Anirudh Gudi

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Summary

M.S. Robotics student at UC Riverside with two years of experience in 3D modeling and sheet metal design. Specialized in developing navigation solutions for wheeled and legged robotic platforms, with hands-on experience in robotic system integration. Currently seeking an internship to expand expertise in robotic systems

Education

University of California,Riverside M.S. in Robotics (GPA: 3.71/4.0) Sep 2024–Present

Courses: Fundamentals of Machine Learning, Foundations of Robotics, Design and Fabrication of Robots, Advanced Robotics (Robot Learning), Computation Methods for Robotics, Secure and Reliable Control Systems, Artificial Intelligence, Intelligent Transportation System, Linear Systems Theory

KLE Technological University, Hubballi B.E. in Mechanical Engineering (CGPA: 8.0/10) Aug 2018–Jun 2022

Courses: Mechatronics, Vehicle Design, CAE, Control Systems, Design of Machine Elements, Mechanics of Machines

Skills

CAD/Design: CREO parametric, CATIA (V5/V6), SolidWorks, Autodesk Fusion 360, GD&T, Ansys Workbench
Programming: Python(Intermediate), MATLAB (Simulink/Simscape)(Intermediate), C/C++ (basic)
Robotics: ROS/ROS2, Gazebo, SLAM, Path Planning, Inverse Kinematics
Other: DFM/DFA, Linux Basics, Rapid Prototyping, Motor Selection, Embedded System Basics

Key Projects

FCleanBOT – Autonomous Cleaning Robot with Arm (UCR) [GitHub] [Report]

Developed an integrated mobile robot system in ROS(noetic) using TurtleBot3 and OpenManipulator-X for household cleaning and object manipulation. Implemented LiDAR-based SLAM (GMapping), boustrophedon path planning, and inverse kinematics for pick-and-place. Built a custom Gazebo simulation with object detection, waypoint control, and PD controller. Used Python with rospy, moveit

Adaptive Sensor Fusion for Vehicle Localization (UCR) [Report]

Built an adaptive fusion system combining GNSS, IMU, and odometry using EKF, UKF, Particle Filter, and FGO. Dynamically selected fusion models based on sensor confidence metrics to ensure accuracy in varying noise. Simulated trajectory drift correction and runtime switching logic in Python and MATLAB. Improved by 15% over any static fusion approach.

SCARA 3DOF Robot Fault Detection (UCR) [Slides]

Created a MATLAB/Simulink model of a SCARA robot and injected actuator/sensor faults to evaluate system response. Designed residual-based fault detection logic to trigger recovery behaviors. Applied kinematic and dynamic modeling techniques and tested system robustness under nonlinear conditions, which achieved 100% results for fault detection.

Gantry Loader Robot for CNC Machine (L&T) [Report]

Led 4-member team to build a 3DOF gantry robot to pick and place circular workpieces into a turning machine. Performed engineering calculations and validated structural integrity through Ansys simulations. Prepared detailed CAD models and engineering drawings.

Experience

Graduate Student Researcher — CRIS Lab Riverside, USA

working under Prof. Ioannais Karamouzas Apr 2025 – Peresent

- Developing a real-time footstep-planning framework that enables quadruped to walk safely alongside with a human companion across variable indoor/outdoor terrains
- Levraging ROS 2 Humble based locomotion stack, integrating terrain-aware safety masks and human-motion prediction, using GPU-accelerated training, with domain-randomization for sim-to-real transfer.

Engineer – Automotive — L&T Technology Services Bengaluru, India

Client: Japanese Automobile Company (U.S. Division) Sep 2022 – Jul 2024

- Designed and optimized structural brackets for underbody components using CATIA V5/V6; applied DFM/DFA principles to reduce material cost and simplify welding/assembly during mass production.
- Developed sealant paths for robotic and human application for the body-side dust sealant to enhance strength and reduce foreign particles to enter the assembly
- Collaborated with cross-functional teams (product design, manufacturing, and testing) to validate component feasibility, and resolve interferences in early design phases improving overall team efficiency by 20%.
- Participated in design reviews and design audits to ensure compliance with GD&T and client-specific manufacturing standards which led to 90% client satisfaction.
- Worked on Body-in-White (BIW) part design including roof panels, pillars, floor reinforcements, and closures using CATIA; ensured conformance to crashworthiness and sealing requirements.
- Applied sheet metal design practices including bend allowances, forming limits, hole-piercing rules, and hem return requirements in automotive design context.
- Reviewed and corrected 2D manufacturing drawings and created 3D feature trees to improve manufacturability and eliminate downstream design defects, yielding about 15% better results than the previous design.
- Assisted in updating drawings through multiple iterations; incorporated supervisor and supplier feedback to align with manufacturing feasibility and client requirements.
- Attended regular stand-ups with OEM clients and project leads to align on deliverables, status updates, and change impact assessments.