Jaspreet Ranjit

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RESEARCH INTERESTS

I am a third year Ph.D. candidate at the University of Southern California Viterbi School of Engineering advised by **Prof. Swabha Swayamdipta** and a student leader of **Center for AI in Society**. Previously, I was a Research Assistant in the **Vision, Language and Learning Lab**, working with **Prof. Vicente Ordóñez** at the University of Virginia.

EDUCATION

University of Southern California, Los Angeles, CA
Ph.D. Candidate, Computer Science - Natural Language Processing
Advised By: Swabha Swayamdipta

University of Virginia, Charlottesville, VA
Master of Science, Computer Science, December 2021
Advisor: Prof. Vicente Ordóñez
Thesis: Analyzing Gender Biases in Visual Recognition Models
Relevant Courses: Machine Learning, Vision and Language, Natural Language Processing, Algorithms, Cloud Computing, Geometry of Data, Machine Learning in Image Analysis

University of Virginia, Charlottesville, VA
Bachelor of Science, Computer Science, May 2021
Rodman Scholar: Top 5% of Engineering Class
Relevant Courses: Computer Science - Python, Java & C++/C, Analysis of Algorithms, Theory of Computation, Computer Architecture, Machine Learning, Artificial Intelligence, Human Computer Interaction in Software Development, Operating Systems, Probability, Linear Algebra, Ordinary Differential Equations

RESEARCH EXPERIENCE

Data, Interpretability, Language and Learning Lab (DILL) Los Angeles, CA
Graduate Research Assistant Fall 2022 - Present
Advisor: Prof. Swabha Swayamdipta
Focus: My research interests lie in investigating how language models can help us understand sensitive societal issues. To this end, my research involves exploring collaborative settings between experts and generative models to characterize and extract insights from large-scale unstructured text corpora.

The Vision, Language and Learning Lab at UVA Charlottesville, VA
Machine Learning Research Assistant Nov 2020 - July 2022
Advisor: Prof. Vicente Ordóñez
Focus: Analyzed the impact of model characteristics such as: pretraining dataset, network architecture, and training setting on the representation of gender biases in visual recognition models. In collaboration with Columbia University: Prof. Baishakhi Ray *Thesis*

UVA Engineering Link Lab Charlottesville, VA
Machine Learning Research Assistant Aug 2019 - Nov 2020
Advisor: Prof. Madhur Behl
Focus: Aggregated the Traffic Scenario Similarity Dataset (TSS) which contains human ranking annotations for similarity between traffic scenarios. Experimented with multi-modal transformer networks in Pytorch for tagging traffic videos with labels. *Project Site*

UVA Aerospace Engineering Research Group Charlottesville, VA
Machine Learning Research Assistant Oct 2017 - Aug 2019

Advisor: Prof. David Sheffler
Focus: Developed a prototype of a 3D printed UAV that completes a mission autonomously using a Raspberry Pi and Pixhawk companion computer and designed machine learning programs for object recognition and communication in OpenCV for precise missions.

PUBLICATIONS & PREPRINTS

Jaspreet Ranjit, Hyundong J. Cho, Claire J. Smerdon, Yoonsoo Nam, Myles Phung, Jonathan May, John R. Blosnich, Swabha Swayamdipta. Designing and Validating Intervention Opportunities for Suicide Prevention with Language Model Assistants. *Under Review.* https://dill-lab.github.io/interventions_lm_assistants/ Runner Up for Best Oral Presentation at ShowCAIS 2025

Jaspreet Ranjit, Brihi Joshi, Rebecca Dorn, Laura Petry, Olga Koumoundouros, Jayne Bottarini, Peichen Liu, Eric Rice, Swabha Swayamdipta. OATH-Frames: Characterizing Online Attitudes Towards Homelessness via LLM Assistants. *In Proceedings of EMNLP 2024.* https://arxiv.org/abs/2406.14883 Outstanding Paper Award, Best Poster at ShowCAIS 2024

Jaspreet Ranjit, Tianlu Wang, Baishakhi Ray, and Vicente Ordonez. Variation of Gender Biases in Visual Recognition Models Before and After Finetuning. *Neurips 2023 Workshop on Algorithmic Fairness through the Lens of Time.* https://arxiv.org/abs/2303.07615

Aron Harder, **Jaspreet Ranjit**, and Madhur Behl. Scenario2Vector: scenario description language based embeddings for traffic situations. *Proceedings of the ACM/IEEE 12th International Conference on Cyber-Physical Systems (ICCPS '21).* Association for Computing Machinery, New York, NY, USA, 167–176. https://doi.org/10.1145/3450267.3450544

Jaspreet Ranjit, Madhur Behl, & Catherine Baritaud. Scenario2Vec: A Scenario Description Language to Characterize Traffic Scenarios for the Development of a Certification Scheme. *Retrieved from https://doi.org/10.18130/v3-16d9-gn66*

