

Saimun Habib

Data Scientist – The MITRE Corporation

saimun.u.habib@gmail.com

<https://www.linkedin.com/in/saimunhabib/>

RESEARCH INTERESTS

My research focuses on the foundations of safe and trustworthy AI, with a particular emphasis on neurosymbolic methods as a path toward interpretable, verifiable, and value-aligned systems. My PhD work has produced two primary contributions. First, a framework for efficient counterfactual reasoning in probabilistic logic programming via Single World Intervention Programs, and second, an characterization of the limits of value alignment via RLHF. Going forward, I am actively pursuing research on counterfactual reasoning in neurosymbolic AI, statistical and normative limits of value alignment, and neurosymbolic approaches to attention mechanisms. I am motivated by the belief that hybrid neurosymbolic architectures, offer a principled foundation for building AI systems whose behavior can be understood, audited, and reliably aligned with human values.

COMPUTATIONAL SKILLS

Python, R, C++, MATLAB, SQL, TensorFlow, Keras, Parsenip, Caret, Torch

EDUCATION

Ph.D., started 2024	University of Edinburgh: School of Informatics Causality and Neurosymbolic AI
M.S., 2024	Johns Hopkins University Data Science. GPA: 3.9
A.B., 2021	Harvard University (<i>cum laude</i>) Double major in Statistics and Math (High Honors), minor in Molecular and Cellular Biology. GPA: 3.76 Thesis: Variable Importance in Composite Indices: A Sensitivity Analysis Approach for Optimized Variable Weights

PROFESSIONAL EXPERIENCE

July 2021 – Present	The MITRE Corporation 7525 Colshire Dr. McLean, VA 22102 <i>Data Scientist</i> Operated as a research data scientist in problem domains such as social equity, computer vision, climate resilience, algorithmic fairness, causal inference, and more, to support government sponsors. Lead multiple projects and initiatives and was responsible for a \$100,000 research grant. Supported multiple sponsors and regularly engaged with officials in the US Census, Federal Emergency Management Agency, Hospital of Special Services, Department of Homeland Security, Veterans Affairs, and Department of Treasury as an individual contributor and subject matter expert.
Jun 2020 – Jun 2021	Social and Decision Analytics Division – University of Virginia 1100 Wilson Blvd. Arlington, VA 22209 <i>Data Scientist</i> Worked as a data scientist supporting teams estimating inequities in EMS wait times in Charlottesville, VA and topic modeling the opinions of Black and White U.S. soldiers on racial integrations from historic survey data. Lead a project to develop a novel statistical method optimizing weights in composite indicators/indices to create theoretically sound composites to measure complex phenomena.

- Jan 2019 – Dec 2020 Dept. of Statistics – Harvard University
 1 Oxford St., Cambridge, MA 02138
Teaching Fellow
 Educated and evaluated students in probability, regression modeling, descriptive statistics, and portfolio analysis. Held weekly sections to review class material in further depth to break down complex ideas into simpler components.
- Jun 2019 – Aug 2019 Newton Lab
 425 Henry Mall Madison, WI 53706
Biomedical Data Science Researcher
 Developed a novel Monte Carlo algorithm using C++ and R which aggregated independent gene expression studies for stronger gene set inferences.

TEACHING

- Jan – May 2025 University of Edinburgh – School of Geosciences
Numeracy, Modelling and Data Management
 Created, delivered, and assessed course materials on un/supervised machine learning algorithms and the ETL pipeline in R and Python.

PUBLICATIONS

Papers/White Papers/Reports/Abstracts

1. Bohmholdt, A., Cochran F., Habib, S., et al. Equity in Climate Resilience Planning and Investments. [White Paper]. Nov. 2022.
2. MITRE. The Racial Wealth Gap in Washington D.C. [Report]. Dec. 2021.
3. Freeza, D., Orange, D., Thompson, J., Habib, S., et al. Computer Vision Analysis of Rheumatoid Arthritis Synovium Reveals Lymphocytic Inflammation is Associated with Immunoglobulin Skewing in Blood. *Arthritis & Rheumatology*. July 2023.
4. Habib, S., Pires, B., Benendetto, G., et al. Automated Synthetic Data Validation: Applying Noise Injection for Disclosure Avoidance. *Joint Statistical Meetings Conference Proceedings*. Oct. 2023.
5. Habib, S. Spatiotemporal Causal Inference with Graphical Models: Understanding Conflict and Contraceptives in Burkina Faso. *Joint Statistical Meetings Conference Proceedings*. Oct. 2023.
6. Habib, S., Munro, M., Stadlan, J., et al. Applying Causal Analysis to Equity Assessments: Racially Disparate NIH Award Rates. [Report]. Nov. 2023.
7. Habib, S., Belle, V., He F. Efficient Counterfactual Reasoning in ProbLog via Single World Intervention Program. [Paper]. Under Consideration at the *Journal of Logic and Probability*. Mar. 2026.
8. Habib, S., Xiao, X., Fang, M., He F. Mission Impossible: Universal LLM Moral Alignment. [Paper]. Under Consideration at the *Communications of ACM*. Mar. 2026.

Conference Presentations

1. Bohmholdt, A., Cochran F., Habib, S., et al. Equity in Climate Resilience Planning and Investments. In *National Adaptation Forum*, Baltimore, MD, USA. Oct., 2022.
2. Habib, S. Towards Spatiotemporal Causal Inference with Graphical Models. In *Joint Statistical Meetings*, Toronto, Canada. Aug., 2023.
3. Habib, S., Pires B., Benendetto, G., et al. Automated Synthetic Data Validation: Applying Noise Injection for Disclosure Avoidance. In *Joint Statistical Meetings*, Toronto, Canada. Aug., 2023.
4. Habib, S., Stadlan, J. Quantifying Equity: From Principles to Metrics. In *Harnessing the Power of Economics to Solve Whole of Nation Challenges*. McLean, VA. Sept. 2023.

MEMBERSHIPS AND ACTIVITIES

- Jan 2022 – Present American Statistical Association
- Jan 2023 – Jun 2024 Volunteer at Arlington, VA Public Libraries – Conversational English Teacher
- May 2023 – Present MITRE's First Generation Professionals Committee - Co-Founder and Co-Chair