Sakshi Shah

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EDUCATION

Master's in Mechanical Engineering   Aug 2023 – May 2025
North Carolina State University || CGPA 4/4   Raleigh, North Carolina, United States
Relevant Courses: Vibrations, System Controls, Design of Electromechanical Systems, Advance Dynamics, Movement Biomechanics, Advance Vehicle Dynamics, Nonlinear Controls, Industrial Automation, Engineering Design Optimization

B.Tech. Mechanical Engineering   Aug 2017 – Jun 2021
MKSSS's Cummins College of Engineering for Women || CGPA 8.5/10   Pune, Maharashtra, India
Relevant Courses: Engineering Mathematics, Rigid Body Dynamics, Automation and Control Engineering, Machine Design, Avionics, Transmission System Design, Manufacturing Processes

SOFTWARE SKILLS

SOLIDWORKS | AutoCAD | Autodesk Fusion 360 | Autodesk Inventor | ANSYS Mechanical | OpenSim | MATLAB | Simulink | Wolfram Mathematica | Python | Connected Components Workbench | SAP | ROS | PostgreSQL | Excel Visual Basics | Power Apps | Latex | PreForm

PROFESSIONAL EXPERIENCE

Research Assistant   Jan 2025 – present | Raleigh, United States
NCRL, North Carolina State University
- Designing and fabricating key components using CAD tools, ensuring an ergonomic fit and structural integrity.
- Selecting and integrated motors and control systems for smooth and precise actuation.

Process Development Intern   May 2024 – Aug 2024
Tioga Cardiovascular   Los Gatos, United States
- Supported **process development**/R&D in optimizing the manufacturing process of the Transcatheter Mitral Valve replacement product by understanding and solving product assembly and packaging requirements in the clean room.
- Designed SLA printed **fixtures** using SolidWorks and Preform for vibration damping and testing the delivery system.
- Refined engineering drawings for **GD&T** specifications and integrated **quality checks** for injection-molded supplier components, enhancing precision and production consistency and reducing defects.
- Generated approval requests for **controlled documents** of new and revised parts. Created equipment and tooling specifications and established procedures and the required quality inspection criteria.

Associate Engineer   Aug 2021 – Jun 2023 | Pune, India
Eaton
- Optimized the Engineering-to-Order (**ETO**) process, increasing efficiency by 34% . Certified in **DMAIC six sigma**.
- Acted as a special point of contact for *Python* and *Excel-VBA* **based automation**.
- Supported plant by executing *Engineering Change Requests* (**ECRs**) and ***Sustaining Engineering*** *projects* for regulators team, ***standardizing processes*** and reducing labor hours, through *Part Drawing revisions*, *bill of material (**BOM**)* standardization in *SAP PLM*, and **documentation**.
- Executed *Design for Manufacturing (**DFA**)*, *Continuous Improvement (**CI**)* and *Design for Manufacturing (**DFM**)* projects.
- Reduced costs through ***VAVE*** *projects*. Minimized material wastage by identifying overdesigned elements, reducing part variations by 96%, improving *inventory management*, and mitigating *part shortages*.
- Utilized **supplier and stakeholder** inputs to create r*amp-up and ramp-down* plans for project implementation.

PROJECTS

Testing and Control of a 7-Link Kinova Gen3 Robot Arm   Nov 2024 – present
- Developing a visual servo control system using an eye-in-hand camera configuration for real-time object tracking.
- Implementing nonlinear control algorithms for precise motion control and stability in dynamic environments.
- Designing and manufacturing end-of-arm tooling (EOAT) to ensure camera stability and support additional equipment.
- Integrating hardware and software for robot path planning, sensor feedback, and closed-loop control.

Design and Validation of Nonlinear Controllers for a Two-Link Robot Arm   Sep 2024 – Dec 2024
- Simulated and tested adaptive, robust, and model-based controllers to ensure stability and optimal system performance.
- Performed dynamic modeling and stability analysis to enhance motion precision and reliability.

System Integration and Control for an Autonomous Conveyor System   Sep 2024 – Nov 2024
- Programmed PLC-based control using Allen-Bradley Micro 800 and used Modbus/MQTT communication for real-time data monitoring.
- Developed a remote control system for automation, integrating low-level hardware communication protocols.
- Designed and optimized sensor-based feedback mechanisms to ensure system stability and fault detection.

2 Pole Electro-Permanent Magnet Clamp for Workpiece holding during machining   Jan 2024 – May 2024
- Optimized clamp design using Magnetic Circuit Analysis (MCA) to identify key design dependencies and performance trends.
- Conducted 2D simulations in FEMM using the octaveFEMM toolbox in MATLAB and refined the design using parametric sweeps in ANSYS Maxwell.