Kazi Noshin

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Research Interest

Human-Computer Interaction – Machine Learning – Deep Learning – Social Computing – Large Language Models – Human Well-being

Education

University of Virginia *Charlottesville, VA, USA*

M.S. in Computer Science *August 2023 – December 2025*

- Current GPA: 4.00/4.00

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

Publications

NADCSM: Neural Additive Deep Clustering Survival Machines (Currently Under Review, Submitted to ACM KDD**)**

Authors: **Kazi Noshin***, Bojian Hou*, Mary Regina Boland, Zixuan Wen, Boning Tong, Li Shen, Aidong Zhang *2025*

- This study introduces NADCSM, a novel framework that enhances risk clustering and interpretability in survival analysis.
- It demonstrates superior risk stratification across benchmark and real-world datasets, including Alzheimer's disease and EHR data.

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

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

- This study leverages Electronic Health Records (EHR) to identify important predictive features for Alzheimer's Disease and Related Dementia (ADRD) using various Machine Learning methods.

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 Informatics Summit*

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

- This study examines the role of Machine Learning in survival analysis for predicting fall-related injuries among elderly patients with NDD.
- It finds that combining medication and laboratory data improves prediction performance while mitigating racial biases in risk estimation.

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

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

- This study reveals that SDOH improves the performance of a deep clustering survival model, with laboratory data outperforming medications in predicting fall risk.
- It finds that education is a key SDOH factor, underscoring its significance in Alzheimer's Disease progression.

Real-time Seismic Intensity Prediction using Self-supervised Contrastive GNN for Earthquake Early Warning (Link**)** *IEEE Transactions on Geoscience and Remote Sensing*

Authors: Rafid Umayer Murshed, **Kazi Noshin**, Md Anu Zakaria, Md Forkan Uddin, AFM Saiful Amin, Mohammed Eunus Ali *2023*

- This study proposes Seismic Contrastive Graph Neural Network (SC-GNN) for improved seismic intensity prediction using early waveforms, demonstrating superior performance over existing methods and enhancing earthquake early warning systems.

Research Experience

Alzheimer's Disease Prediction with Deep Learning approaches (MS Thesis)
(Graduate Research Assistant at University of Virginia) *2023 - Present*

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

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

Earthquake Early Warning System using Graph Neural Network
(Research Assistant at BUET-Japan Institute of Disaster Prevention and Urban Safety) *July 2022 - Jan 2023*
Supervisor: Dr. Mohammed Eunus Ali (Professor, BUET)

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.
- Collecting audio and video data from PD patients using our interface and analyzing the extracted features of facial mimicry expressions to diagnose PD using machine learning-based models such as random forest, XGBoost, etc.

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.

Teaching Experience

Universiy of Virginia *Charlottesville, VA, USA*
Graduate Teaching Assitant *Fall 2024*

- **Courses Taught**:
  - CS 6316: Machine Learning
- **Responsibilities**:
  - Grading assignments and provided feedback.
  - Leading weekly office hours and supported students on Piazza.

University of Asia Pacific *Dhaka, Bangladesh*
Lecturer (Full-time) *Aug 2022 - June 2023*

- **Courses Taught**:
  - 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.

Bangladesh University of Textiles *Dhaka, Bangladesh*
Lecturer (Part-time) *June 2022 - July 2022*

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

Course-Based Projects

SHIKHON - The Admission Helper
Software Development Project (Github link) *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

Lines Of Action (LOA)
Artificial Intelligence Project (Github link) *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

Skills

Programming	Python, R, C/C++, Javascript
Frameworks	PyTorch, Keras, React-Native
Libraries	Pandas, NumPy, Matplotlib, SciPy, Scikit-Learn, OpenFace
Tools/Software	Git, GitHub Actions, Hugging Face, Microsoft Word, PowerPoint, Excel, MATLAB, Latex
Database	MongoDB

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