TALKS & AWARDS

WiSE Merit Award for 2025
First Place in Min Family Challenge: CaseFlo - an agentic AI platform that streamlines the workflow of case managers, enabling effective discovery of resources, reduced case worker burnout, and data-driven interventions for people experiencing homelessness.
Runner up for best oral presentation at ShowCAIS 2025: Designing and Validating Intervention Opportunities for Suicide Prevention with Language Model Assistants.
Invited talk at Google: Technology, AI, Society and Culture Team
Invited talk at National Alliance to End Homelessness
Viterbi Magazine: Featured in the USC Viterbi Magazine under the theme: 'Human Centered' The USC School of Advanced Computing
Recieved an outstanding paper award at EMNLP 2024
Passed my Qualifying Exam
Invited talk at ISI Natural Language Seminar
Presidential Leadership Council: Invited to present at USC's Presidential Leadership Council
Spectrum News Coverage: Spectrum News covers our work on OATH-Frames: Characterizing Online Attitudes Towards Homelessness via LLM Assistants.
USC Media Coverage: USC covers our work on OATH-Frames: Characterizing Online Attitudes Towards Homelessness via LLM Assistants.
Best Poster Award: ShowCAIS 2024: Awarded best poster at annual conference organized by Center for AI in Society.

CAIS++ Talk: Gave a talk at CAIS++ (Center for AI in Society) on OATH-Frames: Characterizing Online Attitudes Towards Homelessness via LLM Assistants.
Rodman Scholar Academic honor awarded to top 5% of undergraduate engineering class at University of Virginia
Cornell, Maryland, and Max Planck Pre-Doctoral Research School: Promising undergraduate and Masters students are invited to attend this program that provides an overview of the state of the art research in Computer Science.
Truly OpenML: Led a team of four people to pitch a web application that provides a collaborative, intuitive and accessible platform for individuals who are passionate about learning machine learning (ML). Semi-finalist at the American Evolution Innovator's Cup.

SERVICE & LEADERSHIP

Student Leader of CAIS: As student leader, introduced new CAIS Think Tank series to foster more interdisciplinary collaborations amongst Engineering and Social Work. Organizing student-led conference for AI in Society scheduled for April 2025.
Student Mentoring: Claire J. Smerdon, Aryan Gulati (4th year undergraduate), Catherine He (4th year undergraduate), Myles Phung (1st year Master's Student), Ruyuan Zhou (Graduated Master's Student)
Reviewer: NLP4PI 2025, IJCAI 2025, EMNLP 2024, ACL 2024
Society of Women Engineers Charlottesville, VA
Performed service projects at high schools in Charlottesville area to educate minority students about engineering opportunities

WORK EXPERIENCE

Vimeo New York, NY
Machine Learning Researcher on Search and Recommendations Jun 2021 - Aug 2021
Analyzed gender biases in search and recommendation models and formulated a bias identification framework with the Rank Bias metric quantifying gender biases in ranked search results. Developed learning to rank (LTR) models in Pytorch using RankNet and LambdaMART, and developed an internal dataset for LTR models in private search. Worked with big data in Snowflake and wrote queries in SQL to scale bias experiments. *Mentor:* Silvena Chan. *Medium Publication*

Minimally Invasive Spinal Technology Charlottesville, VA
Machine Learning Engineer and SWE Lead Oct 2019 - Aug 2020
Worked as a lead Machine Learning Researcher to develop machine learning algorithms in Pytorch and Keras for the analysis and prediction of scoliosis using Unet++ and Centernet. Deployed this model for medical testing using Docker, AWS and Django. *Mentor:* Alexander Singh

Expedition Technology Herndon, VA
Machine Learning Engineer Jun 2019 - Aug 2019
Researched anchorless object detection techniques for 3D point cloud object detection. Designed a convolutional neural network on the basis of existing VoxelNet and CenterNet architectures in Tensorflow. *Mentor:* Cheryl Daner. *Summary of Work*

NASA Goddard Spaceflight Center Greenbelt, MD
Core Flight Software Engineer Jun 2018 - Aug 2018
Developed and benchmarked core Flight Software apps in C/C++ that directed AI image processing and command/telemetry with ground station. Worked with Xilinx Platform Studio and ISE Design Suite. *Mentor:* Alessandro Geist

NASA Langley Research Center Hampton, VA
3D Printing Engineer Jun 2016 - Aug 2016
Leveraged sensor technology to design and improve the dimensional integrity of a printed component using Pronterface. Designed 3D components in Inventor. *Mentor:* Godfrey Sauti

PROJECTS

Project Clear Skies: UVA HooHacks:Developed a web app using RestAPI that aggregates real time data about a natural disaster from social media sources giving first responders the ability to perform rapid searches using key words and features. Leveraged Google Vision API and Tensorflow for image classification to provide an accurate assessment of the severity of disasters to reach victims and allocate resources more efficiently. *Code Release*

Save the Children: UVA Data Science Hackathon: Prototyped transformer models in Pytorch for generating infrastructure damage values that can be applied to MDI's predictive analytics model in an effort to better help with displacement efforts due to disasters. *Code Release*