Md Salman Rahman

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Education

2022–2026 **Ph.D. in Computer Science,**
New York University, New York, NY, USA.

2021–2022 **M.S. in Applied Statistics and Data Science,**
University of Texas Rio Grande Valley(UTRGV), Edinburg, TX, USA,
GPA: 4.00/4.00, Advisor: Prof. Tamer Oraby.

Research Interests

Machine Learning, AI for Healthcare & Medicine, Un(self)supervised Learning, Interpretability.

Awards and Recognitions

2022 **National Science Foundation Innovation Corps**
Selected Participant in the NSF I-Corps UTRGV Regional Program.

2022 **Rafael Munguia Business Plan Competition**
A $1,500 prize money for placing at the competition and 1 year co-working membership to the Center for Innovation and Commercialization (CIC).

2021 **Blackstone LaunchPad Ideas Competition 2021 Grand Prize Winner**
A $10,000 scholarship for presenting "HealthyAI: Empowering the Future of Primary Care".

2021 **UTRGV Big Idea Competition Winner Along with Health and Life Science Category**
A $1,500 scholarship for presenting "HealthyAI: Empowering the Future of Primary Care".

2021 **Presidential Graduate Research Assistantship**
Two-year graduate research scholarship with an overall stipend of $34,176 for master's study.

2018 **Dean's Award**
One of three students awarded by dean's list award for academic excellence at all levels of undergraduate study.

2014–2018 **University Merit Scholarship**
Scholarship for academic excellence at all levels of undergraduate study.

2008 **High School Scholarship**
Scholarship awarded by the government of Bangladesh.

2005 **Primary School Talent Pool Scholarship**
Scholarship awarded by UNICEF & government of Bangladesh.

Peer-reviewed Journal

paper link **A Simulation Study of Techno-Economics and Resilience of the Solar PV Irrigation System Against Grid outages**
Hemal Chowdhury, Tamal Chowdhury, **Md Salman Rahman**, Hasan Masrur, Tomonobu Senjyu.
In Environmental Science and Pollution Research, 1-12, 2022(Impact Factor: 4.223).

paper link **Estimation of the Healthcare Waste Generation During COVID-19 Pandemic in Bangladesh**
Tamal Chowdhury, Hemal Chowdhury, **Md Salman Rahman**, Nazia Hossain, Ashfaq Ahmed, Sadiq M. Sait.
In Science of the Total Environment, 152295, 2021(Impact Factor: 7.963).

paper link **More Crops Whilst Saving Drops Using an Optimization Model – A Case from Bangladesh**
Md Reaz Akter Mullick, **Md Salman Rahman**, Md Panjarul Haque.
In Irrigation and Drainage, 1-19, 2021(Impact Factor: 1.328).

paper link **Design of a Stand-alone Energy Hybrid System for a Makeshift Health Care Center - A Case Study**
Tamal Chowdhury, Hemal Chowdhury, Samiul Hasan, **Md Salman Rahman**, M.M.K.Bhuiya, Piyal Chowdhury.
In Journal of Building Engineering, 40, 102346, 2021(Impact Factor: 3.379).

paper link **An Overview of the Hydropower Production Potential in Bangladesh to Meet the Energy Requirements**
Monirul Islam Miskat, Ashfaq Ahmed, **Md Salman Rahman**, Hemal Chowdhury, Tamal Chowdhury, Piyal Chowdhury, Sadiq M. Sait, Young-Kwon Park.
In Environmental Engineering Research, 26(6), 200514, 2020(Impact Factor: 1.438).

paper link **Improving Spatial Agreement in Machine Learning-based Landslide Susceptibility Mapping**
Mohammed Sarfaraz Gani Adnan, **Md Salman Rahman**, Nahian Ahmed, Bayes Ahmed, Md. Fazleh Rabbi, Rashedur M. Rahman.
In Remote Sensing, 12(20), 3347, 2020(Impact Factor: 4.118).

Conference Papers

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

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

Conference Abstract & Poster

conference link **Combining Machine Learning and Satellite Imagery to Improve Landslide Susceptibility Prediction**
Md Salman Rahman.
In 4th Annual Meeting of the SIAM Texas-Louisiana Section (TXLA21), 2021.

