

# **Atiksh Bhardwaj**

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Github: <https://github.com/AtikshB>

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## **Academics**

**Cornell University (Class of 2026) Engineering Dean's Honor List (Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024)**

- Major: Computer Science in College of Engineering; GPA: 4.00 / 4.00; Pursuing Honors Program (Includes Research)
- Coursework: Algorithms, Reinforcement Learning, Robot Learning, Computer Vision, Machine Learning,, Discrete Structures, Computational Algebra, Honors Data Structures, Differential Equations, Linear Algebra, Multivariate Calculus

**Coursera - [Stanford University and DeepLearning.AI's Machine Learning Specialization](#)**

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## **Research (Google Scholar)**

**PoRTaL Group (2023 - Present) (Full-Time Undergraduate Researcher) (Prof. Sanjiban Choudhury):** <https://portal.cs.cornell.edu/>  
“[MOSAIC: A Modular System for Assistive and Interactive Cooking](#)” published at Conference on Robot Learning (CoRL) 2024 and International Conference for Robotics and Automation (ICRA) 2024

- MOSAIC is a modular architecture for home robots facilitating collaborative cooking tasks with users through natural language interaction, coordinating multiple robots, and employing large-scale pre-trained models alongside task-specific modules
- Applied human-motion forecasting algorithms and ideas from previous papers to a large system to enable active collaboration between robots and a human in a kitchen setting
- Implemented new vision based system for human pose tracking, point cloud generation, and object detection to automate the robot's human-motion forecasting without the need for motion capture systems
- Created protocols that actively motion plan based on the object detection system via FrankaPy for different tasks run by the robot such as handovers, reactive stirring, and table setting
- Best Paper Award at the ICRA 2024 VLNMN Workshop and Best Poster Award at the ICRA 2024 MoMa Workshop

“[InteRACT: Transformer Models for Human Intent Prediction Condition on Robot Action](#)” published at the ICRA 2024

- InteRACT is a novel architecture for collaborative human-robot manipulation, addressing the challenge of predicting human intents influenced by robot actions through leveraging large-scale human-human interaction data to pre-train a conditional intent prediction model and fine-tune it on a small human-robot dataset.
- Developed correspondence between robot arm and human arm using wrist and hand positions along with inverse kinematics for the Franka Emika Research 3 Robot using the FrankaPy library
- Programmed and modified model for conditional forecasting for both human-human and human-robot datasets using the Multi-Range Transformer (MRT) model
- Created the Collaborative Manipulation Dataset (CoMaD) containing human-human and human-robot interactions across 5 varied kitchen tasks extended from work on ManiCast

“[ManiCast: Collaborative Manipulation with Cost-Aware Human Forecasting](#)” published at the CoRL 2023

- ManiCast is a framework designed for seamless human-robot manipulation, which focuses on producing cost-aware human motion forecasts to enhance the planning performance of a robot arm in collaborative tasks.
  - Created new data for training, created figures and edited final paper
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## **Work Experience**

**Undergraduate Researcher at PoRTaL Group (Summer 2023, Summer 2024)**

**Teaching Assistant (TA) (2023 - Present)**

Hold weekly office hours to help students with assignments, Develop new assignments for the course, and Grade exams/assignments throughout the semester

- TA for Robot Learning (Fall 2024), TA for Artificial Intelligence (Spring 2024), TA for Functional Programming (Fall 2023)

**Brains4Drones Summer Internship (Summer 2022):** <https://brains4drones.com/>

Developed computer vision and machine learning algorithms to help analyze field terrain and electricity poles to prevent wildfires.

- Created automatic panorama stitcher with optical flow on drone movement as a software solution for LIDAR maps
  - Programmed ML algorithm to identify specific danger zones amongst wildfire prone areas such as ground conditions and situation regarding the electrical wiring
  - All code built into GUI application for line workers to easily identify danger zones with the help of automated drone flight
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## **Awards, Honors, and Competitions**

**Big//Red Hacks (2022)**

Winner of Blockchain and Web Track sponsored by PI Network: [NFTree](#) / PI Network Blog: [Big//Red Hacks Winners](#)

- An open marketplace for users to purchase and grow trees, with attached NFTs that change in value based on the attributes of the tree including health, type, location, and more

**Featured in Blogs/Media - Mathworks Simulink Blog:** [Simulink Award](#)

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## **Skills**

- Proficiency: Java, C++, Python, Simulink (MatLab), OCaml, PyTorch, OpenCV, TensorFlow, Scikit-Learn, Windows, MacOS, Ubuntu, Arduino, Raspberry PI, Microsoft Office, Google Suite, Blender (3D Modeling + Video Editing)
- Languages: English (Native), Hindi (Native), Spanish (Fluent)