Salman Rahman

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Education

Aug. 2026 **New York University** *New York, USA*
Ph.D. in Computer Science, GPA: 3.93/4.00
Courses: Deep learning, Computer vision, Natural language processing with representation learning, Learning with large language and vision models, Causal inference, Statistical learning theory

Aug. 2022 **University of Texas Rio Grande Valley (UTRGV)** *Texas, USA*
M.S. in Applied Statistics and Data Science, GPA: 4.00/4.00
Courses: Neural network, Statistical learning, Data mining, Linear algebra, Probability and statistics

Research Interests

Natural Language Processing, Large Language Models, Scalable Oversight, Model Evaluation, Health AI

Research Experience

2022–Present **Graduate Research Assistant** *New York University* NY, US

- Analyzing fairness in clinical BERT models trained on NYU Langone's discharge notes, focusing on privacy and fairness dynamics in downstream supervised tasks: readmission, mortality, length of stay, comorbidity, and insurance denial prediction.
- Investigating debiasing techniques and developing rewriting strategies to systematically reduce bias in clinical notes.
- Contributing to the development of NYU-GPT, a domain-specific language model, integrating both public datasets (MIMIC-IV, SlimPajama, Pubmed Collection, Common Crawl medical section) and proprietary NYU clinical data (discharge, radiology, and pathology notes, along with social and consult conversational data).
- Investigating disparities in post hoc machine learning explanations, focusing on factors like sample size, concept shift, and group attributes, using fidelity gap metrics. This includes examining multi-agent explanation systems for Large Language Models (LLMs) to assess fairness and factual reasoning in explanations generated by LLMs.
- Contributing to a project focused on the analysis of AI-generated mass disinformation, which include developing a theoretical framework to understand the impact of social media disinformation. The research aims to distinguish between the Simple Deception and Environmental Corrosion models of disinformation, and assess the potential of AI detection tools, informing policy-making and future empirical research.
- Evaluating the robustness of Google Street View images as proxies for health-related outcomes, utilizing mediation analysis and validation with ground truth data.

2021–2022 **Graduate Research Assistant** *University of Texas RGV* TX, US

- Modeled the effect of human cultural dimension on COVID-19 policy adherence and economic outcomes using evolutionary game theory to underscore the role of human behavior in public health interventions.
- Leveraged Convolutional Neural Network's fully connected layer to predict human cultural dimensions from COVID-19 time series data, providing insights into behavioral patterns during the pandemic.

Publications

arXiv link **Generalization in Healthcare AI: Insights from Evaluation of a Clinical Large Language Model**
Salman Rahman, Lavender Yao Jiang, Saadia Gabriel, Yindalon Aphinyanaphongs, Eric Karl Oermann, Rumi Chunara
Submitted to FAccT'24.

arXiv link **Understanding the Cause of Disparity in Post-Hoc Machine Learning Explanation Methods**
Vishwali Mhasawade, **Salman Rahman**, Zoé Haskell-Craig, Rumi Chunara
Submitted to FAccT'24.

arXiv link **Impact on Public Health Decision Making by Utilizing Big Data Without Domain Knowledge**
Miao Zhang, **Salman Rahman**, Vishwali Mhasawade, Rumi Chunara
Submitted to Proceedings of the National Academy of Sciences (PNAS).

arXiv link **Out of Distribution Performance of State of Art Computer Vision Model**
Salman Rahman, Wonkwon Lee
arXiv preprint arXiv:2301.10750.

paper link **Current Scenario of Solar Energy Applications in Bangladesh: Techno-Economic Perspective, Policy Implementation, and Possibility of the Integration of Artificial Intelligence**
Monirul Islam Miskat, Protap Sarker, Hemal Chowdhury, Tamal Chowdhury, **Salman Rahman**, Nazia Hossain, Piyal Chowdhury, Sadiq M. Sait
Energies, 16(3), 2023 (Impact Factor: 3.2).

paper link **Advanced Thermodynamics Analysis for Sustainable Residential Sector: A Case Study of Turkish Residential Sector**
Monirul Islam Miskat*, **Salman Rahman***, Quddus Tushar*, Shishir Barai, Nazia Hossain, Fazleh Rabbi, Nadia Sultana Nisha, Sadiq Sait
Environmental Science and Pollution Research, 30(13), 2023 (Impact Factor: 5.8).

paper link **A Simulation Study of Techno-Economics and Resilience of the Solar PV Irrigation System Against Grid outages**
Hemal Chowdhury, Tamal Chowdhury, **Salman Rahman**, Hasan Masrur, Tomonobu Senjyu
Environmental Science and Pollution Research, 1-12, 2022 (Impact Factor: 5.8).

paper link **Estimation of the Healthcare Waste Generation During COVID-19 Pandemic in Bangladesh**
Tamal Chowdhury, Hemal Chowdhury, **Salman Rahman**, Nazia Hossain, Ashfaq Ahmed, Sadiq M. Sait
Science of the Total Environment, 152295, 2021 (Impact Factor: 9.8).

paper link **More Crops Whilst Saving Drops Using an Optimization Model – A Case from Bangladesh**
Md Reaz Akter Mullick, **Salman Rahman**, Md Panjarul Haque
Irrigation and Drainage, 1-19, 2021 (Impact Factor: 1.9).

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, **Salman Rahman**, M.M.K.Bhuiya, Piyal Chowdhury
Journal of Building Engineering, 40, 102346, 2021 (Impact Factor: 7.144).

paper link **An Overview of the Hydropower Production Potential in Bangladesh to Meet the Energy Requirements**
Monirul Islam Miskat, Ashfaq Ahmed, **Salman Rahman**, Hemal Chowdhury, Tamal Chowdhury, Piyal Chowdhury, Sadiq M. Sait, Young-Kwon Park
Environmental Engineering Research, 26(6), 200514, 2020 (Impact Factor: 3.5).

paper link **Improving Spatial Agreement in Machine Learning-based Landslide Susceptibility Mapping**
Mohammed Sarfaraz Gani Adnan, **Salman Rahman**, Nahian Ahmed, Bayes Ahmed, Md. Fazleh Rabbi, Rashedur M. Rahman
Remote Sensing, 12(20), 3347, 2020 (Impact Factor: 5.0).

Awards and Recognitions

2022-2023 **NYU Graduate Fellowship** *New York University*
2022 **Innovation Corps Participant** *National Science Foundation*
2022 **Rafael Munguia Business Plan Competition** *UTRGV*
2021-2022 **Presidential Graduate Research Assistantship** *UTRGV*
2021 **LaunchPad Ideas Competition** *Blackstone*
2021 **Big Idea Competition** *UTRGV*

Skills

Languages Python, C, C++, Matlab, Bash
Frameworks PyTorch, Hugging Face Transformers, TensorFlow, Keras
Version Control Git

Statistics	R
Database	MySQL

Invited Talks

Fall 2023 **Foundation(Large) Language Model** *New York University* **Guest Lecture at CS-GY 9223 Foundations of Data Science**

Teaching

Spring 2022 **STAT 3337: Probability and Statistics** *UTRGV*
Graduate Teaching Assistant
- Instructor: Prof. George Yanev and Prof. Cuiyu He

Spring 2022 **STAT 3301: Applied Statistics** *UTRGV*
Graduate Teaching Assistant
- Instructor: Prof. George Yanev

Spring 2022 **MATH 1342: Elementary Statistical Methods** *UTRGV*
Instructor

References

Available upon request.