Kishore Paranthaman

+91 9940334698   kishoreparanthaman@gmail.com
https://www.linkedin.com/in/kishore-paranthaman-23b554b3

EDUCATION

Bachelor of Technology, Vellore Institute of Technology, Chennai, India. *Sep 2020 - Present*
*Major - **Electronics and Communication*** **CGPA: 8.64/10**
Key Courses - Computer Vision, Control Systems, Applied Linear Algebra, Calculus, Statistics, Embedded System Design

Certificate of Higher Education, Velammal Vidhyashram, Chennai, India *Jul 2020*
*Major - **Computer Science*** **Grade: 91.2%**

EXPERIENCE

Mowito, Pittsburgh, USA **Remote**
Robotics Intern - Manipulation *May 2023 - Present*
- Integrated robust pick and place for vending machine system on a Kinova arm gen3 present in CMU Robotics Institute using ROS2.

Robert Bosch Center for Cyber-Physical Systems, Indian Institute of Science **Bangalore, India**
*DST-INSPIRE Intern - **Advisor: Dr Josephine Ruth D*** *Aug 2022 - Apr 2023*
- Conducted Visual Servoing using ROS Moveit on KUKA LBR iiwa R820 using Intel realsense D455 depth camera and resolved an algorithm to use a Robotic arm to accomplish chemical experiments like humans.
- Minimized error rate for occluded objects by utilizing STag fiducial marker and achieved precise pose estimation.
- Project Demonstration - https://drive.google.com/file/d/14F9vKpn5003j8k2ADMnK0UwLuQ1t_hcS/view?usp=drive_link

HCL Technologies Ltd **Chennai, India**
Robotics Research Intern - AI and Robotics based 3D Bin Picking *Dec 2021 - Feb 2023*
- Phase 1 - Performed Instance Segmentation using Mask R-CNN and Object detection using YoloV5 for bin picking and interfaced with UFactory's xArm5 cobot.
- Phase 2 - Generated Synthetic dataset of textureless Industrial objects and executed 6D pose estimation using Nvidia's DOPE for bin picking and produced an accuracy of 73.5%.
- Project Demonstration - https://drive.google.com/file/d/1zbF0K_ZhqqOh3T88rSeD5nOcD4FQRhQ5/view?usp=drive_link

Technocrats Robotics, VIT **Chennai, India**
Robocon Team Lead *Jun 2022 - Jun 2023*
- Led the Team of 42 members and contributed to the Autonomous Ring Shooting System for Robocon 2023.
- Resolved Robot-to-Robot Calibration using a PID control system for passing rings between two robots and scored 20/20 in solution ideas category.

Robotics Developer *Mar 2021 - Jun 2022*
- Programmed Robot for ABU Robocon 2022 Competition's problem statement using MQTT protocol, OpenCV and ROS.
- Created a PI controller for the Robot to implement shooting motion with respect to the camera feed and TOF sensor and got a 3D input parameter to perform shooting trajectory calculation.

PROJECTS

Mimicking hand gestures using a five-finger robotic hand *2023*
- Developed a customized MoveIt package by leveraging the Schunk SVH 5-finger arm description, incorporating 9 degrees of freedom (DOF) for enhanced flexibility and functionality.
- Employed Google's state-of-the-art Mediapipe technology to seamlessly integrate pose estimation of 5 gestures into the system.

- Innovated trajectory planning algorithms to enable precise and coordinated movements of the robotic hand based on gesture-based input.
- Project link - https://github.com/Ack-Robotics/Acktask.git

RRT Path Planner in Python *2023*
- Implemented Rapidly-Exploring Random Tree Algorithm (RRT) on Python 3.
- The code generates a 2D state space with random and manual obstacles and finds feasible paths.
- Project link - https://github.com/kishoreparanthaman/RRT

Navigation System for Modular farming robot *2022*
- The farming robot employs ARUCO markers as the primary reference points for navigation for land of 5 acres.
- Markers are strategically positioned across the field in predetermined locations to provide precise and reliable positioning information to the farming robot.
- Implementing the ARUCO marker-based navigation system significantly reduces the cost of components required for navigation. This approach enhances the feasibility and scalability of deploying farming robots in smaller agricultural areas.
- Project link - https://github.com/kishoreparanthaman/Navigation-System-for-Modular-farming-robot.git

Apple Fruit Disease Detection using Cycle-GAN *2021*
- Employed CycleGAN model for generating diseased apple images and paired 90 diseased apple images with 950 healthy apple images as input data.
- Experimented with different approaches on red and green apple datasets, identifying the green apple healthy dataset as the most reliable for CycleGAN training.
- Mitigated the dataset limitation of diseased apple images by generating 1000 realistic and diverse synthetic samples.
- Trained the generated dataset with yolov5 and got an accuracy rate of 87%.

TECHNICAL SKILLS

C, C++, Python, Core Java, ROS, ROS 2, OpenCV, MATLAB, ML, Deep Learning - CNN, Reinforcement learning.

ACHIEVEMENT

- Winner of the World Moveit Day Hackathon conducted by Picknik Robotics and received a 6 DOF robotic arm *2023*
- DD Robocon 2023, 2022 and 2021 and scored 80, 61 and 90/100 respectively in stage 1. *2021,2022,2023*
- Best Robot Performance Award in First Lego League Indian Region. *2015*

PUBLICATION

- Deep Learning-based 6D pose estimation of textureless objects for Industrial Cobots in Advances in Robotics 2023 conference held at IIT Ropar.