Md Salman Rahman

CONTACT INFORMATION

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[Google Scholar] [dblp] [ResearchGate]

RESEARCH INTERESTS

Data Science, Machine Learning, Deep Learning, Bayesian Statistics, ML and AI in Health Care, Computational Sustainability.

EDUCATION

University of Texas Rio Grande Valley — *Edinburg, TX*
M.S. in Applied Statistics and Data Science — *Summer 2022 (Expected)*
CGPA: **4.00/4.00**
Thesis title: *Bayesian Methods and Deep Learning in Disease Modeling*

Chittagong University of Engineering and Technology — *Bangladesh*
B.Sc. in Civil Engineering with Honors, CGPA: **3.84/4.00** — *July 2018*
Class Rank: Summa Cum Laude (top 1% in a class of 126 students)

AWARDS

- **HealthyAI** : UTRGV Big Idea Competition Winner in Health and Life Science Category. 2021
- Presidential Graduate Research Assistantship for master's study. 2020
- Dean's list award for academic excellence at all levels of undergraduate study, Bangladesh. 2018
- University merit scholarship for academic excellence at all levels of undergraduate study, Bangladesh. 2014-2018
- High school scholarship awarded by government of Bangladesh. 2008
- Primary school talent pool scholarship awarded by UNICEF & government of Bangladesh. 2005

PUBLICATIONS

Peer-reviewed Journal (*denotes co-first author)

[1] Md Reaz Akter Mullick, **Md Salman Rahman**, Md Panjarul Haque. *More Crops Whilst Saving Drops Using an Optimization Model – a Case from Bangladesh* In Irrigation and Drainage, 2021. (Impact Factor : 1.328). [Link]

[2] Tamal Chowdhury, Hemal Chowdhury, Samiul Hasan, **Md Salman Rahman**, M.M.K.Bhuiya, Piyal Chowdhury. *Design of a stand-alone energy hybrid system for a makeshift health care center: A case study.* In Journal of Building Engineering, 40, 102346, 2021. (Impact Factor: 3.379). [Link]

[3] Monirul Islam Miskat, Ashfaq Ahmed, **Md Salman Rahman**, Hemal Chowdhury, Tamal Chowdhury, Piyal Chowdhury, Sadiq M. Sait, Young-Kwon Park. *An overview of the hydropower production potential in Bangladesh to meet the energy requirements.* In Environmental Engineering Research, 26(6), 200514, 2020. (Impact Factor: 1.438). [Link]

[4] Mohammed Sarfaraz Gani Adnan, **Md Salman Rahman**, Nahian Ahmed, Bayes Ahmed, Md. Fazleh Rabbi, Rashedur M. Rahman. *Improving spatial agreement in machine learning-based landslide susceptibility mapping.* In Remote Sensing, 12(20), 3347, 2020. (Impact Factor: 4.118). [Link]

Book Chapters

[1] Hemal Chowdhury, Tamal Chowdhury, Pranta Barua, **Md Salman Rahman**, Nazia Chowdhury, Anish Khan. *Biofuel production from food waste biomass and application of machine learning for process management.* In book: Advanced Technology for the Conversion of Waste into Fuels and Chemicals. Edited by Anish Khan, Mohammad Jawaid, Antonio Pizzi, Naved Azum, Abdullah Asiri, Illyas Isa. Chapter 3. Elsevier, 2021. [Link]

[2] Tamal Chowdhury, Hemal Chowdhury, Monirul Islam Miskat, **Md Salman Rahman**, Nazia Chowdhury. *Membrane based hybrid processes for wastewater treatment.* In book: Membrane-Based Hybrid Processes for Wastewater Treatment. Edited by Maulin P. Shah and Susana Rodriguez-Couto. Chapter 19. Elsevier, 2021. [Link]

Conference Abstract

[1] **Md Salman Rahman**, Md Reaz Akter Mullick, Panjarul Haque, Nadia Sultana Nisha. *Effect of Climate Change to Irrigation Water Requirement in an Irrigation Project of Bangladesh.* In American Geophysical Union (AGU) fall meeting in San Francisco, USA (December 2019). [Link]

[2] Emon Roy, **Md Salman Rahman**, Nadia Sultana Nisha. *Climate Change Induced Disaster and Adaption Strategy at Coastal Region of Bangladesh: a Case Study on Saint Martin Island.* In American Geophysical Union (AGU) fall meeting in San Francisco, USA (December 2019). [Link]

[3] **Md Salman Rahman**, Rupom Kanti Dhar, Md Reaz Akter Mullick. *Seasonal Weather Prediction for Bangladesh Based on ENSO Condition.* In American Geophysical Union (AGU) fall meeting in San Francisco, USA (December 2019). [Link]

[4] **Md Salman Rahman**, Nadia Sultana Nisha. *Sustainability Impact on Bangladesh Due to Influx of the Rohingya Immigrants.* In International Conference on the Rohingya Crisis in Comparative Perspective, UCL Institute for Risk and Disaster Reduction, University College London, UK (July-2019). [Link]

Others

[1] Emon Roy, **Md Salman Rahman**, Nadia Sultana Nisha, Amlan Majumder. *Water Vulnerability Scenario of a Typical Populous City of Least Developed Country.* In 5th International Conference on Civil Engineering for Sustainable Development (ICCESD 2020). [Link]

[2] **Md Salman Rahman**, Sultan Mohammad Farooq, Md Aftabur Rahman. *Improvement of Soft Soil by Physical and Chemical Interaction.* In 4th International Conference on Advances in Civil Engineering (ICACE 2018). [Link]

In Review

[1] Tamal Chowdhury, Hemal Chowdhury, **Md Salman Rahman**, Monirul Islam Miskat, Nazia Hossain, Piyal Chowdhury, Sadiq M. Sait. *Progress of Solar Energy Application in Bangladesh, Techno-economic Analysis and Implementation of Artificial Intelligence* (Under review in Utilities Policy, Impact Factor : 1.835).

