Sahil Verma

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Research Interests

My research is broadly focused on Trustworthy ML or Responsible AI, specifically focused on fairness, explainability, and robustness of ML.

Education

Sept 2019 - Present	PhD in Computer Science **University of Washington, Seattle** Advisors: Prof. Chirag Shah and Prof. John Dickerson
July 2015 - July 2019	BTech in Electrical Engineering **Indian Institute of Technology Kanpur (IIT Kanpur)** Advisor: Prof. Subhajit Roy

Honors and Awards

2020	Best Paper Award and Nvidia Titan RTX GPU	ML-RSA Workshop at NeurIPS
2019	Allen School Fellowship	Paul G. Allen School, UW
2018	Student Travel Award of $1500	ACM SIGPLAN
2017	Student Travel Award of $1800	Google India
2015	All India Rank 663	IITJEE Advanced Exam
2015	KVPY Fellow with All India Rank 205	IISc Bangalore

Publications

Post-Hoc Attribute-Based Explanations for Recommender Systems
Sahil Verma, Anurag Beniwal, Narayanan Sadagopan, Arjun Seshadri
TEA Workshop at NeurIPS 2022 **(Best Student Paper Award)**

Amortized Generation of Sequential Counterfactual Explanations for Black-box Models
Sahil Verma, Keegan Hines, John P Dickerson
AAAI 2022

Counterfactual Explanations for Machine Learning: A Review
Sahil Verma, John Dickerson, Keegan Hines
ML-RSA Workshop at NeurIPS 2020 **(Best Paper Award) (Citations 225+)**

Removing biased data to improve fairness and accuracy
Sahil Verma, Michael Ernst, Rene Just

Fairness Definitions Explained
Sahil Verma and Julia Rubin
FairWare Workshop at ICSE 2017 **(Citations 725+)**

Facets of Fairness in Search and Recommendations
Sahil Verma, Ruoyuan Gao, Chirag Shah

Algorithmic Bias Workshop at ECIR 2020

ShapeFlow: Dynamic Shape Interpreter for TensorFlow
Sahil Verma and Zhendong Su

Debug-Localize-Repair: A Symbiotic Construction for Heap Manipulations
Sahil Verma and Subhajit Roy
FMSD Journal 2021

Synergistic Debug-Repair for Heap Manipulations
Sahil Verma and Subhajit Roy
ESEC/FSE 2017

Patents

Amortized Generation of Sequential Counterfactual Explanations for Black-box Models
Sahil Verma, Keegan Hines, John P Dickerson
U.S. Patent Application No.: 17/520,069

Work Experience

June 2022 - Sept 2022	Research Intern at Amazon, USA. Developed novel post-hoc explainability technique for recommender systems.
June 2020 - Sept 2021	Research Fellow at Arthur AI, USA. Developed industry deployable ML explainability algorithm.
June 2019 - Sept 2019	Research Intern at ETH Zurich, Switzerland. Developed tensor shape incompatibility bugs detection in TensorFlow.
May 2018 - Aug 2018	Research Intern at CSAIL, MIT, USA. Developed tool for automating floating bit allocation in programs.
May 2017 - Aug 2017	Research Intern at NUS, Singapore. Developed tool to convert CSP programs into C code.

Professional Responsibilities

- **Reviewed research papers for:**
  - Workshops: AFCR 2021 (3), AFCP 2022 (7), HCAI 2022 (4).
  - Conferences: EAAMO 2021 (1), XAIF 2021 (3), NeurIPS 2022 (1), AAAI 2022 (1), ICML 2022 (1), FAccT 2022 (1), AIES 2022 (1), XAIF 2022 (2), AAAI 2023 (4).
  - Journals: IEEE Transactions on Artificial Intelligence (1), Data Mining and Knowledge Discovery (1), International Journal of Data Science and Analytics (1), Journal of Decision Systems (1), Computer and Operations Research (1), Machine Learning (2).
- **Student Volunteer** at ESEC/FSE 2017.

Coursework

Computer Vision	Deep Learning	Fairness in Machine Learning
Machine Learning	Convex Optimization	Reinforcement Learning
Probability and Statistics	Linear Algebra	Reasoning for Software