Bhrij Patel

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EDUCATION

University of Maryland, College Park - Co-Advisors: Dinesh Manocha, Amrit Singh Bedi (UCF)
Ph.D. in Computer Science (Expected: Dec 2026)
Thesis: ***Reliable Policy Learning with Suboptimal Feedback Signals***
Master's in Computer Science (May 2024)

Duke University, Durham, NC - Advisors: Cynthia Rudin
Bachelor of Science in Computer Science & Mathematics, Minor in Creative Writing (May 2022)

WORK EXPERIENCE

Qualcomm, Efficient Agentic AI Team - Amsterdam, Netherlands June 2025 - Present
Machine Learning Research Intern, Mentors: Bence Major, Davide Belli

- Working on a research paper revolving around on-device LLM agents

Emergence AI - Remote Feb. 2025 – May 2025
AI Research Intern, Mentors: Aditya Vempaty, Ashish Jagmohan

- Proposed problem of in-context learning of functionality of APIs from demonstrations for tool-based agent tasks
- Investigated self-improvement methods with LLM-generated feedback of functionality and parameters
- Highlighted the importance of robust error/exception handling for agent understanding of APIs

GAMMA Lab - University of Maryland, College Park Aug. 2022 - Present
Graduate Research Assistant, Mentors: Dinesh Manocha, Amrit Singh Bedi

- Exploring the reliability of reference-free LLM judges for prompt optimization
- Investigating memory-augmented LLM agents for personalized embodied agents
- Researching sample-efficient RL training with sparse rewards

Interpretable Machine Learning Lab - Duke University Jan. 2019 - Mar. 2022
Undergraduate Research Assistant, Mentor: Cynthia Rudin

- Worked on generating hi-res portraits given low-res image examples with unsupervised representation learning
- Analyzed criminal history data from Broward County, FL, ($\sim$ 150,000 records), and from Kentucky ($\sim$3,200,000)

Rein.ai - Remote Mar. 2020-May 2020
Data Science Intern, Mentor: Mohammed Shameer Iqbal

- Set up automated web extraction of truck accident records from 1975-2018 with Python and SQL
- Cleaned and integrated trucking data into the database for the development of risk models

PUBLICATIONS

- *Learning API Functionality from Demonstrations for Tool-based Agents*
  Bhrij Patel, Ashish Jagmohan[†], Aditya Vempaty[†]
  Findings of Empirical Methods in Natural Language Processing (EMNLP), 2025
- *Confidence-Controlled Exploration: Efficient Sparse-Reward Policy Learning for Robot Navigation*
  Bhrij Patel, Kasun Weerakoon, Wesley A. Suttle, Alec Koppel, Brian M. Sadler, Tianyi Zhou,

Dinesh Manocha, Amrit Singh Bedi
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025

- *Towards Global Optimality for Practical Average Reward Reinforcement Learning without Mixing Time Oracles*
  Bhrij Patel, Wesley A. Suttle, Alec Koppel, Vaneet Aggarwal, Brian M. Sadler, Dinesh Manocha, Amrit Singh Bedi
  International Conference of Machine Learning (ICML), 2024

- *Beyond Exponentially Fast Mixing in Average-Reward Reinforcement Learning via Multi-Level Monte Carlo Actor-Critic*
  Wesley A. Suttle*, Amrit Singh Bedi*, **Bhrij Patel**, Brian M. Sadler, Alec Koppel, Dinesh Manocha
  International Conference of Machine Learning (ICML), 2023

- *Interpretable, Fair and Accurate Machine Learning for Criminal Recidivism Prediction*
  Caroline Wang*, Bin Han*, **Bhrij Patel**, Cynthia Rudin
  Journal of Quantitative Criminology (JoQC), 2022

*Denotes Equal Contribution, †Denotes Equal Advising

PREPRINTS

- *AIME: AI System Optimization via Multiple LLM Evaluators.*
  Bhrij Patel, Souradip Chakraborty, Wesley A. Suttle, Mengdi Wang, Amrit Singh Bedi†, Dinesh Manocha†
  arXiv, preprint (2024)

- *Multi-LLM QA with Embodied Exploration*
  Bhrij Patel, Vishnu Sashank Dorbala, Amrit Singh Bedi, Dinesh Manocha
  arXiv, preprint (2024)

- *Right Place, Right Time! Dynamizing Topological Graphs for Embodied Navigation*
  Vishnu Sashank Dorbala*, **Bhrij Patel***, Amrit Singh Bedi, Dinesh Manocha
  arXiv, preprint (2025)

*Denotes Equal Contribution, †Denotes Equal Advising

AWARDS

- **2022 University of Maryland, College Park Dean's Fellowship Award**
- **2021 Duke DataFest**: Judges' Pick Award
- **2021 NC State Datathon**: 3rd Place Team
- **2020 COMAP Mathematical Contest in Modeling**: Meritorious Winner
- **2019 Duke University Datathon**: Runner-Up Team

PRESENTATIONS

- *In Pursuit of Interpretable, Fair and Accurate Machine Learning for Criminal Recidivism Prediction*
  Caroline Wang, Bin Han, **Bhrij Patel**, Feroze Mohideen
  Duke CS Showcase 2020

- *Comparing Black-box and Interpretable ML models for Criminal Recidivism Prediction*
  Bhrij Patel
  Duke CS+ 2019

TEACHING

- Teaching Assistant, CMSC 335: Web Application Development with JavaScript, University of Maryland, College Park (Jan 2024-May 2025)
- Teaching Assistant, CMSC 131: Introduction to Object Oriented Programming, University of Maryland, College Park (Aug-Dec 2023)
- Teaching Assistant, CS 671: Graduate Machine Learning, Duke University (Aug-Dec 2021)
- Teaching Assistant, CS 371: Undergraduate Data Science, Duke University (Jan-May 2021)
- Teaching Assistant, CS 371: Undergraduate Machine Learning, Duke University (Aug-Dec 2020)
- Math Help Room Tutor, Linear Algebra, Duke University (Aug 2019-May 2020)