SHUBHANSHU GUPTA

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EDUCATION

Year	Degree	Institute	CGPA
Dec 2021 - Ongoing	PhD, AE	Indian Institute of Technology, Kanpur	9.9/10
Aug 2020 - Converted to PhD	MS, AE	Indian Institute of Technology, Kanpur	10/10
July 2015 - May 2019	BTech, EEE	Visvesvaraya National Institute of Technology, Nagpur	8.08/10

PUBLICATION

S. Gupta, M. Kothari, Abhishek, "Optimal Transition Trajectory of a Quadrotor Biplane Tailsitter," Submitted in Automatic Control in Aerospace (ACA) 2022

ACADEMIC ACHIEVEMENTS

Received academic excellence certificate during MS program for two consecutive semesters, at IIT Kanpur (2020, 2021)

Awarded **Prof. Vasant and Smt. Susheela Mokashi Prize** for course Engineering Mechanics, at VNIT Nagpur (2016)

Selected in Texas Instruments Innovation Challenge 2017, India for Smart Digital Oscilloscope project

EXPERIENCE

Quadrotor Biplane Tailsitter — Hybrid VTOL Vehicle Nov 2021 - Ongoing
PhD Scholar | Advisor: Dr. Mangal Kothari *IIT Kanpur*

- Implemented backstepping controller on a quadrotor model
- Improved the wing aerodynamics model for high angle-of-attack conditions experienced during transition
- Developed optimal trajectory for forward transition of vehicle using multiple optimality conditions

PARLOMA — Deaf-Blind Assistive Device Report May 2018 - July 2018
Undergraduate Researcher | Advisor: Dr. Calogero Oddo *The BioRobotics Institute, Pisa*

- Designed a tele-communication platform using webcam to assist deaf-blind people communicating in sign language
- Applied state-of-art deep learning algorithms for 3D hand pose estimation without availability of depth information
- Implemented data augmentation to improve the accuracy of the model

Autonomous Drone Delivery — Blowhorn Video July 2017 - March 2018
Project Manager and Design Engineer | Advisor: Dr. Shital S. Chiddarwar *VNIT, Nagpur*

- Worked on 3D designing of quadcoptor, package dropping mechanism and printing of quadcopter parts
- Project manager, handling the purchase of items and maintaining connection between the team and the company

PROJECTS

Embedded Systems GitHub Oct 2020 - June 2021

- Worked on creating HAL libraries for GPIO and SPI communication protocol on discovery board
- Implemented task scheduling to share CPU occupancy between a set of tasks

Autonomous Lane Follower Video Sept 2018 - April 2019

- Aimed to design a prototype of Level 2 self driving car, which can follow road lanes
- Implemented the method of behavioral cloning on a CNN model to obtain the steering angle using RGB images
- Generated labelled datasets by manually driving an RC car on created arena

POSITION OF RESPONSIBILITY

Student Mentor: Guided the freshmen during the initial year in college in technical and social aspects (Certificate)

Treasurer - IvLabs: Involved in fund generation and management for the robotics lab, and conducted workshops on solidworks, circuit designing, manual robots, embedded programming etc.

Academic Secretory: Coordinated with the department authorities for quarterly reporting the status of courses

RELEVANT COURSES

Classical Control	Nonlinear Systems	Helicopter Dynamics	Convex Optimization
Modern Control System	Digital Control	Aerodynamics (enrolled)	Autonomous Navigation