Naveen Anil

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—— Mechanical Engineer with 5+ years of industry experience in designing and developing electromechanical robotic systems

—— Proven track record in analyzing 3D CAD geometries and implementing continuous improvements

Professional Experience

Terrapin Works Maryland, USA

Senior Mechanical Engineer January 2023 – June 2024

- Engineered the development of 5+ mobile robots, coordinating with a team of 10 technicians to ensure design and quality standards
- Led internal design reviews to validate and refine design concepts, ensuring the presentation of optimal solutions to customers
- Collaborated with manufacturing, supply chain, and quality teams to ensure high-quality parts and on-time delivery
- Optimized connector selection and wire harness configurations for electromechanical systems, reducing assembly time and costs

SFO Technologies R&D Solutions Kerala, India

Mechanical Engineer July 2018 – July 2022

- Leveraged proficiency in CAD software to produce intricate 3D CAD models and 2D drawings for industrial-grade electromechanical systems and automotive components
- Conducted FEA and CFD simulations, validating the mechanical and thermal performance of robotic designs under various conditions
- Programmed and calibrated Siemens S7-controlled robotic systems, enhancing operational efficiency and reducing defects by 15%
- Created GD&T drawings for complex parts, adhering to ASME Y14.5 standards to ensure precision fit and integration of subsystems
- Performed root cause analysis to pinpoint and rectify potential failure modes in robotic system designs, ensuring compliance with industry standards (CE, UL, ISO), resulting in a 20% decrease in failure rates and boosting product reliability by 10%
- Managed Engineering Change Notifications (ECNs) and document control activities, leveraging PDM and PLM platforms
- Constructed design prototypes using machine shop equipment, driving customer-focused design improvements that led to a 15% increase in customer satisfaction scores for the product line and a 12% revenue growth
- Employed Design for Manufacturing and Assembly techniques to reduce fabrication time and improve assembly efficiency by 25%
- Constructed pneumatically controlled fixtures and jigs for testing robotic work cells under various operational conditions

IROV Technologies Pvt Ltd Kerala, India

Electromechanical Design Intern June 2018 – July 2018

- Optimized mechanical designs with tolerance stack-up analysis, achieving 20% improved manufacturing efficiency
- Ensured all designs met or exceeded regulatory standards by implementing FMEA, resulting in a 100% compliance rate during audits

Technical Stack

CAD Modeling: SolidWorks, Fusion 360, Inventor, Catia, Ansys, Siemens NX, DraftSight, AutoCAD
Programming: C/C++, Python, Ladder Logic, Function Block Diagram, Kuka KRL, Matlab
Software Libraries/Tools: ROS, ROS 2, OpenCV, Pytorch, Tensorflow, Gazebo, RViz, Keras
Resource Management: Windchill, Teamcenter, MS Office, SAP ERP, Jira, G Suite
Fabrication: CNC Milling, Welding, Injection Molding, Die Casting, Stamping, Vacuum Forming, Sheet Metal Forming, 3D Printing

Education

University of Maryland – College Park, MD | Master of Engineering in Robotics | GPA: 3.7/4 August 2022 – May 2024

APJ Abdul Kalam Technological University – India | B.Tech in Mechanical Engineering | GPA: 7.6/10 September 2015 – June 2019

Robotics Projects

Robot Anomaly Detection | Machine Learning, ROS 2, Pytorch January 2023 – November 2023

- Developed Multi-Modal Anomaly Detectors to report behaviors that deviate from the robot's normal baseline nature
- Created a one-stop log retrieval service using Large Language Models to improve accessibility for non-technical users
- Formulizing metrics to measure, compare, and parameterize the safety of robots and cyber-physical systems

Delivery Robot | SolidWorks, AutoCAD, Ansys, ROS 2, Intel NUC 13 January 2023 – July 2023

- Designed and assembled a mobile robot for food and grocery delivery applications, developed for a leading supply chain giant
- Fabricated custom metal and plastic components using CNC milling, injection molding, grinding, and 3D printing techniques
- Integrated advanced sensor systems including LIDAR, cameras, and GPS, to enhance autonomous navigation and obstacle detection

Collaborative Robotic Arm | SolidWorks, AutoCAD, ANSYS, ROS, Jetson Nano January 2021 – July 2021

- Conceptualized and developed a 5 DOF robotic arm from inception to completion, employing creative design principles
- Carried out structural analysis to finalize motor specifications and payload capacity, enhancing robotic arm reach and efficiency
- Utilized DH parameters to model the kinematics and inverse kinematics for pick and place operations within a Gazebo environment

FEA – Finite Element Analysis, CFD – Computational Fluid Dynamics, B.Tech – Bachelor of Technology, FMEA – Failure Mode and Effects Analysis