Shaunak Mehta

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EDUCATION

Degree	Institute	Year	CPI/Percentage
BTech-Mechanical	Indian Institute of Technology Jodhpur, India	Expected 2021	8.28 / 10

PUBLICATIONS

STUDENT MIXTURE MODEL BASED VISUAL SERVOING
Preprint available at arXiv:2006.11347v1

INTERNSHIP EXPERIENCE

MECHATRONICS, INSTRUMENTATION AND CONTROL LAB (MICL), IIT PATNA | Guide - Dr.Atul Thakur

LAPAROSCOPIC SIMULATOR WITH 3 DOF HAPTIC FEEDBACK | MAY – JULY 2019 | IIT PATNA, INDIA

- Aimed at the development of a novel kinesthetic haptic device for laparoscopic simulation.
- Worked on user interaction with virtual organs instead of cadavers for realistic experience, for training and improving the skills in surgical process of laparoscopy.
- Achieved force feedback in x and y direction using a cable driven parallel mechanism and in z direction using a ferrofluid based damper and a capstan drive mechanism.

AUTOMATION + MECHANICAL ENGINEERING INTERN | GODREJ INTERIO

DESIGN AND DEVELOPMENT OF A RAIL GUIDED VEHICLE (RGV)| MAY – JULY 2018 |GODREJ INTERIO, MUMBAI

- Designed and prototyped an automated vehicle for inter plant material transfer to reduce risk of human lives and to improve efficiency.
- Integrated LIDAR sensor for working in an open environment to avoid the obstacles in its path for the purpose of avoiding hazards. Link to Model on Grabcad

PROJECTS

IMAGE BASED VISUAL SERVOING FOR TUMBLING OBJECTS

June 2020 – Present | Guide - Dr. Suril Shah | IIT Jodhpur , India

- Extracted feature points from an uncooperative tumbling object to create an elliptical track in the image plane. The controller minimizes the error between the current elliptical track and the desired features.
- This algorithm was successfully implemented on a 6 DoF UR-5 robot.

STUDENT MIXTURE MODEL BASED VISUAL SERVOING

August 2019 – June 2020 | Guide - Dr. Suril Shah | IIT Jodhpur , India

- Developed a novel approach for visual servoing based on student t-distribution mixture model (SMM)
- Successfully achieved image modelling using SMM, analytically formulated interaction matrix and a SMM based framework for Image Based Visual Servoing (IBVS) without any requirement of feature tracking and correspondence.
- Systematic experimental validation was carried out using various test scenarios,test objects (shapes and sizes), object textures, obstacles etc. showing promising results.

VISION BASED CONTROL OF UR-5 MANIPULATOR

January 2019 – April 2019 | Guide - Dr. Suril Shah | IIT Jodhpur , India

- Studied the Basic Visual Servoing algorithm and operation of UR-5 Robotic Manipulator.
- Successfully controlled the position, velocity and acceleration of 6 Degree of Freedom UR-5 manipulator using ROS.
- Multiple feature detection and tracking was achieved with the implementation of visual servoing algorithm.

SKILLS

Robotics Tools	Design and Simulation Tools	Programming Languages	Other
• Robot Operating System (ROS)	• Fusion 360	• Python	• LaTeX
• MATLAB	• COMSOL Multiphysics	• C++	• Linux
• Beaglebone	• SolidWorks		• ADAMS
• Arduino	• Unity 3D		