

# 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   <b>Iowa State University</b>	2020 - 2026 ( <i>Expected</i> )
- Research Area: <i>Algorithmic Fairness, AI Safety, Policy and Evaluation</i>	
MSc. Computer Science   <b>University of Minnesota Duluth</b>	2017 - 2019
B.E Computer Engineering   <b>National University of Sciences &amp; Technology</b>	2017

## HONORS & AWARDS

<b>Spotlight Presentation @ NeurIPS'24</b>	2024
Workshop on Algorithmic Fairness Through the Lens of Metrics and Evaluation	
<b>Google CSRMP, Google CS Research Program.</b>	2023
<i>Selected as an advanced-stage Ph.D. student mentee for the program</i>	
<b>Research Excellence Award from Iowa State University</b>	2023
<i>Awarded by ISU Computer Science Department for publication in top-tier venues</i>	
<b>Featured Research by Montreal AI Ethics Institute Newsletter</b>	2023
<i>Invited to feature my research in the monthly newsletter</i>	
<b>Teaching Excellence Award from Iowa State University</b>	2022
<i>Awarded annually for teaching excellence to Top 10% of graduate students</i>	
<b>Nominated for the Midwest Teaching Excellence Award</b>	2022
<i>Iowa State Computer Science Department - (Midwestern Association of Graduate Schools)</i>	
<b>F. Wendell Miller Scholarship</b>	2020
<i>Awarded to outstanding graduate student (2020-2023)</i>	

## PUBLICATIONS

<b>A Taxonomy of Real-World Defeaters in Safety Assurance Cases</b>	ICSE 2025 (Workshop)
<u>Usman Gohar</u> , Michael C. Hunter, Myra B. Cohen, Robyn R. Lutz	
<b>Different Horses for Different Courses: Comparing Bias Mitigation Algorithms in ML</b>	AFME @NeurIPS'24
Prakhar Ganesh*, <u>Usman Gohar</u> *, Lu Cheng, Golnoosh Farnadi [ <i>Spotlight Presentation</i> ]	
<b>CoDefeater: Using LLMs To Find Defeaters in Assurance Cases</b>	ASE'24
<u>Usman Gohar</u> , Michael C. Hunter, Robyn R. Lutz, Myra B. Cohen	
<b>Long-Term Fairness Inquiries and Pursuits in Machine Learning: A Survey of Notions, Methods, and Challenges</b>	Under Review
<u>Usman Gohar</u> , Zeyu Tang, Jialu Wang, Kun Zhang, Peter L. Spirtes, Yang Liu, and Lu Cheng	
<b>Evaluating the Social Impact of Generative AI Systems in Systems and Society</b>	Book Chapter
Irene Soleiman et al., ( <u>Usman Gohar</u> ) Oxford Handbook on Generative AI (forthcoming)	
<b>Introducing v0.5 of the AI Safety Benchmark from MLCommons</b>	Preprint
Bertie Vidgen et al., ( <u>Usman Gohar</u> )	
<b>A Family-Based Approach to Safety Cases for Controlled Airspaces in Small Uncrewed Aerial Systems</b>	AIAA'24
Michael C. Hunter, <u>Usman Gohar</u> , Robyn R. Lutz, Myra B. Cohen	
<b>Towards Engineering Fair and Equitable Software Systems for Managing Low-Altitude Airspace Authorizations</b>	ICSE'24
<u>Usman Gohar</u> , Michael C. Hunter, Agnieszka Marczak-Czajka, Robyn R. Lutz, Myra B. Cohen, Jane Cleland	
<b>A Survey on Intersectional Fairness in Machine Learning: Notions, Mitigation, and Challenges</b>	IJCAI'23
<u>Usman Gohar</u> , and Lu Cheng	
<b>Towards Understanding Fairness and its Composition in Ensemble Machine Learning</b>	ICSE'22

## WORK EXPERIENCE

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### Research Assistant

Iowa State University

Aug 2020 - Present

Ames, IA

- Leading multiple research projects to analyze & address algorithmic fairness empirically, 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

Seagate

May 2023 - Aug 2023

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

Bayer

May 2021 - Aug 2021

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)

Open Access Technology International

Sep 2019 – Aug 2020

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

Progos Tech

Jun 2017-Aug 2017

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

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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

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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

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

## TEACHING

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