# Dhruv Krishna

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## EDUCATION

### IIT JODHPUR
BTech in Mechanical Engineering
Expected Dec 2021
CGPA: 8.65
(upto 4th semester)

### S.P.S.E.C
Higher Secondary (CBSE)
2016| Kanpur, UP
Percentage: 89.9%
Secondary (CBSE)
2014| Kanpur, UP
Cum GPA: 10/10

## LINKS

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

## COURSEWORK

### RELEVANT COURSES
Linear Algebra and Calculus
Complex analysis and Differential Equations
Probability, Statistics and Random Processes
Computer Programming
Engineering Mechanics
Mechatronics
Mechanics of Solids
Thermodynamics
Machining Science and Metrology*
Kinematics of Machines and Mechanisms

### AUDIT
Introduction to Robotics
SLAM in Robotics*
Introdction to Machine Learning
Reinforcement Learning
MATLAB programming

## SKILLS

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

### SOFTWARES
• MATLAB
• Adams
• Cinderella

*Ongoing

## PROJECTS AND EXPERIENCES

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

- Aim to bias the nodes of Rapidly Exploring Tree for better and faster solution trajectories using **Deep Reinforcement Learning** .
- Introduced goal bias as a hyperparameter for better results.
- Implementing the qRRT algorithm on **Pioneer 3-DX** mobile robot

### 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** .
- Added actuators and defined **Position and Trajectory Control** laws using **ROS Control** package
- Implemented **Visual Servoing** on the Reachy Robotic Arm using an RGB-D Camera

### AUTONOMOUS NAVIGATION OF MOBILE ROBOTS | BTech 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

### HANDWRITTEN DIGIT RECOGNITION | Self Project
Aug 2018 – Sep 2018

- Self coded **Back Propagation** algorithm to recognise handwritten digits for a 3 layer Neural Network on **MATLAB** .
- Trained the Neural Network on MNIST dataset using **Deep Convolutional Network** and **Fully Connected Neural Networks** and compared the performance.

### TREMOR SUPPRESSING GLOVES | 7th Inter IIT Tech Meet
Nov 2018 – Dec 2018 | IIT Bombay

- Created a light weight and cheaper solution to suppress Parkinson Tremors for the project of Parkinson Tremor Suppression hosted by **BETiC Lab, IIT Bombay**
- The prototype **secured first position** among the top 21 institutions for technical education (IITs) in India

### CNC ENGRAVER | Gymkhana Project
June 2018 – Aug 2018 | IIT Jodhpur

- Controlled the speed of 2 Stepper motors simultaneously and independently
- Used **Bresenham's Algorithm** for simple contours like Lines and Arcs
- Coded a **G Code interpreter** on Arduino for arbitarary contours and simulated on MATLAB

## HONORS AND ACHIEVEMENTS

- **First position** among 21 IITs in BETiC Medical Challenge hosted by Indian Institute of Technology Bombay during 7th Inter IIT Tech Meet.
- **Gold Level** on Hackerrank in C++ (5 Star)

## POSITIONS OF RESPONSIBILITY

| | | |
|---|---|---|
| 2017 | Student Volunteer | Student Placement Cell |
| 2018 | Team Captain | BETiC Medical Challenge |
| 2018 | Vice Captain | Robotics Club IIT Jodhpur |