Kazi Noshin

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Research Interest

Explainable Artificial Intelligence/Machine Learning/Deep Learning – Fair AI – Medical AI – Health Informatics – Large Language Models

Education

University of Virginia — *Charlottesville, USA*

Ph.D. in Computer Science — *August 2023 – Present*

Bangladesh University of Engineering and Technology (BUET) — *Dhaka, Bangladesh*

Bachelor of Science in Computer Science and Engineering — *Feb 2017 – May 2022*

- CGPA: 3.68/4.00
- Last two-year CGPA: 3.84/4.00

Work Experience

University of Asia Pacific — *Dhaka, Bangladesh*

Lecturer — *Aug 2022 - June 2023*

- **Courses Conducted**:
  - Introduction to Computer Science and Programming Methodology Lab
  - Structured Programming (C)
  - Data Structures
  - Software Development
- **Responsibilities**:
  - Efficient planning of assignments to enhance the student's ability to understand computer basics.

BUET-Japan Institute of Disaster Prevention and Urban Safety — *Dhaka, Bangladesh*

Research Assistant

Supervisor: Dr. Mohammed Eunus Ali (Professor, BUET) — *July 2022 - Jan 2023*

- **Purpose**:
  - Improvement of Earthquake Early Warning System using graph attention networks.
  - Prediction of earthquake intensity in different regions using a relatively small amount of earthquake receiver station records.

Bangladesh University of Textiles — *Dhaka, Bangladesh*

Lecturer (Part-time) — *June 2022 - July 2022*

- **Courses Conducted**:
  - Structured Programming (C)
- **Responsibilities**:
  - Effective delivery of course contents to make the student's able to understand C basics.

Publications

Uncovering Important Diagnostic Features for Alzheimer's, Parkinson's and Other Dementias Using Interpretable Association Mining Methods (Link) — *PSB*

Authors: **Kazi Noshin**, Mary Regina Boland, Bojian Hou, Victoria Lu, Carol Manning, Li Shen, Aidong Zhang — *2024*

Determining the Importance of Clinical Modalities for NeuroDegenerative Disorders, Alzheimer's Disease, and Risk of Patient Injury Using Machine Learning and Survival Analysis (Link) — *AMIA*

Authors: **Kazi Noshin**, Mary Regina Boland, Bojian Hou, Weiqing He, Victoria Lu, Carol Manning, Li Shen, Aidong Zhang — *2024*

Integrating Social Determinants of Health in a Multi-Modal Deep Clustering Survival Model for Injury-Risk in Alzheimer's and Related Dementia Patients (Link) *PubMedAIHealth*

Authors: **Kazi Noshin**, Mary Regina Boland, Bojian Hou, Weiqing He, Victoria Lu, Carol Manning, Li Shen, Aidong Zhang *2024*

Real-time Seismic Intensity Prediction using Self-supervised Contrastive GNN for Earthquake Early Warning (Link) *IEEE*

Authors: Rafid Umayer Murshed, **Kazi Noshin**, Md Anu Zakaria, Md Forkan Uddin, AFM Saiful Amin, Mohammed Eunus Ali *2024*

Research Projects

Alzheimer's Disease Early Prediction with Deep Learning approaches *2023 - Present*

Supervisor: Dr. Aidong Zhang (Professor, University of Virginia)

External Collaborators: Dr. Li Shen (Professor, University of Pennsylvania)

- Developing approaches for identifying Social Determinants of Health (SDOH) using LLM
- Building interpretable alogorithms/models to provide early predictions for Alzheimer's Disease.

Automated Analysis of Parkinson's Disease (PD) Characteristics and Severity Based on Videos Collected via a Web-based Platform (B.Sc. Thesis) **(PDF)** *2021 - 2022*

Supervisor: Dr. Mohammad Saifur Rahman (Professor, BUET)

External Collaborators: Dr. Ehsan Hoque (University of Rochester), Dr. Imran Sarker (NINH, BD)

- Building a simple automated online PD screening tool by modifying an existing web-based application that can capture audio and video data from participants to identify Parkinson's Disease (PD) in thousands of undiagnosed people in Bangladesh.
- Providing patients the opportunity for frequent assessment/monitoring without having appointments with neurologists or requiring them to travel to a healthcare facility.

Actionable Analytics of Cancer *2021-2023*

Supervisor: Dr. Mohammad Saifur Rahman (Professor, BUET)

External Collaborator: Dr. Abu Zafer Mohammed Dayem Ullah (Barts Cancer Institute, UK)

- Identifying the association of various clinical or molecular factors with the survival of patients diagnosed with cancers.

Notable Projects

SHIKHON - The Admission Helper

Software Development Project *2021*

- The targeted users of the platform is University Admission Candidates and the purpose of the application is to provide tutorials, notes, and solutions about a particular topic of a particular subject. The main challenge of this project is to learn how to build an interactive live application.
- Language : Javascript, Library : NodeJS, Database : MongoDB, Frontend : React Native JS
- Github link

Lines Of Action (LOA)

Artificial Intelligence Project *2021*

- This project provides a platform where the player can play with an AI agent or two players can play with each other.
- Language: Java, Framework: Slick
- Github link

Skills

Programming	Python, R, C/C++
Database	PostgreSQL, MongoDB
Frameworks	PyTorch, Keras
Tools/Software	Git, Microsoft Word, PowerPoint, Excel, MATLAB, Latex
Libraries	Pandas, NumPy, Matplotlib, SciPy, Scikit-Learn, TensorFlow, OpenFace

References

Aidong Zhang Professor, Computer Science, UVA, email: aidong@virginia.edu

Mary Regina Boland Assistant Professor, Data Science in Mathematics, Saint Vincent College, Latrobe, PA, USA, email: mary.boland@stvincent.edu