

# Abhinav Modi

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## EDUCATION

**University of Maryland, College Park**  
*Masters of Engineering in Robotics*

**College Park, MD**  
*Aug. 2018 - May 2020*

- **GPA:** 4.0/4.0

**Birla Institute of Technology and Science(BITS), Pilani**  
*Bachelors of Engineering(Hons.) in Mechanical Engineering*

**Rajasthan, India**  
*Aug. 2014 - May 2018*

- **GPA:** 7.53/10(3.18/4)

**Relevant Coursework:** Control of Robotic Systems, Robot Modelling, Planetary Surface Robotics, Mechatronics, Intro to MEMS, Neural Networks and Fuzzy Logic, Pattern Recognition, Reverse Engineering and Rapid Prototyping

## TECHNICAL SKILLS

**Modeling and Analysis**  
**Software & Tools**

Solidworks, MSc ADAMS, Simulink  
MATLAB, Python, Tensorflow, OpenCV, C++, ROS, Adobe Photoshop, LaTeX

## TECHNICAL EXPERIENCE

**Perception and Robotics Group, University of Maryland**  
*Graduate Research Assistant*

*Aug. 2018 - Present*

- Working towards implementation of Geometric and Model Predictive based control systems for online trajectory tracking and altitude control of quadrotors.

**Autonomous Micro Aerial Vehicle(AMAV) Team**  
*Graduate Research Assistant*

*Dec. 2019 - Present*

- Work with a team of 20 members to develop a micro aerial vehicle to participate in the 7th annual VFS MAV Student Challenge, 2019 to be held in Philadelphia, PA.
- Developing vision based algorithms to generate dynamically feasible trajectories for quadrotor control.

## PROJECTS

- **Edge Detection using Pb-Lite:** Edge detection in images using "Probability of Boundary" method by computing k-means on texture, brightness and color gradient maps.
- **Unsupervised Deep Homography:** Trained an Unsupervised Neural Network on COCO dataset to generate a panorama .
- **Cable Suspended Load from a Quad:** Implemented Geometric Control based on differential flatness to track trajectory of a load suspended from a quadrotor
- **BIOBOT:** Developed a conceptual model of a one-crew carrying Lunar Rover. The rover follows the astronaut with an onboard Life Support System to aid in physical movement of the astronaut.

## LEADERSHIP EXPERIENCE

**Inspired Karters, Formula Student Team, BITS Pilani**  
*Team Captain*

*Feb. 2016 - Feb. 2017*

- Established a new team structure for a team of 50 students from multiple disciplines to incorporate a KTM 390 engine, smaller wheels (10" & 12"), and a full body aero-package, all for the first time in the history of the team.
- Successfully raised INR 150,000 as a team in only one month's time, amounting to INR 7,50,000 during the whole year.

#### *Team Member*

- Performed an active role in decision making and squad selection for various inter-university tournaments.
- In-charge of managing inventory for the team and tournament scheduling for **Bits Open Sports Meet, 2017**.

#### **49<sup>th</sup> Engineer's Day Celebrations and Poster Presentation**

*Sept, 2016*

#### *Team Member - Organizing Committee*

- Worked towards organizing quizzes, panel discussion and poster presentation competition for the event.
- Co-presented a poster on "What we learn at Inspired Karters" for the theme: Skill Development for Young Engineers to Reform the Core Sector: Vision 2025.

### **ACTIVITIES AND AFFILIATIONS**

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**Society of Automotive Engineers**

*May 2016 - July 2017*

**Department of Art Design and Publicity**

*Aug. 2014 - May 2018*

**BITS Pilani Cricket Team**

*Aug. 2014 - May 2018*

### **EXTRA-CIRRICULAR**

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- State level athlete and District record holder, U-16 category, 100m hurdles, represented the district of Fatehgarh Sahib in the 2011 intra-state games held in Ludhiana, Punjab, November 2011
- Part of the Field Hockey team of my hostel for Intra Bits Open Sports Meet (I-BOSM); winners in 2018, runner-ups in 2017.
- Gold Medalist in Discus Throw, I-BOSM, 2018.
- Silver Medallist in Javelin Throw, I-BOSM, 2017.