[2] *Monirul Islam Miskat, ***Md Salman Rahman**, Nazia Hossain, Md. Fazleh Rabbi, Nadia Sultana Nisha, Hasan Yildizhan. *Assessment of Sustainability for Turkey's Residential Sector with Advanced Thermodynamics Analysis* (Under review in Journal of Building Engineering, Impact Factor : 3.379).

[3] *Monirul Islam Miskat, ***Md Salman Rahman**, Nazia Hossain, Md. Fazleh Rabbi, Nadia Sultana Nisha, Hasan Yildizhan. *Energy, Exergy, and Sustainability Analysis of Fossil-fuel Applications in the Industrial Sector of Iran: A Case*

Study (Under review in Environmental Science and Pollution Research, Impact Factor : 3.056).

[4] Hemal Chowdhury, Tamal Chowdhury, **Md Salman Rahman**, Monirul Islam Miskat. *Estimating the Medical Waste Generation During COVID-19 Pandemic in Bangladesh* (Under review in Resources, Conservation & Recycling, Impact Factor : 8.086).

[5] Hemal Chowdhury, Tamal Chowdhury, Samiul Hasan, **Md Salman Rahman**, Sadiq M. Sait. *Techno-economic optimization of an island standalone system for rural electrification in Monpura, Bangladesh* (Under review in Journal of Energy Storage, Impact Factor : 6.583).

[6] Hemal Chowdhury, Tamal Chowdhury, **Md Salman Rahman**, Hasan Masrur, Tomonobu Senjyu. *Techno-economic Comparison of Grid extension, Solar PV and Diesel Based Irrigation System and Resiliency of the Solar PV System against the Grid Outages* (Under review in Sustainable Energy Technologies and Assessments, Impact Factor : 5.353).

SERVICES

Journal Reviewer [ORCiD]

- Water Resources Management

TALKS

Remote Sensing Data Processing. North South University, Bangladesh, November 2020.

Fundamental of Satellite Remote Sensing. North South University, Bangladesh, October 2020.

Data Science and Machine Learning to Tackle Societal Challenges. SPIE Student Chapter Seminar, University of Texas RGV, USA, August 2020.

RESEARCH EXPERIENCE

Bayesian Statistics, Machine Learning, and Deep Learning [Currently Working]

- Deep learning-based reverse engineering process to predict human cultural dimension from COVID disease.
- Human cultural dimensions and behavior during COVID-19 can lead to economic losses: a Bayesian and game theory perspective.
- Machine learning time series analysis of COVID vaccination.

AI for social good [Remote sensing Journal]

- Develop a machine learning-based landslide susceptibility map for Rohingya refugees with a better spatial agreement and minimizing the uncertainty involved in various methods.

Machine learning and optimization for sustainable agriculture [Irrigation and Drainage Journal]

- Designed a linear programming optimization model to maximize crop production and subsequently net benefit considering the climate change effects.

WORK EXPERIENCE

Presidential Research Assistant, School of Mathematical and Statistical Sciences, University of Texas Rio Grande Valley — Spring 2021 - Present

Supervisor: Professor Tamer Oraby

Project Title: Integrating the Bayesian method, machine learning, and evolutionary game theory to explore the impact of cultural dimension and human behavior in COVID-19 disease modeling and vaccination.

Research Assistant, ECE Department, North South University Fall 2020
Supervisor: Professor M. Rashedur Rahman
Project Title: Dense prediction under pseudo-random and non-random noise in multi-dimensional labels.

RELEVANT COURSEWORK

Masters Courses (Data Science and Statistics) Statistical Machine Learning, Mathematical Statistics (Statistical Inference), Statistical Methods, Foundation of Software and Programming System, Linear Algebra, Analysis. In Spring & Summer 2022: Deep Learning, Data Mining and Warehousing, Foundation of Algorithm and Data Structure, Probability and Statistics.

TECHNICAL SKILLS

Programming Languages: **Proficient**: Python, R; **Familiar**: C++, MATLAB, C, Javascript.
Frameworks: TensorFlow, PyTorch, Flask, Keras, Django, REST Api, Bootstrap.
Libraries: Numpy, Scikit-learn, Seaborn, Pandas, Matplotlib, SciPy.
Remote sensing: ArcGIS, Google Earth Engine.
Database: MySQL.

LEADERSHIP SKILLS

Founding President: American Statistical Association Student Chapter UTRGV - Data Science and Statistics Club.

REFERENCE

Available upon request