023*)*

1. **Extracted**, **transformed**, and **analyzed unstructured Electronic Health Records** to understand patient clinical characteristics, demographics, and comorbidities using **Pandas**, **mySQL**, **numpy**, **sklearn**, and visualization with **seaborn**. Conducted **statistical prediction with k-means clustering** and **logistic regression**.

2. Contributed to **paper**: "Diagnosis and management of Alzheimer's disease in primary care: a real-world study in Ontario, Canada" accepted in Journal of Primary Care and Community Health (2025).

INDUSTRY EXPERIENCES

Front-end Developer (1 year+) Jan 2024 – Present
Smith School of Electrical and Computer Engineering, Queen's University
- Developed a **visualization research tool** for **streaming data** from PID controllers using: **Python Socket IO**, **HTML5**, **CSS3**, **D3 JavaScript**.
- Document tool for **paper publication** on tools (accepted in NFM2025).

Machine Learning Engineer (3 years) Aug 2019 - Jul 2022
Silicon Orchard Ltd ,Dhaka, Bangladesh
- Built an internal **HR data analytics** tool based on **BERT**.
- Developed a **Stylometric Analysis** algorithm for **Authorship Attribution**.
- Developed a **deep Reinforcement Learning** algorithms for **recommendation systems**.
- Developed **speech recognition** algorithm for **smart home systems**.

RESEARCH PROJECTS

Computational Biology	Combinatorial Optimization	Reinforcement Learning	Cyber security
Explainable AI in Radiology Imaging using GradCAM. Paper accepted in BioKDD'25.	Multi-task learning to select best group of classifiers for specific set of tasks.	Imbalanced classification for biomedical datasets using RL for weight distribution.	Using multi-party computation to pass secret messages. Biometric authentication.

OTHER EXPERIENCES

Graduate Teaching Assistant Jan 2023 – Present
School of Computing, Queen's University
Multiple CS courses. Duties: Assist with marking, proctoring, conducting lab sessions, and office hours.

Community Volunteering
COMPSA Liaison Officer, Graduate Computing Society, Queen's University January 2025 – August 2025
VP, Queen's Bangladeshi Student Association, Queen's University September 2024 – Present

ACADEMICS

Ph.D. Candidate Pursuing
School of Computing, Queen's University
XAI in Vision and NLP.

M.Sc in Cybersecurity Degree Conferred
School of Computing, Queen's University
Thesis: Passive Liveness Detection using Depth and rPPG for Face Presentation Attack Detection

CERTIFICATIONS

- Deep Learning Certification by *Deeplearning.AI*
- TensorFlow in Practice Certification by *Deeplearning.AI*

PUBLICATIONS

Highlights:

- Sadman, N., Zulkernine, F, Kwan, B (2025 August). Interpreting Biomedical VLMs on High-Imbalance Out-of-Distributions: An Insight into BiomedCLIP on Radiology. In the 24th International Workshop on Datamining in Bioinformatics (BioKDD 25).
- Sadman, N., Kienersi, N., Kauffman, S. (2025 April). Visualizing Temporal Interval Hierarchies. In the 17th NASA Formal Methods (NFM).
- Sadman, N., Hasan, K.A., Rashno, E., Alaca, F., Tian, Y., Zulkernine, F. (2023 December). Vulnerability of Open-source Face Recognition Systems to Blackbox Attacks: A Case Study With InsightFace. In 2023 IEEE Symposium on Computational Intelligence in Cyber Security (IEEE CICS)}.

First Authored Publication: 12 **Venues:** KDD, ICML, ICMLA, SSCI, ICSOFT, ICSEA, CCWC
Google Scholar Citations: https://scholar.google.com/citations?user=M3FEjQsAAAAJ

REFERENCES

Dr. Farhana Zulkernine, Ph.D., P.Eng.

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