ANOUSHKA BAIDYA

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Education

Worcester Polytechnic Institute(WPI) - USA | *MS Robotics* | GPA: 4.0/4.0	May 2024
Manipal Institute of Technology (MIT) - India | *BTech in Mechatronics* | GPA: 8.68/10.0	July 2020

Technical Skills

- **Programming Languages/OS**: Python, C++, MATLAB, ROS, ROS2, Ubuntu
- **Tools**: Pytorch, TensorFlow, Keras, OpenCV, Gazebo, Rviz, Solidworks, MoveIT, PCL, SkLearn, Simulink, Git
- **Industrial Robot**: Fanuc (Roboguide with DCS), Epson, Kuka, Universal

Work Experience

Calvary Robotics, USA \| *Robotics and Vision Engineer - Intern* — June 2023 - May 2024
- **Automation**: Design, program, test, configure and debug automated robotic systems enhancing operational efficiency by 50% and reducing downtime.
- **Integration, Troubleshoot and Debugging**: Programmed and troubleshot robots like Epson, Fanuc and KUKA in their native format including development of interfaces to other systems such as PLC, ROS2, and Vision. Remotely troubleshoot and resolved robot issues with customers.
- **Robot Simulation Validation and Analysis**: Performed robot simulation to estimate cycle times, conducted feasibility studies, and virtual validation of EOAT designs.

Vision Based Robotic Manipulation
- **Robot Simulation & Programming**: Simulated and selected industrial robots based on project-specific criteria like reach, feasibility, and cycle times ensuring efficient operation across diverse manufacturing settings.
- **Process Optimization**: Led process optimization by developing custom robotic codes and optimized motion paths, enhancing robotic reachability, part detection and picking accuracy to 95%.
- **Implementation**: Demonstrated end-to-end project leadership. Achieved project goals with seamless robot deployment, rigorous testing and efficiency optimizations reducing cycle times and failure rates to below 15%.
- **Integration**: Enhanced functionality in industrial settings by integrating and debugging with PLC systems, establishing Ethernet IP on controllers, and controlling robots through PLC commands.
- **Internal Robot Calibration**: Conducted internal robot camera calibration for cameras attached on the EOAT, established dynamic user frames, and calculated TCP to ensure precise part alignment in the gripper.
- **Testing & Validation**: Verified the final program's functionality by transferring simulation to physical robot.

Tata Motors Limited, India \| *Senior Manager* — Jan 2021 - Jul 2022
- Led cross-functional teams in optimizing manufacturing processes, improving cost forecast accuracy by 3% and reducing costs by 5%.
- Spearheaded multi-robot system enhancements, optimizing process, coordination and functionality across manufacturing lines, boosting operational efficiency by 10%.

Bector Automation RML, India \| *Robotics Intern* — Jan 2020 - June 2020
- Designed, implemented and integrated plant process layout using a P&ID diagram, Robot gripper in Catia, PLC Logic in RSLogix 5000 (AB MicroLogix PLC) and Yaskawa Robot Programming Logic in MotoSim EG-VRC.

Key Projects

Robust Trajectory Tracking for Quadrotor UAVs using Sliding Mode Control \| *Matlab, ROS* \| *Github*
- Spearheaded the design and execution of a robust control scheme for a quadrotor, achieving 30% improved trajectory accuracy and precise tracking despite external disturbances and model uncertainties.

Robot Control Design \| *Matlab, ROS* \| *Github*
- Pioneered the development of a dynamic trajectory-tracking controller in the presence of dynamic model uncertainties, utilizing feedback and partial feedback linearization, coupled with robust and adaptive control strategies.

Vision-Based Grasping \| *Point Cloud Library, Python, C++, OpenCV , ROS ,Gazebo* \| *Github*
- Developed a computer vision algorithm to segment environmental objects from point cloud data, enhancing grasp synthesis and stability through heuristic and geometric optimizations.

Visual Servoing of a Robotic Manipulator \| *ROS, Python, Gazebo, OpenCV* \| *Github*
- Developed Object Segmentation code using Feature(ORB) Detection on video feed from eye-in-hand camera configuration to construct Image Jacobian and designed velocity controller for robot to track segmented object.

Autonomous Mobile Robot Navigation \| *ROS, Gazebo* \| *Github*
- Simulated a mobile robot capable of navigating complex environments. Involved forward kinematics computation, sensor integration (LIDAR), environment mapping, localization and autonomous motion planning.

Object Segmentation Robot \| *ABB, Computer Vision*
- Programmed a six-axis robot for precise real-time object segmentation and placement achieving 100% accuracy.