Anagha Dangle

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About

Experience in deep learning and computer vision with a keen interest in embedded programming and Perception domain. Seeking internship opportunities for Summer 2023!

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)*

Working proficiency

Programming: C, C++, Python, HTML, CSS, JavaScript.
Software: MATLAB, Simulink, VRep, ROS, Arduino, 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 grasping algorithms of GGCNN and ResNet on Franka-Panda Emika robot and assessing results on benchmarking protocols.

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

- Created dashboards for data visualisation using Apache SuperSet with customised features for 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

- Worked on human-quadcopter interaction project, simulating admittance control strategy and external force estimation for quadcopter using MATLAB and Simulink. Implemented 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.
- Developed custom ball detection model using SiamMask and KCF tracking for position estimation and trajectory prediction. Deployed 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

Springer Nature Lecture Notes in Electrical Engineering - Rugby ball detection, tracking and future trajectory prediction algorithm.
Springer Nature Lecture Notes in Electrical Engineering - Optimized detection, classification and tracking with YOLOv5, HSV color thresholding and KCF tracking.
2022 IEEE Delhi Section Conference (DELCON) - Qualitative Colorization of Thermal Infrared Images using custom Convolutional Neural Networks.
International Conference on Machine Learning and Data Engineering - Enhanced Colorization of Thermal Images for Pedestrian Detection using Deep Convolutional Neural Networks.
Secured Rank 3 and 4 (ABU-ROBOCON 2021 & 2022) among 150 teams in India.