USMAN GOHAR

Ph.D. Computer Science | Iowa State University
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Research Interests: I am interested in the challenges that arise from operationalizing AI and data-driven software, primarily at the intersection of fairness, safety, ethics, evaluation, and governance.

EDUCATION

Ph.D. Computer Science | **Iowa State University** 2020 - 2026 (*Expected*)
- Research Area*: Algorithmic Fairness, AI Safety, Policy and Evaluation*

MSc. Computer Science | **University of Minnesota Duluth** 2017 - 2019

B.E Computer Engineering | **National University of Sciences & Technology** 2017

HONORS & AWARDS

Spotlight Presentation @ NeurIPS'24 2024
Workshop on Algorithmic Fairness Through the Lens of Metrics and Evaluation

Google CSRMP, Google CS Research Program. 2023
Selected as an advanced-stage Ph.D. student mentee for the program

Research Excellence Award from Iowa State University 2023
Awarded by ISU Computer Science Department for publication in top-tier venues

Featured Research by Montreal AI Ethics Institue Newsletter 2023
Invited to feature my research in the monthly newsletter

Teaching Excellence Award from Iowa State University 2022
Awarded annually for teaching excellence to Top 10% of graduate students

Nominated for the Midwest Teaching Excellence Award 2022
Iowa State Computer Science Department - (Midwestern Association of Graduate Schools)

F. Wendell Miller Scholarship 2020
Awarded to outstanding graduate student (2020-2023)

PUBLICATIONS

A Taxonomy of Real-World Defeaters in Safety Assurance Cases ICSE 2025 (Workshop)
Usman Gohar, Michael C. Hunter, Myra B. Cohen, Robyn R. Lutz

Different Horses for Different Courses: Comparing Bias Mitigation Algorithms in ML AFME @NeurIPS'24
Prakhar Ganesh*, Usman Gohar*, Lu Cheng, Golnoosh Farnadi [*Spotlight Presentation*]

CoDefeater: Using LLMs To Find Defeaters in Assurance Cases ASE'24
Usman Gohar, Michael C. Hunter, Robyn R. Lutz, Myra B. Cohen

Long-Term Fairness Inquiries and Pursuits in Machine Learning: A Survey of Notions, Methods, and Challenges Under Review
Usman Gohar**,** Zeyu Tang, Jialu Wang, Kun Zhang, Peter L. Spirtes, Yang Liu, and Lu Cheng

Evaluating the Social Impact of Generative AI Systems in Systems and Society Book Chapter
Irene Soleiman et al., (Usman Gohar) Oxford Handbook on Generative AI (forthcoming)

Introducing v0.5 of the AI Safety Benchmark from MLCommons Preprint
Bertie Vidgen et al., (Usman Gohar)

A Family-Based Approach to Safety Cases for Controlled Airspaces in Small Uncrewed Aerial Systems AIAA'24
Michael C. Hunter, Usman Gohar, Robyn R. Lutz, Myra B. Cohen

Towards Engineering Fair and Equitable Software Systems for Managing Low-Altitude Airspace Authorizations ICSE'24
Usman Gohar, Michael C. Hunter, Agnieszka Marczak-Czajka, Robyn R. Lutz, Myra B. Cohen, Jane Cleland

A **Survey on Intersectional Fairness in Machine Learning: Notions, Mitigation, and Challenges** IJCAI'23
Usman Gohar, and Lu Cheng

Towards Understanding Fairness and its Composition in Ensemble Machine Learning ICSE'22
Usman Gohar, Sumon Biswas, and Hridesh Rajan

WORK EXPERIENCE

Research Assistant Aug 2020 - Present
Iowa State University Ames, IA
- Leading multiple research projects to analyze & address algorithmic fairness, AI/LLM safety, and uncertainty quantification in ML systems (Python, Pytorch, Fairness toolkits)
- Develop techniques to investigate the safety of data-driven software systems, publishing in top venues (IJCAI, ICSE).
- Received research publication awards in recognition of research contributions as a graduate student.

Ph.D. Data Science Intern May 2023 - Aug 2023
Seagate Bloomington, MN
- Performed extensive data analysis on historical manufacturing and field data to design a predictive model to improve the hard drive manufacturing process, which reduced current target error by 30%.
- Collaborated closely with product & research teams in North America to develop and propose an innovative process enhancement, improving manufacturing yield by 8%.

