Vijeth Hebbar

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Education

MS |Aerospace Engg.
UIUC | 2019-Present
- Research: HRI, game theory
- Advisor: Cedric Langbort
- GPA: 4.00/4.00

B. Tech |Aerospace Engg.
IIT Bombay | 2015-19
- CPI: 9.01/10.00
- Minor in Systems and Controls Engineering
- Graduated with Honors
- Thesis: Optimal Sensing using Co-operative Ground Robots

Coursework

Controls
Optimal Control
Adaptive Control
State Estimation
Games and Information

Aerospace
Aircraft Design
Aerospace Propulsion
Flight Mechanics
Orbital Mechanics

Math & Stat
Machine Learning
Data Analysis
Numerical Analysis

Technical Skills

Programming
python • MATLAB
c++ • c
Engg. Tools
Solidworks • ROS • Arduino
XFoil • Tecplot • AutoCAD
AVR Studio • Gazebo • RasPi
Languages
English • French • Hindi
Software Premier• Photoshop • LaTeX

Extracurriculars

Mountaineering • Drums
Swimming • Star-gazing

Research Experience

Optimal sensing using co-operative ground robots Mumbai, INDIA
Undergrad Thesis | Guide: Prof. Sukumar Srikant | IIT Bombay 2018-2019
- Simulated convergence of sensing algorithm to optimal configuration
- Proposed and implemented torque control with a DC motor using RPM feedback
- Implemented the algorithm in non-holonomic bots, used RasPi and ROS network

Nonlinear Robust Control in Parrot Minidrones Montréal, CANADA
Research Intern | Guide: David Saussié | Ecole Polytechnique Summer 2018
- Identified the non-linear system model for Parrot Rolling Spider drone
- Designed a sliding mode controller (SMC) and an adaptive controller for the drone
- Obtained 3D helical trajectory tracking in presence of actuator saturation
- Used Simulink® Parrot Minidrone package
- Mitigated chattering effect in SMC using a modified, differentiable control law

Attitude tracking in multirotors with input saturation Mumbai, INDIA
Guide: Prof. Sukumar Srikant | IIT Bombay Jan 2018 - May 2018
- Designed an μ modified adaptive controller to stabilize multirotor with input saturation
- Simulated using MATLAB® the attitude tracking in a multirotor using the controller

Technical Experience

Control algorithm development in Pluto mini-drone Mumbai, INDIA
Student Developer | Drona Aviation Dec 2017 - Apr 2018
- Evaluated the flight capabilities of the Drona® Pluto mini-drone
- Implemented and tested various control algorithms and flight trajectories

Rakshak: Autonomous disaster-relief UAV Design Team Mumbai, INDIA
Junior Design Engineer | Instrumentation Oct 2015 - Dec 2016
- Automated the drone using Pixhawk module, aimed to participate at AUVSI SUAS
- Established communication links between the UAV and ground station over a ROS

2-Pi Mapper - Institute Technical Summer Project Mumbai, INDIA
SLAM implementation | Team of 4 May 2016 - Jul 2016
- Implemented SLAM in a ground bot in a 2D grid using ultrasonic range sensors

Awards and Achievements

Robert Beatty fellowship for top incoming graduate students at UIUC [2019]
Academic Excellence Award for ranking 1st in the department [2018]
Kishore Vaigyanik Protsahan Yojna (KVPY) Fellowship [2014]
Awarded the prestigious AP grade for two courses; Aircraft Design and Flight Mechanics

Notable Course Projects

Design of a controllable Frisbee — Aircraft Design
Triangulation method based localisation of ground bot — State Estimation
Reinforcement learning crawler bot — Machine Learning

Positions of Resposibility

Hostel technical affairs secretary [2016 - 2017]
Events coordinator for Competitions | Mood Indigo (Asia's Largest College Fest) [2016]