Aadhya Puttur

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EDUCATION
Worcester Polytechnic Institute (WPI) , Worcester, MA   May 2023
Bachelor of Science - Computer Science

SKILLS
<u>Programming Languages:</u> Python, Java, numpy, ROS, C++, C, JavaFX, Javascript, MySQL
<u>Tools:</u> OpenCV, Pytorch, Github, Figma, Agile Methodology, Linux
<u>Databases:</u> MySQL, Apache Derby   <u>Electrical:</u> Soldering and Wiring, Raspberry Pi, Arduinos

PROFESSIONAL EXPERIENCE
Research Technical Intern, MIT Lincoln Laboratory, Lexington, MA   June 2022- August 2022
- Extracted <u>*LiDAR data*</u> by implementing an algorithm to analyze missing data in a canopy forest to find loss of data missing in different areas and views of the canopy forest

Research Technical Intern, MIT Lincoln Laboratory, Lexington, MA   May 2021- August 2021
- Assembled a coffee can radar and implemented a method to properly transfer it to work with the Arduino MKRZero using serial communications and MATLAB.
- Researched on serial communication, USB communication, data transfer, and programmed in MATLAB.

Research Technical Intern, Raytheon BBN Technologies, Cambridge, MA   May 2020 - August 2020
- Implemented communication of the hierarchical task network (HTN) for swarms of drones to be able to run a simulation with a live database using MySQL

Software Engineering Intern, Raytheon BBN Technologies, Cambridge, MA   June 2019 - August 2019
- Implemented a communication flow between a drone called the Skydio with a drone using a different interface through TCP connections and multithreading

PROJECTS
12 Degree of Freedom Quadruped Robot, Major Qualify Project, WPI   Aug 2022 - Present
- Building a 12 degree freedom <u>*Quadruped Robot*</u> that can detect obstacles and follow a moving target
- Implementing object tracking and environment representation using computer vision state of the art methods
- Implementing a control system along with a ROS communication architecture to communicate between low level controls and computer vision
- Created a website for grant proposal for this project

SfM (Structure from Motion) and NeRF (Neural Radiance Fields), Computer Vision   Nov 2022
- Used classical <u>*SfM*</u> technique, <u>*epipolar geometry*</u>, linear and nonlinear triangulation, and <u>*bundle adjustment*</u>
- Implemented <u>*NeRF*</u> using a fully connected (non-convolution) <u>*deep neural network*</u> using Pytorch

FaceSwap, Computer Vision   Aug 2022
- Implemented face warp of two faces by using Triangulation and Thin Plate Spline using Python

Edge Detection and Image Filtering, Computer Vision   Aug 2022
- Implemented PB boundary detection algorithm by creating a texton, color, and brightness map to consider texture, color information, and intensity using Python and Pytorch

Panorama Stitching, Computer Vision   Aug 2022
- Implemented <u>*feature matching*</u> and RANSAC algorithm and calculated homography between two images
- Implemented supervised approach for homography estimation using Pytorch

Camera Calibration, Computer Vision
- <u>*Calibrated camera*</u> by mapping 3D world coordinates to image coordinates and then estimated parameters of camera through the processes of calculating intrinsic and extrinsic parameters using Python

Personal Website, aadhyaputtur.com   ~ First attempt on making a website   June 2022
Mass General Brigham Hospital, Software Lead, WPI   March 2022 -April 2022
- Led the development of 20,000 line, full-stack Java application prototype as part of a 10 person, Agile Scrum team

SPECTRUM, COVID Innovation Challenge, WPI, *2nd Place*   June 26, 2020
- Link to competition submission pitch video: https://www.youtube.com/watch?v=yBG85EsSapw
- Prototyped a COVID PPE in three days for the challenge that uses UV light to kill germs as part of the mask.