TRISHAM BHARAT PATIL
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OBJECTIVE: Mechanical Design Engineer.

EDUCATION:

Worcester Polytechnic Institute (WPI). Worcester, MA ,USA.
Master of Science in Mechanical Engineering.GPA-3.64/4. May 2021.
Relevant Courses-Advanced Dynamics, Control of Linear Dynamical Systems, Numerical Methods in Engineering, Design of Thermal Systems, Engineering Mathematics, Robot Dynamics, Finite Element Methods.

University of Pune. Pune, India.
BE in Mechanical Engineering.CGPA-8.42/10. May 2019.

PROJECT & RESEARCH EXPERIENCE:

Lab Assistant- University of Cincinnati. Cincinnati, Ohio, USA. August-December 2021.
- Designed residential thermoelectric-cooling system, discovered best material combination for semiconductors to improve performance and determined the operating parameters from simulation results .
- Conducted Finite Element Analysis (FEA) (MATLAB) and thermal analysis (in SOLIDWORKS & ANSYS) to analyse heat distribution (conduction, convection, and radiation) throughout the system to derive internal resistance and heat loss through the system.
- Calculated and determined electrical properties, thermal properties, size, and cost for entire system.

Research Assistant- Bioinstrumentation Lab (WPI). Worcester, MA,USA. January-May 2021.
- As a Mechanical Designer RA , I designed and manufactured a coaxial probe on Lathe Machine, designed connections between probe and impedance analyser (KEYSIGHT E4990A).
- Developed mechanical setup for experiment, designed and manufactured custom fixture to place probe and connector box, using SOLIDWORKS and 3D printing.
- Analysed and summarized experimental data to eliminate noise using Principal Component Analysis in MATLAB and determined optimal frequency range for maximum deviation in impedance data using ANOVA in Minitab.
- Validated impedance data by comparing experimental results to available impedance value of tissues.

Project-Robot Dynamics. Worcester, MA,USA. September-December 2020.
- Utilized knowledge of advanced robot dynamics (forward kinematics, inverse kinematics) to calculate trajectory, torque, and dynamic equations (potential and kinetic energy) of robotic manipulator and arm using MATLAB.
- Designed robotic arm assembly using dynamic equations in SOLIDWORKS, simulated robotic system using ROS 2 (Foxy Fitzroy) on Ubuntu 20.04.1 and visualized through the RVIZ user interface on ROS 2.
- Plotted time-position and time-velocity graphs of joints of robot to determine the operating parameters (max velocity, force).

WORK EXPERIENCE:

Teaching Assistant
University of Cincinnati. Cincinnati, Ohio, USA. August-December 2021.
- Taught structural design and analysis (stress, strain, deformation) using SOLIDWORKS and ANSYS-Structural.

Worcester Polytechnic Institute. Worcester, MA, USA. January 2020- May 2021.
- Taught Engineering Mathematics, Numerical Methods in Engineering and Fluid Dynamics.

Intern-R&D Forbes Marshall India Pvt Limited. Pune, India. December 2017-March 2018.
- Investigated design errors in steam trap, resolved errors, redesigned steam-trap model using SOLIDWORKS, and developed a CFD model of 3D turbulent flow using ANSYS-Fluent to calculate fluid flow at outlet.
- Generated reports, design documents and design models for ISO, DFM and form-fit-function compliance according to ASME 14.5 standards.
- Saved thousands of dollars in costly rework through careful design review that identified flaws in new subassembly and parts models prior to production. Generated and maintained documentation required for testing and maintenance of steam rig.
- Established appropriate scope and timing estimates during project quotation phase; interacted with manufacturing and sales team to get orders out on time.

SKILLS:

TOOLS & TECHNOLOGIES: SOLIDWORKS, CATIA, AutoCAD, ANSYS(Thermal, Fluent(CFD), Structural), Mastercam, MATLAB, Python(NumPy, Pandas, scikit learn, matplotlib), SQL, SQLite Studio, MS Office, Minitab.
INDUSTRY KNOWLEDGE: Thermo-fluids, Advanced Dynamics, 2D Drawing, 3D CAD, GD&T, FEA, CFD, Lean Six Sigma, Business Statistics, Database Management, Operations Management, Project Management, Data Analysis, Prototype Testing.