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

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

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

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

Book Chapters

chapter link **Biofuel Production from Food Waste Biomass and Application of Machine Learning for Process Management**
Hemal Chowdhury, Tamal Chowdhury, Pranta Barua, **Md Salman Rahman**, Nazia Chowdhury, Anish Khan.
In Advanced Technology for the Conversion of Waste into Fuels and Chemicals Book. Edited by Anish Khan, Mohammad Jawaid, Antonio Pizzi, Naved Azum, Abdullah Asiri, Illyas Isa. Chapter 3. Woodhead Publishing, 2021.

chapter link **Membrane Based Hybrid Processes for Wastewater Treatment**
Tamal Chowdhury, Hemal Chowdhury, Monirul Islam Miskat, **Md Salman Rahman**, Nazia Chowdhury.
In Membrane-Based Hybrid Processes for Wastewater Treatment Book. Edited by Maulin P. Shah and Susana Rodriguez-Couto. Chapter 19. Elsevier, 2021.

Experience

2021–2022 **UTRGV School of Mathematical and Statistical Sciences** *Edinburg, TX*
Graduate Research Assistant under Prof. Tamer Oraby.
- Bayesian methods, machine learning, and deep learning for estimation and prediction of human and culture parameters influencing COVID-19 susceptibility.
- Deep learning for medical imaging.
- Deep learning time series prediction of cultural dimension from COVID-19.

Projects

2022 **Multimodal Fusion** *under Prof. Robert Fergus, NYU Computer Vision Course.*
- Developing diffusion based AI.

2022 **Out of Distribution Generalization** *under Prof. Jennifer Hill, NYU Causal Inference Course.*
- Generalize treatment of target data under multi level structure.

2020-2021 **AI for Social Good** *under Dr. Bayes Ahmed, UCL, UK.*
- Extracted landslide features from satellite images.
- Developed a machine learning-based landslide susceptibility map for Rohingya refugees with a better spatial agreement and minimized the uncertainty involved in machine learning methods.
- Saved lives of one million Rohingya refugees from catastrophic landslide.
- Published a paper in the Remote Sensing journal.

2018–2020 **Data, Health, & Energy Sustainability** *with Energy Research Group, Bangladesh.*
- Estimated amount of healthcare waste generated during the COVID-19 pandemic in Bangladesh.
- Designed a makeshift temporary health care system to accommodate more patients, especially for developing countries where the number of infected patients is much larger than the capacity of hospitals.
- Published paper in Science of Total Environment & Journal of Building Engineering.

2018–2019 **Optimization for Sustainable Agriculture** *under Prof. Reaz Akter Mullick, CUET, Bangladesh.*
- Designed an optimization model to maximize crop production and subsequently net benefit considering the climate change effects.
- Contributed with Food and Agriculture Organization (FAO)'s more crop per drop theme to ensure food security for the world.
- Published a paper in the Irrigation and Drainage journal.

Teaching

Spring 2022 **STAT 3337: Probability and Statistics** *UTRGV*
Graduate Teaching Assistant.
- Taught by Prof. George Yanev in one section and Prof. Cuiyu He in another section.
- Created and graded weekly quizzes, homework, and exams.
- Taught R for statistics.
- Held regular office hours, led some of the lectures and guest lectured.

Spring 2022 **STAT 3301: Applied Statistics** *UTRGV*
Graduate Teaching Assistant.
- Taught by Prof. George Yanev.
- Created and graded weekly quizzes, homework, and exams.
- Taught R for statistics.
- Held regular office hours, led some of the lectures and guest lectured.

Spring 2022 **MATH 1342: Elementary Statistical Methods** *UTRGV*
Instructor.
- Organized, and taught the course, held regular office hours.
- Designed and graded quizzes, homework, and exams.

Talks

2020 **Satellite Remote Sensing & Data Processing,** North South University, Bangladesh.

2020 **Data Science and Machine Learning to Tackle Societal Challenges,** SPIE Student Chapter Seminar, University of Texas Rio Grande Valley, USA..

Relevant Courses

ML & DL Computer Vision, Neural Network and Deep Learning, Statistical Machine Learning, Data Mining and Warehousing.

Algorithm Foundation of Algorithm and Data Structure, Foundation of Software and Programming System.

Math & Stat Linear Algebra, Causal Inference, Probability & Statistics, Calculus, Mathematical Statistics, Statistical Methods, Analysis.

Review Activities

2020 **Water Resources Management**.

Skills

Languages Python, C, C++, Matlab, Java

Statistics R

Frameworks PyTorch, Keras, Tensorflow

Remote Sensing ArcGIS, Google Earth Engine

Database MySQL

Leadership

2021–2022 **UTRGV Applied Statistics and Data Science - American Statistical Association Student Chapter** *Founding President*.

2021–2022 **International Society for Optics and Photonics (SPIE) UTRGV Chapter** *Vice President*.

2021–2022 **UTRGV Sports Organization - Badminton Section** *President*.

Reference

Available upon request.