

Sagar Parekh

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PUBLICATIONS

- RILI - Robustly Influencing Latent Intent | IROS 2022 - Under Review
- Learning Latent Actions without Human Demonstrations | ICRA 2022 - In Press
- On-Board Cable Attitude Measurement and Controller for Outdoor Aerial Transportation | DOI: [10.1017/S0263574721001302](https://doi.org/10.1017/S0263574721001302).
- Collaborative transportation of cable-suspended payload using two quadcopters with human in the loop | DOI: [10.1109/RO-MAN46459.2019.8956380](https://doi.org/10.1109/RO-MAN46459.2019.8956380)
- On the Human Control of a Multiple Quadcopters with a Cable-suspended Payload System | DOI: [10.1109/ICRA40945.2020.9197279](https://doi.org/10.1109/ICRA40945.2020.9197279)

RESEARCH

COLLABORATIVE ROBOTICS LAB (COLLAB), VT | GRADUATE STUDENT

Aug 2021 - Present | Blacksburg, VA

- Work on developing learning algorithms for robots to enable better human-robot collaboration.
- Using autoencoders and reinforcement learning, developed a method that would make it easier for disabled users to control assistive robots.
- Working on improving robots that collaborate by influencing human intent in teams.

HUMAN-CENTERED ROBOTICS LAB, IIT GANDHINAGAR | PROJECT ASSISTANT

June 2019 – May 2021 | Gandhinagar, Gujarat

- In a team, developed a human-in-the-loop control modality for multiple quadcopters collaboratively transporting a cable-suspended payload.
- Developed a quadcopter-payload experimental setup with a custom sensor suite for state feedback estimation.
- Conducted indoor and outdoor experiments for validating the developed control modality.
- Lead an investigative study to understand human-robot interaction in a shared control paradigm with a virtual quadcopter simulator developed during internship.

HUMAN-CENTERED ROBOTICS LAB, IIT GANDHINAGAR | RESEARCH INTERN

Jan 2019 - May 2019 | Gandhinagar, Gujarat

- Developed a quadcopter simulator using the software development platform, Unity.
- Programmed the dynamics of a quadcopter as well as implemented an onboard assistive controller using C# scripts in Unity.
- Designed a serial communication protocol to receive RC inputs from Arduino to Unity.
- Developed and validated a LQR controller on the simulator.

PROJECTS

AUTONOMOUS QUADCOPTER FOR DISASTER RELIEF | IDEALABS INITIATIVE

April 2018 - March 2019 | Nirma University

- Developed a prototype quadcopter with a mechanical gripper arm for disaster relief as a mode of delivering aid packets.
- Designed and fabricated the mechanical gripper with a payload carrying capacity of 250 grams.
- Programmed the Pixhawk controller to operate the gripper as well as autonomously navigate using GPS.

EDUCATION

VIRGINIA TECH

M.S. IN MECHANICAL ENGINEERING

Blacksburg, VA

Cum. GPA: 3.85 / 4.0

NIRMA UNIVERSITY

B.TECH. IN MECHANICAL ENGINEERING

May 2019 | Ahmedabad, Gujarat

Cum. GPA: 8.38 / 10.0

COURSES

- Modern Robotics
- Control of Mobile Robots
- Optimal Control, Guidance and Estimation
- Digital Image Processing
- Nonlinear Systems Theory
- Human-Robot Interaction

SKILLS

PROGRAMMING

• Python • C# • MATLAB

TECHNOLOGY

- Creo Parametric
- Unity

INTERESTS

- Dynamics and Control
- Human-Robot Interaction
- Robot Learning