Data Scientist - Intern May 2021 - Aug 2021
Bayer Creve Coeur, MO
Investigated the effects of irrigation on row-crop yield prediction to improve current models, directly impacting company revenue.
- Collected relevant historical irrigation data from disparate sources, including well levels, rivers, and aquifers. (USDA, USGS) and aggregate for EDA and modeling. (SQL, Python)
- Designed an XGBoost value-proposition model to determine Bayer seeds' competitiveness, improving current model performance by up to 15% in the Corn Belt states.

Software Developer - (Advanced Research Team) Sep 2019 – Aug 2020
Open Access Technology International Minneapolis, MN
- Led a team of developers to build an ML analytics framework for energy forecasting.
- Developed an end-to-end predictive model for energy load forecasting using Time Series data analysis. Experimented with multiple ML/statistical algorithms, improving prediction accuracy by up to 10%
- Streamlined model deployment using Jenkins & Ansible, reducing deployment time & error rates by 80%.

Data Scientist - Search Engine Optimization Intern Jun 2017-Aug 2017
Progos Tech Islamabad, Pakistan
- Wrote complex SQL queries to extract data from multiple databases to analyze shopping trends.
- Supported search engine optimization team to improve average monthly website traffic (+4K) and ranking using data-driven decisions. Designed and performed A/B testing on new website features.

INVITED TALKS

2025	AI Safety and Fairness in Drones	Federal Aviation Administration
2024	How Good are AI-Language Models in Global Languages?	London Data Week
2024	Social Impacts of Generative AI Evaluations	PASS Seminar at Princeton University
2024	Social Impacts of Generative AI Evaluations	“AI for Social Good” at Stanford
2023	Machine Learning Ensemble Fairness.	TruX Seminars at University of Luxembourg
2023	Fair Machine Learning	Data Tech

SKILLS

Tech Stack: Python, R, SQL/NoSQL, Spark, TensorFlow, Tableau, Exploratory Data Analysis, Time Series Forecasting, Machine Learning, Data Mining, Advanced Statistics, A/B testing, Natural Language Processing. Research

REVIEWING & ACADEMIC SERVICES

2025	Association for the Advancement of Artificial Intelligence **(AAAI)**	Program Committee
2025	International Joint Conference on Artificial Intelligence **(IJCAI)**	Program Committee
2025	International Joint Conference on Artificial Intelligence **(IJCAI HAI Track)**	Program Committee
2025	DataSafe Workshop: Datasets and Evaluators for AI Safety @ **AAAI**	Program Committee
2025	Workshop on Trustworthy NLP @ **NAACL**	Program Committee

2025	Workshop on GenAI Watermarking @ **ICLR**	External Reviewer
2025	International Conference on Software Engineering **(ICSE)**	Shadow PC
2024	EvalEval: Evaluating Evaluations: Examining Best Practices for Measuring Broader Impacts of Generative AI @ **NeurIPS**	Organizer/Chair
2024	ACM Conference on Fairness, Accountability, and Transparency **(FAccT)**	Volunteer Co-Chair
2024	AAAI/ACM Conference on AI, Ethics, and Society **(AIES)**	Program Committee
2024	Association for the Advancement of Artificial Intelligence **(AAAI)**	Program Committee
2024	International Joint Conference on Artificial Intelligence **(IJCAI)**	Program Committee
2024	International Conference on Machine Learning **(ICML)**	Ethics Reviewer
2024	Conference on Language Modeling **(COLM)**	Ethics Reviewer
2024	Conference on Human Factors in Computing Systems **(CHI)**	External Reviewer
2024	Conference on Neural Information Processing Systems **(NeurIPS)**	Ethics Reviewer
2024	Workshop on Responsible Language Models (ReLM) 2024 @ **AAAI**	External Reviewer
2024	Workshop on Trustworthy NLP @ **NAACL**	Program Committee
2024	Student Research Workshop @ **NAACL**	External Reviewer
2023	Conference on Neural Information Processing Systems **(NeurIPS)**	Ethics Reviewer
2023	ACM Transactions on Knowledge Discovery from Data **(TKDD)**	External Reviewer

TEACHING

Software Development Practices (COMS 309), *Teaching Assistant/Instructor*	Fall 2020 - Spring 2023 Iowa State University
Introduction to Natural Language Processing (CS 5761) *Teaching Assistant*	Fall 2018 University of Minnesota Duluth
Introduction to Computer Science I (CS 1511) *Teaching Assistant*	Fall 2017 University of Minnesota Duluth
Introduction to Computer Science II (CS 1521) *Teaching Assistant*	Spring 2018 - Spring 2019 University of Minnesota Duluth