

ANAGHA DANGLE

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Seeking full-time opportunities in Perception, Manipulation, and AV domains from May 2024

Education

Worcester Polytechnic Institute <i>Master of Science (Major- Robotics Engineering)</i>	Aug 2022 - May 2024 (4.0/4.0)
Savitribai Phule Pune University <i>Bachelor of Engineering (Major- Computer Engineering)</i>	Aug 2018 - May 2022 Distinction (9.64/10.00)

Working proficiency

Programming: C++, Python, C, HTML, CSS, SQL
Software: ROS, OpenCV, PyTorch, MATLAB, Simulink, TensorFlow-Keras, VReP, Apache SuperSet, Spark, Linux, L^AT_EX
Hardware: Jetson, STM32 Discovery, Arduino, Raspberry Pi, RealSense, ZED, Franka-Emika
Network architectures: YOLO, MaskRCNN, ResNet, DenseNet, SfM, VGG, NeRF, SAM

Experience

Amazon Robotics <i>SDE RnD Intern</i> <i>Team - CTO, Robotics Business and Strategy</i>	May 2023 - Aug 2023
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- Developed perception and manipulation algorithms for a specialized End-of-Arm Tool (EOAT), focusing on optimizing sorting procedures within Amazon's warehouse facilities.
- Established an automated annotation pipeline utilizing proprietary image matching algorithms, resulting in significant cost and time savings driving operational efficiency by approximately 70%.

Manipulation and Environmental Robotics Lab - WPI <i>Research Assistant</i> <i>Advisor - Dr. Berk Calli</i>	Aug 2022 - Present
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- Researching on the optimal selection of grasp primitives for dexterous picking strategies, focusing on skill identification – such as sliding, and pushing for specific target objects and scenes. (Amazon Grant, Collaborations - UMass Lowell and Harvard)
- Assessed GGCNN and ResNet (visual-based learning algorithms) on the Franka-Panda Emika robot, comparing their performance through evaluation against YCB benchmarking protocols.

Hewlett Packard Enterprise <i>Intern</i>	Mar 2022 - July 2022
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- Created and delivered customized data visualization dashboards using Apache Superset, catering to client specifications and encompassing a dataset of 500,000 samples. Also conducted comprehensive big data analysis for enterprise solutions, leveraging Apache Spark and Scala to extract insights from complex datasets.

OmniPresent Robotech <i>Intern</i>	Oct 2020 - Jan 2021
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- Implemented drone navigation paths in ROS-Gazebo, customizing underlying PX4 architecture and executing robust solution for RFM to attain NPNT (No Permission- No takeoff) compliance.
- Successfully deployed custom trajectories for offboard control, parsed and validated permission artefacts, monitored geofence check, and delivered custom messages through MAVlink and MAVROS.

Human-Centered Robotics lab - IIT Gandhinagar <i>Research Intern</i> <i>Advisor - Dr. Vineet Vashishta</i>	Jun 2021 - Aug 2021
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- Contributed to human-quadcopter interaction project, simulating admittance control strategy and external force estimation for quadcopter using MATLAB and Simulink. Focused on position and attitude control equations with state estimation using Kalman filter for a quadcopter in ROS-Gazebo.

Team Automaton - ABU-ROBOCON <i>Team member, Programming lead</i>	Aug 2018 - July 2022
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- Led and directed a team of ~20, overseeing pivotal aspects of visual control, sensor fusion, and motion planning across multiple robotic platforms, including Omni-drive, swerve-drive, and quadruped systems. Under my leadership, the team secured a 3rd position among 150 team around the country at ROBOCON 2022.

Academic projects

Thermal Image colorization for Autonomous vehicles - Formulated a novel solution for thermal image colorization with a post-processing deblurring model using a custom Convolutional neural network for pedestrian detection in autonomous vehicles.

Enhancing Saliency Object Detection through Attention - Developed and integrated U2Net-attention framework to enhance salient object detection (SOD).

Additional projects - Camera calibration using Zhang's method, Point-to-Point ICP on LIDAR point cloud data for semantic segmentation and mapping, 3D reconstruction from monocular camera - Structure from motion, NeRF, Image stitching for creating seamless panorama images, Music Transcription analysis. (Refer my [website](#) for all details)

Publications, Awards and Mentorship

“Enhanced Colorization of Thermal Images for Pedestrian Detection using Deep Convolutional Neural Networks”, 2022 Springer International Conference on Machine Learning and Data Engineering. [Paper](#)

“Optimized detection, classification and tracking with YOLOv5, HSV color thresholding and KCF tracking”, “Rugby ball detection, tracking and future trajectory prediction algorithm”, 2021 Springer Nature Lecture Notes in Electrical Engineering. [Paper](#), [Paper](#)

WRAMP 2022-23 (Women's Research and Mentorship program) Provided guidance and mentorship to high school and undergraduate students pursuing careers in STEM fields. [Link](#)