

# SHREYANSH SHETHIA

West Lafayette, IN USA | (765)775-9732 | sshethia@purdue.edu | [in](#) | [G](#)

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## Education

### Master of Science in Aeronautics and Astronautics

May 2021

School of Aeronautics and Astronautics, Purdue University, GPA: 3.96/4.0.

**Relevant Coursework:** Hybrid Systems, Multi-Agent Systems, Systems Analysis and Synthesis, Applied Optimal Control, Principle of Dynamics, Machine Learning – I, Reinforcement Learning

### Bachelor of Technology in Aerospace Engineering

May 2019

Indian Institute of Technology, Kharagpur, India, GPA: 8.55/10.0.

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## Skills and Expertise

- **Languages/Libraries:** C, C++, Python, HTML, LATEX, MATLAB, TensorFlow
- **Software/Systems:** Simulink, ROS, Git, Ubuntu, Pixhawk, Crazyflies, Gazebo, Arduino IDE, MS Office, Solidworks,

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## Publications

### 1. Empirical Analysis of Battery Performance with Ambient Temperature for Small Electric UASs

[Under review] Akshita Gupta, Shreyansh Shethia, Wie Cheng, I. Hwang, AIAA Aviation Forum 2021

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## Academic Experience

### Research Assistant, Flight Dynamics and Controls Laboratory, Purdue University

Aug 2020 - Present

- Performed hover tests on Quadcopters in Wind tunnel against different windspeeds and no-wind conditions.
- Working on data analysis of battery performance during hover & cruise of Hex copter in various temperatures.

### Teaching Assistant, Subject: VIP AFRL-UAS, Purdue University

Aug 2020 - Present

- Evaluated the student assignments, assigned groups, and maintained weekly updates from students.
- Assisted Professor to teach Trajectory planning and Computer vision with hardware implementation on Crazyflies

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## Projects and Competitions

### Stereo Vision Navigation and Swarm Motion Planning – AFRL-UAS Lab, Purdue University

Fall 2020

- Developed python codes for depth detection on Nvidia Xavier NX with two cameras using ROS and OpenCV.
- Implemented RRT and working on programming smooth minimum snap trajectories for a swarm of Crazyflies

### MathWorks Minidrone Competition, IFAC

July 2020

- Designed a Model-based controller for perception-based line following Parrot minidrone using **MATLAB & Simulink**
- Worked with in-built Simulink blocks for color and blob analysis, and a user-function for path planning

### Boeing Student Project, IIT Kharagpur

Spring 2019

- Worked with a team of 4 seniors to design and build a fixed-wing UAV with **vertical take-off and lift** capability.
- Devised Pixhawk 4.0 with airspeed sensor and GPS, to perform transitions between different flight modes.

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## Internships

### Navigation of LEO Satellite using IRNSS, IIT Indore

Summer 2018

- Developed Python code for RK-4 simulation of LEO satellite, including JGM 21X21 and Atmospheric drag
- Used MAP estimator to find satellite position using pseudo ranges and NavIC positions and obtained the DOP.

### Rendezvous Control of LEO Satellites, ISRO Bangalore

Summer 2017

- Simulated high fidelity orbital dynamics with MATLAB, with Earth's oblateness, for two satellites in Low Earth Orbit.
- Using HCW equations, developed a PD controller to perform safe rendezvous between 2 LEO satellites

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## Awards and Achievements

- **Second Position**, MathWorks Minidrone Competition, IFAC 2020
- **Silver Medal**, B. Tech in Aerospace Engineering (Hons), IIT Kharagpur, 2019
- **Best B.Tech Project Award**, IIT Kharagpur, 2019
- **Boeing Student Scholarship**, IIT Kharagpur, 2017-18 and 2018-19