abhishekh reddy munnangi

graduate student in robotics

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education

M.Eng in Robotics at University of Maryland, College Park — Aug 2022 - May 2024 (Expected)
Finished Third Semester with 3.33 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
Software Development	Git, Docker, Shell Scripts, CMake and GoogleTest
Documentation	Doxygen, Markdown and LaTeX
Computer-Aided Design	KiCAD, Fusion 360, FreeCAD and Solidworks
Embedded Platforms	STM32 Nucleo, Arduino and TI Launchpad

experience

Teaching Assistant at Institute for Systems Research, UMD — Aug 2023 - Present

- Served as a Teaching Assistant for a Robotics Laboratory Course: ENEE467 in Fall '23 semester. Interacted with students from diverse engineering backgrounds.
- Instructed and guided students in interdisciplinary lab exercises including writing a roscpp node to draw shapes with a real UR3e robotic arm and developing a line follower program for the TI Robotic Systems Learning Kit.
- Delivered a hotfix for the C++ wrapper library based on MoveIt! API used during the course. This significantly improved execution success rate of the code written by students when using the Cartesian planner to move the robotic arm.
- Maintained the instructions and documentation for the lab exercises written in Markdown on GitHub Wiki.
- Assisted students with debugging C++ and Embedded C code in lab exercises.

Robotics Engineer Intern at iTrontik Smart Systems, Pune — 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 a sturdy 3D-printed quadcopter frame for prototyping using Fusion 360 in three iterations. The frame was able to sustain multiple hard and crash landings during testing.
- Ideated and developed a USB-C charger board which integrates into the battery pack to reduce the need to ship an external charger with the drone. Designed a 2-layer PCB in KiCAD and worked with a PCB fab house to produce the first prototype.

projects

Justbot Manipulator as coursework project — Nov 2022 - Dec 2022

- Simulated a 7 DOF articulated manipulator designed in Solidworks using Gazebo and ROS.
- Written an inverse kinematics solver in Python that published joint angles for a given end-effector displacement.

Mint Flight Controller Board as personal project — Oct 2020 - May 2021

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

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.