Dhruv Krishna

krishna.1@iitj.ac.in | (+91)8604521228

EDUCATION

B. TECH MECHANICAL ENGG
IIT Jodhpur
Expected Dec 2021
CGPA: 8.49
(upto 6th semester)

HIGHER SECONDARY (CBSE)
S.P.S.E.C
2016| Kanpur, UP
Percentage: 89.9%

SECONDARY (CBSE)
S.P.S.E.C
2014| Kanpur, UP
Cum GPA: 10/10

LINKS

Github:// dhruvsasuke
LinkedIn:// dhruv-krishna

ACHIEVEMENTS

- Former selected intern at **Carnegie Melon University**
- **First position** among 21 IITs in BETiC Medical Challenge
- **Gold Level** on Hackerrank in C++ (5 Star)

COURSEWORK

RELEVANT COURSES
Introduction to Robotics
Artificial Intelligence
Linear Algebra and Calculus
Probability, Stats. and Random Processes
Complex analysis and Differential Eqs.
Computer Programming
Kinematics of Machines and Mechanisms
Nanosensors
Mechatronics

AUDIT
Introdiction to Deep Learning
Introdction to Machine Learning
Reinforcement Learning

SKILLS

PROGRAMMING
•C • C++ • Python
• Arduino •HTML • CSS

SOFTWARES
• Gazebo • VRep • MoveIt!
• MATLAB • Adams • Cinderella

*Ongoing

EXPERIENCES

ISRO INTERTIAL SYSTEMS UNIT | Thiruvananthapuram, India
June 2020 - August 2020 | Summer Internship

- Created the URDF for the robot designed by ISRO
- Integrated **MoveIt** path planning and perception pipeline with **Gazebo** for the task of obstacle avoidance during manipulation in static environments
- Reduced the convergence time and compared the performance of various path planners with and without obstacles in a static environment

SMART ROBOT GROUP | National University of Singapore
June 2020 - August 2020 | Summer Internship

- Discussed and presented the recent developments and breakthroughs in the field of **Smart Robotics** and **Robot Imagination** weekly
- Compared the performance of various state of the art **Pose Estimation Networks** on the Linemod and Occluded Linemod datasets
- Fine tuned the networks to improve the performance of the network on dataset for kitchen utensils

PROJECTS UNDERTAKEN

FEATURELESS VISUAL SERVOING FOR TUMBLING OBJECTS* | Research Project
June 2020 - Present | Guide: Dr. Suril V. Shah, Dr. Rajendra Nagar

- Created a dataset of 600k videos of tumbling objects on **Blender** and calculated **Optical Flow** in coarse to fine manner
- Extracted static features of tumbling object from the calculated optical flow using **Convolutional Neural Networks**
- Simulated **Position Based Visual Servoing** by using the extracted features of the tumbling object on **VRep**

VISION BASED MANIPULATION AND GRASPING USING 7-DOF ROBOTIC ARM | Indian Space Research Organisation (I.S.R.O)
January 2020 - Present | Guide: Prof. Suril V. Shah

- Simulated the Reachy 7 DoF Robotic Arm in **Gazebo** by adding actuators and Velocity Controllers using **ROS Control** package
- Created the **URDF** and controllers for custom robot designned by ISRO and controlled it in **Gazebo**
- Implemented eye to hand **Image Based Visual Servoing** in Joint Space in Gazebo for the custom robot

QUALITY BIASED INCREMENTAL RRT FOR OPTIMAL MOTION PLANNING | Research Internship
May 2019 - September 2019 | Guide: Prof. Suril V. Shah

- Biased the nodes of **Rapidly Exploring Random Tree** for better and faster solution trajectories using **Deep Reinforcement Learning**
- Introduced goal bias as a hyperparameter for better results

AUTONOMOUS NAVIGATION OF MOBILE ROBOTS | B. Tech Project
February 2019 - April 2019 | Guide: Prof. Suril V. Shah

- Mapped the environment through **Microsoft KINECT** Sensor using **Real Time Appearance Based Mapping** (RTAB-Map)
- Navigated the **Pioneer-3 DX** Mobile robot in the mapped environment autonomously