Sruthi Sudhakar
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Research Interests
I am interested in developing generalizable deep learning-based computer vision models that can perform well given limited data, dataset biases, and domain shifts.

Education
Columbia University | NYC, NY 2022-2026 (expected)
Ph.D. in Computer Science, co-advised by Dr. Carl Vondrick and Dr. Richard Zemel
NSF Graduate Research Fellow
Georgia Institute of Technology | Atlanta, Georgia 2018 – 2022
B.S. in Computer Science, advised by Dr. Judy Hoffman
GPA: 3.96, Faculty Honors

Academic Research Experience
Georgia Tech x Princeton Research Collaboration | Undergraduate Researcher June 2021 - Present
• Working with Dr. Judy Hoffman of Georgia Institute of Technology and Dr. Olga Russakovsky of Princeton University to investigate algorithmic biases in deep learning-based object detection systems.
Georgia Tech Computer Vision Lab | Undergraduate Researcher August 2020 - Present
• Developed an improved algorithm for mitigating biases while training visual transformers (a deep learning model architecture). Published "Mitigating Bias in Visual Transformers via Targeted Alignment" at BMVC 21'.
• Investigated techniques to perform unsupervised discovery of dataset and model biases in Deep Learning models. Published "UDIS: Unsupervised Discovery of Bias in Deep Visual Recognition Models" at BMVC 21'.
Georgia Tech Entertainment and Intelligence Lab | Undergraduate Researcher August 2019 – May 2020
• Worked on developing an algorithm to produce natural language explanations for CNN models to improve Explainability of AI.
• Conducted in depth qualitative and quantitative statistical analysis on results of user studies to assess different rationale types.

Publications
Conference Papers
[1] Sudhakar Sruthi, Prabhu Viraj, Krishnakumar Arvind, Hoffman Judy. Mitigating Bias in Visual Transformers via Targeted Alignment. In BMVC, 2021.

[2] Krishnakumar Arvind, Prabhu Viraj, Sudhakar Sruthi, Hoffman Judy. UDIS: Unsupervised Discovery of Bias in Deep Visual Recognition Models. In BMVC, 2021.
Preprints
[3] Sudhakar Sruthi, Prabhu Viraj, Russakovsky Olga, Hoffman Judy. A Framework for Inspecting Biases in Object Detection Systems. Arxiv, 2022.
[4] Sruthi Sudhakar, Jon Hanzelka, Josh David Bobillot, Tanmay Randhavane, Neel Joshi, Vibhav Vineet. What Matters in Synthetic Data Generation? In Submission, CVPR 2023.

Awards

NSF Graduate Research Fellowship | May 2022
President's Undergraduate Research Award (PURA), Competitive Georgia Tech Research Scholarship | May 2021
Richard Tapia Computing Conference Poster Scholarship | September 2021

Teaching Experience

Teaching Assistant, Representation Learning | Fall 2022
Course Instructor: Prof. Carl Vondrick | Columbia University
Grade homework/participation, and answer student questions.
Teaching Assistant, Intro to Computer Vision | Spring 2022
Course Instructor: Prof. Judy Hoffman | Georgia Tech
Create homework, grade homework, and hold office hours.

Relevant Coursework

Machine learning with Limited Supervision, Computer Vision, Deep Learning, Introduction to Machine Learning, Artificial Intelligence, Probability and Statistics, Advanced Linear Algebra, Multivariable Calculus, Object-oriented Programming

Work Experience

Microsoft Research | May 2020 - August 2020

Microsoft Research Intern

• Studied the sim2real gap and sought to understand the underlying causes of this gap from the lens of a data artists' process of creating realistic data. Created a novel synthetic "digital twin" dataset, YCB-Synthetic, which includes not only perfectly matching data to YCB-Real, but also variation artifacts added to the synthetic data. Studied the affects of these artifacts on YCB-Real, and two existing published datasets. Additionally, we provide time-estimates for fixing these artifacts, giving intuition on cost-benefit trade-offs between artist time and trained model accuracy. Published "What Matters in Synthetic Data Generation?"

Bloomberg LP | May 2020 - August 2020

Software Engineering Intern

• Created a Document Classification Machine Learning model with 94.46% accuracy that automatically sorted and processed incoming bond and securities documents. Cut down the "Time to Market" by 6 minutes per document.

• Worked on improving a Multi-label Classification Deep Learning model to extract and annotate information from pdf documents

Microsoft | May 2019 - August 2019

Program Manager and Software Engineer - Explore Intern

• Created a new product for Microsoft Teams called "Classroom Analytics". Allows teachers to view analytics students' classroom participation and conversations in the classroom by tracking signals.

• Worked on back-end object modeling, API queries, and data processing (using C# LINQ)

YogaSangeeta (non-profit) | January 2018 - Present

App Developer (Android and Xamarin)

• Developed an Android App, SGS Gita, that allows for students to learn to read texts through an audio tutorial.

• Working with a team to develop a virtual assessment app for teachers to help students learn to read texts.

Bloomberg LP | June 2018 - August 2018

Software Engineering Intern

• Wrote Python scripts to automate engineering tasks done manually, improving efficiency and cutting manual labor time

Leadership/Service

• Volunteer Tutor (2020 - present) – Volunteer as a weekly reading/math tutor for Afghani refugee students.

• Volunteer at Soup Kitchen (2019-2022) – Cooked and served food for homeless people in Atlanta weekly at the non-profit organization, Food4Lives.

• Discussion Coordinator in the club SYA (2020-2022) – Created and lead weekly group discussions for Sai Young Adults club at Georgia Tech.

• Resident Assistant (RA) (2019-2020) - Supervised freshman living in the freshman residence halls at Georgia Tech.

• Product Manager in the club Bits of Good (2020) – Created a social media platform for the non-profit organization Liv2BGirl.