Maitreyi Swaroop — Curriculum Vitae

Email: mswaroop@andrew.cmu.edu—**Website:** https://maitreyiswaroop.github.io

EDUCATION

Carnegie Mellon University, Pittsburgh, USA — August 2024 – Present
Ph.D. Candidate, Machine Learning — Supervisor: Prof. Bryan Wilder
Department of Machine Learning, School of Computer Science

Indian Institute of Technology, Kharagpur, India — July 2019 – May 2024
BSc. (Hons) + MSc. in Mathematics & Computing — Department Rank: 2/63
Micro Specialization in Artificial Intelligence and Applications — Overall GPA: 9.45/10.00

RESEARCH EXPERIENCE & PUBLICATIONS

Distributionally Robust Feature Selection, *Maitreyi Swaroop, Tamar Krishnamurthi, Bryan Wilder.*

- **Paper accepted at NeurIPS 2025 Conference, Main Track (Poster)** [Code]
- Novel method for variable subset selection in a group-DRO setting. Project funded by the National Institute of Mental Health (NIMH).

Research Internship — *PI: Amit Sharma, Vineeth Balasubramanian*
Microsoft Research, Bangalore — June 2023 – August 2023

- Developed *monitor-guided reasoning*: a model-agnostic framework that improves language model performance through integration of a verification monitor into the generation loop.

Research Internship — *PI: Prof. Dhanya Sridhar*
Mila - Quebec AI Institute, Montreal, Canada — May 2023 – May 2024

- **Paper: Learning Macro Variables with Auto-encoders**, *Maitreyi Swaroop, Eric Elmoznino, Dhanya Sridhar.* Accepted at *NeurIPS 2023 Workshop on Causal Representation Learning.* [Code]
- Proposed **DeepCFL**: a self-supervised method that learns macro variables and their relations, extending the desiderata of Causal Feature Learning.

Masters Thesis — *PI: Prof. Partha Pratim Chakrabarti*
Indian Institute of Technology, Kharagpur, India — May 2023 – May 2024

- Developed hybrid methods combining approximation algorithms, heuristics, and RL approaches for routing problems, including a novel divide-and-conquer approach using RL models with Lin Kernighan k-opt solver.

Research Internship — *PI: Dr. Manuel Gomez Rodriguez*
Max Planck Institute for Software Systems, Kaiserslautern, Germany — May 2022 – July 2022

- Formulated a threshold test incorporating intersectionality of traits to identify biased decision-makers using Dirichlet-Process Mixture Models (DPMM) and MCMC inference methods.

ADDITIONAL EXPERIENCE & PROJECTS

Google Research Week — *Google Research, Bangalore, India* — February 2024

IIT Delhi Theoretical Computer Science Winter School — *Indian Institute of Technology Delhi* — December 2022

Data Science Textbook Collaboration — December 2020 – May 2021
Indian Institute of Science (IISc.), Bangalore (Remote)

- Collaborated with Prof. Ramesh Hariharan and Prof. Rajesh Sundaresan on developing solutions for their Data Science textbook, focusing on astronomical calculations to determine Earth and Mars orbital parameters using Tycho Brahe's historical dataset—the same data employed by Kepler in formulating his laws of planetary motion.

AWARDS & HONORS

- **Best Project Work** — Awarded for the best Masters Thesis Project in the Department of Mathematics & Computing, 2024.
- **Indian Academy of Sciences (IASc) Summer Research Fellowship** — Awarded the IASc-INSA-NASI Summer Research Fellowship in 2021 for a two-month research project at the Indian Institute of Science Education & Research (IISER), Kolkata. Could not participate due to the pandemic.