

abhishekh reddy munnangi

graduate student in robotics

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github.com/armgits

education

M.Eng in Robotics at University of Maryland, College Park

Aug 2022 - May 2024 (Expected)

Currently in Third Semester with 3.11 GPA

B.Tech in Mechatronics Engineering at Ajeenkya DY Patil University, Pune

Aug 2018 - May 2022

Graduated with 7.87/10 CGPA

skills

Programming Languages	C++, C and Python
Documentation	Doxygen, Markdown and \LaTeX
Computer-Aided Design	KiCAD, Fusion 360, FreeCAD and Solidworks
Embedded Platforms	STM32 Nucleo, Arduino and TI Launchpad
Hardware Prototyping	Oscilloscope and Multimeter operation, Hand Soldering and Wire Crimping

experience

Teaching Assistant at Institute of Systems Research, UMD

Aug 2023 - Present

- Teaching Assistant for Robotics Laboratory Course - ENEE467
- Guiding students to write a roscpp node that commands a UR3e arm to track a square trajectory.
- Guided students in writing a line follower program for the TI Robotics System Learning Kit.
- Assisted students with setting up GPIOs, SysTick timer and PWM signal generation on TI-MSP432 Launchpad board.
- Supported students in debugging Embedded C code by identifying register value errors and program flow issues.

Software Team Member at Terraformers URC

Apr 2023 - Present

- Developing software for the rover and its robotic arm for the 2024 University Rover Challenge.
- Creating a description package for the 6DOF robotic arm design to integrate with the ROS ecosystem.
- Leveraging micro-ROS to setup a node on STM32 Nucleo Board to communicate with a single-board computer.

Robotics Engineer Intern at iTrontik Smart Systems

May 2021 - Apr 2022

- Worked on the hardware of a nano class (less than 250g) quadcopter drone.
- Sized the components of the quadcopter drive system for hover flight time and selected suitable off-the-shelf parts.
- Designed and 3D-printed a sturdy quadcopter frame for prototyping using Fusion 360. The frame was able to sustain multiple hard and crash landings during testing.
- Created circuit schematic and 2-layer PCB design for a USB-C charger board that integrates into the drone battery pack. This reduced the need for an external charger.

projects

Mint Flight Controller Board as personal project

Oct 2020 - May 2021

- Designed a miniature flight controller board for quadcopter drones based on STM32H7 microcontroller.
- Created the circuit schematic and a 4-layer PCB design in KiCAD.
- The resulting board sizes 80 percent smaller than Pixhawk 4 while retaining most functionality.

Brushless Motor Speed Controller as coursework project

Nov 2019 - Dec 2019

- Built a 3-phase inverter circuit using MOSFETs, gate drivers and op-amps to drive a brushless motor.
- Created the circuit schematic in KiCAD and hand-soldered the components on a perfboard.

Hybrid Landing Gear as coursework project

Jan 2019 - May 2019

- Developed a landing gear system that also functions as a gripper for multicopter drones.

- Created the design in Fusion 360 that was further 3D-printed in PLA.
- Written code for an Arduino Nano board to read the PWM input from a radio receiver and control the servos.