Anagha Dangle

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*Seeking internship opportunities for Summer 2023. Visit website for details.

Education

Worcester Polytechnic Institute **2022-2024**

Master of Science - Robotics Engineering

Savitribai Phule Pune University **2018-2022**

Bachelor of Engineering (Major- Computer Engineering). *GPA: Distinction (9.72/10.00) (4.0/4.0)*

Working proficiency

Programming: C, C++, Python, HTML, CSS, JavaScript.
Software: MATLAB, Simulink, ROS, Arduino, VRep, OpenCV, PyTorch, Keras, SuperSet, Apache Spark, LaTeX.
Hardware: Jetson Nano, STM32 Discovery board, Arduino, Raspberry Pi.

Experience

Manipulation and Environmental Robotics Lab | *Directed Research* **Aug 2022 -Present**

Advisor - Dr. Berk Calli

- Implementing learning-based visual grasping algorithms, GGCNN and ResNet on Franka-Panda Emika robot and assessing results on YCB benchmarking protocols.

Hewlett Packard Enterprise | *Intern* **Mar 2022 -July 2022**

- Delivered dashboards for data visualisation using Apache SuperSet with customised features as per client requirements. Worked on big data analysis using Apache Spark and Scala for enterprise solutions.

OmniPresent Robotech | *Intern* **Oct 2020 -Jan 2021**

- Simulated drone navigation paths in ROS-Gazebo, customizing underlying PX4 architecture and executing robust solution for RFM to attain NPNT compliance.
- Achieved successful implementation of custom trajectories (offboard control), parsing permission artefact and validation, monitoring geofence, and delivering custom messages through MAVlink.

Human-Centered Robotics lab - IIT Gandhinagar | *Research Intern* **Jun 2021 -Aug 2021**

Advisor - Dr.Vineet Vashishta

- 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 quadcopter in ROS-Gazebo.

Team Automatons - ABU-ROBOCON | *Team member, Programming lead* **Aug 2018 -July 2022**

- Led a team of ∼20 responsible for control and motion planning of Omni-drive and quadruped robotic systems.
- Deployed custom ball detection model using SiamMask and KCF tracking for position estimation and trajectory prediction, with real-time input processing from Intel RealSense D435i on Jetson Xavier and Nano.

Academic projects

AutoPano | *Python, PyTorch*

- Stitched images to create a panorama using Homography estimation and deep learning supervised method.

PbLite Edge Detection | *Python, PyTorch*

- Detected edges using a simplified version of the probability of boundary detection algorithm.

Image colorization. | *Keras, GAN, CNN*

- Proposed a novel solution for thermal image colorisation with post processing deblurring model using custom Convolutional neural network for pedestrian detection in autonomous vehicles.

Sample analysis for music transcription. | *Python, Librosa*

- Examined transform algorithms like FFT, DFT, CQT to automatize music transcription. Transformed ∼ 1000 piano music samples into spectrograms, to analyze features.

POPPY robot simulation. | *Python, VReP*

- Implemented control algorithms on POPPY humanoid for co-ordinated limb movements.

Publications and awards

"Enhanced Colorization of Thermal Images for Pedestrian Detection using Deep Convolutional Neural Networks", *2022 Springer International Conference on Machine Learning and Data Engineering*

"Optimized detection, classification and tracking with YOLOv5, HSV color thresholding and KCF tracking", *2021 Springer Nature Lecture Notes in Electrical Engineering -*

"Rugby ball detection, tracking and future trajectory prediction algorithm", *2021 Springer Nature Lecture Notes in Electrical Engineering*

"Qualitative Colorization of Thermal Infrared Images using custom Convolutional Neural Networks", *2022 IEEE Delhi Section Conference (DELCON)*

Rank 3 and 4 (ABU-ROBOCON 2021 & 2022) among 150 teams in India.