Md Mahmudur Rahman

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Work Experience

- **Graduate Teaching Assistant**, **Jan 2023 – Present**

  Department of Information Systems, UMBC. **Course:** Deep Learning.
  - Graded assignments, homework, and exam papers for a class of 40 students.
  - Conducted one-on-one discussions with students who needed help understanding course materials.
- **Graduate Research Assistant**, Sanjay Lab, UMBC. **Aug 2019 – Dec 2022**
  - Proposed several novel methods to address the critical challenges in healthcare, such as fair, interpretable, and accurate risk predictions of the patients.
  - Achieved state-of-the-art performance for complex survival analysis problems, such as competing risk analysis, multi-state survival analysis, and fair survival analysis, using our proposed pseudo-value-based deep learning methods.
  - Introduced federated learning framework for survival analysis that has opened the door for future research and advancements in this field, as there is currently limited research in this domain.
  - Published our works in top-tier conferences like KDD, AAAI, SDM, and CISS.
  - Achieved two best poster awards from the Information systems department at UMBC.
  - Achieved one student travel grant from SIAM SDM 2023 conference and three student scholarships from AAAI and KDD conferences.
- **Deputy Director**, The Central Bank of Bangladesh. **Apr 2018 - Study leave**
  - Identified and visualized the key pattern and trends in Bangladesh's Export Receipts & Central Account data by analyzing them using the Enterprise Data Warehouse system that helped my manager make informed decisions on strategic initiatives.
  - Was responsible for monitoring the discrepancy in the reports provided by the commercial and state banks on a monthly basis to ensure the accuracy of the data.
  - Prepared the quarterly and annual reviews on Export Receipts of Goods & Services. By providing insights into the country's export performance, we support the government in its efforts to promote economic growth and attract foreign direct investment.
  - Led a team that established a Data Science section in my department, which lays a foundation for a more data-driven culture.
- **Lecturer**, Bangladesh University of Business and Technology. **Jun 2017 -Sep 2017**
  - Designed and taught three statistics courses, covering topics such as probability, regression analysis, and time series analysis.
  - Monitored student progress throughout the semester by assigning homework, projects, and exams that evaluated their understanding of the course materials.
  - Provided constructive feedback and guidance to help students identify their strengths and weaknesses and make progress accordingly.
  - Encouraged group discussions and class participation to develop strong communication and teamwork skills in the students.

Skills

- **Programming Languages:** Python, R
- **Deep Learning Frameworks:** TensorFlow, Keras, PyTorch
- **Machine Learning Library:** Numpy, Pandas, Matplotlib, scikit-learn
- **Statistical Tools:** STATA, SPSS, SAS
- **Utilities:** LaTeX, Anaconda, Git, Jupyter Notebook, SQL, MS Word, MS PowerPoint, MS Excel

Education

- **Ph.D. Student — Information Systems** **Expected:** May 2024
  University of Maryland, Baltimore County (UMBC), USA.
- **Master of Science — Information Systems** **Expected:** May 2023
  University of Maryland, Baltimore County (UMBC), USA.
- **Master of Science — Statistics** **Jan 2016 – Mar 2017**
  University of Dhaka, Bangladesh. **GPA:** 3.89/4.00
- **Bachelor of Science — Statistics** **Jan 2011 – Nov 2015**
  University of Dhaka, Bangladesh. **CGPA:** 3.78/4.00

Publications

Conference Proceedings

1 **M M Rahman** and S Purushotham, "Federated survival analysis with competing events (abstract)," in CISS (to appear), 2023.

2 **M M Rahman** and S Purushotham, "Multi-state survival analysis using pseudo value-based deep neural networks," in SIAM SDM, Minneapolis, Minnesota, USA, 2023.

3 **M M Rahman** and S Purushotham, "Fair and interpretable models for survival analysis," in ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Washington DC, USA, 2022.

4 **M M Rahman**, K Matsuo, S Matsuzaki, and S Purushotham, "Deeppseudo: Pseudo value based deep learning models for competing risk analysis," in AAAI, Virtual Conference, 2021.

Workshops and Symposiums

1 **M M Rahman** and S Purushotham, "A pseudo value based interpretable neural additive model for survival analysis," AAAI Workshop on Trustworthy AI for Healthcare, 2022.

2 **M M Rahman** and S Purushotham, "Fedpseudo: Pseudo value-based deep learning models for federated survival analysis," KDD Workshop on Applied Data Science for Healthcare, 2022.

3 **M M Rahman** and S Purushotham, "Pseudo value-based deep neural networks for multi-state survival analysis," KDD Workshop on Applied Data Science for Healthcare, 2022.

4 **M M Rahman** and S Purushotham, "Pseudonam: A pseudo value based interpretable neural additive model for survival analysis," AAAI Fall Symposium Series in Human Partnership with Medical AI, 2021.

5 **M M Rahman**, K Matsuo, S Matsuzaki, and S Purushotham, "Deeppseudo: A deep learning approach based on pseudo values for competing risk analysis," KDD Workshop on Applied Data Science for Healthcare, 2020.

Professional Activities and Recognition

- **SIAM Student Travel Award**, SIAM International Conference on Data Mining, SDM23, 2023.
- **Peer-reviewer in CISS 2023 conference, 2023**.
- **1st Place - PhD/Postdoc Completed Research Track**, IS Research Symposium, UMBC, 2022.
- **KDD-22 Student Scholarship**, ACM SIGKDD, 2022.
- **Volunteered at ACM SIGKDD 2022 main conference, 2022**.
- **AAAI-22 Student Scholarship**, AAAI, 2022.
- **Best Poster Award**, IS Poster Day, UMBC, 2021.
- **AAAI-21 Student Scholarship**, AAAI, 2021.
- **Volunteered at AAAI 2021 main conference, 2021**.
- **Dean's Award**, University of Dhaka, Bangladesh, 2016.
- **NST Fellowship for Research**, Ministry of Science and Technology, Bangladesh, 2016.