SRUJAN PANDYA

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EDUCATION

University of Illinois Urbana Champaign (UIUC) *GPA: 3.77 / 4.00*
Master of Engineering in Mechanical Engineering *December 2024*
Courses: FEA, Intro to Robotics, Controls System Design, Robust Adaptive Control, Applied ML, Electric Mobility Systems

Indian Institute of Technology (IIT) Gandhinagar *GPA: 3.52 / 4.00*
Bachelor of Technology (Honors) in Mechanical Engineering with Minor in Physics *July 2022*
Courses: Aircraft & Rocket Propulsion, Control Theory, Synthesis & Analysis of Mechanisms, Multi-body Dynamics

TECHNICAL SKILLS

Programming: Python | MATLAB | R | ROS | PyTorch | OpenCV

Proficiencies: FEA | CAD | Part & Assembly Design | Control Systems | Robot Kinematics & Dynamics | DFMEA | GD&T

Engineering Tools: Autodesk Fusion 360 | Autodesk Inventor | Solidworks | Catia | Creo | Onshape | Simulink | ANSYS Fluent | ANSYS Mechanical | ANSYS APDL | COMSOL | ABAQUS | Altair Hyperworks | LTSpice | VBA Macros | LaTeX

EXPERIENCE

Design Intern, *Global Product Development Team* | **Sulzer Inc., Portland, OR** *Jul 2024 - Aug 2024*
- Built custom CAD features on OnShape using FeatureScript framework, speeding the design pipeline by 50% compared to NX Siemens.
- Comparative modal analysis of Meshless FEA Simulations on Onshape with standardized ANSYS simulations to ensure software reliability.

Finite Element Analysis Intern, *CAE Team* | **L&T Technology Services Ltd, India** *Apr 2023 – Jul 2023*
- Performed preprocessing tasks (meshing, geometry cleanup) and conducted structural, thermal and modal analyses on various automotive electronic components - battery disconnect units (BDUs), car hoods, radiators, busbars - using SpaceClaim and ANSYS Mechanical.
- Leveraged APDL and Python scripting to automate processes within the Mechanical environment, reducing analysis time by **5%**. Streamlined FEA processes, identified and rectified critical stress points, improving component durability and boosting workflow efficiency.

Research Fellow, *Computational Aeroacoustics of Underexpanded Supersonic Jets* | **IIT, India** *Aug 2022 – Nov 2022*
- Utilized the *Method of Characteristics (MoC)* in MATLAB to design an optimized nozzle geometry, subsequently modeled using Autodesk Fusion 360, resulting in an *NPR (Nozzle Pressure Ratio)* of **3.5** and a *throat-to-exit area ratio* of **1:2.8** for optimal flow characteristics.
- Performed high-fidelity CFD analysis and 2D simulations of the nozzle using the *Large Eddy Simulation (LES)* model in ANSYS Fluent. Quantified the jet noise by calculating the *Power Spectral Density (PSD)* and spatial correlation in both near and far-field regions.

Vibrational Analyst Intern | **Vadict Inc, India** *Jul 2022 – Aug 2022*
- Calibrated digital triaxial MEMS accelerometers (IIS3DWB) using back-to-back calibration method, contributing to research and innovation in design, prototyping and manufacturing of sensor enclosures (casing), mitigating vibrational amplitudes and preventing resonance.

PROJECTS

AI-Based Data Compression for Drilling & Measurement Tools | **Schlumberger (SLB)** *Sept 2024 - Present*
- Developing and testing feature-based data compression algorithms to ensure efficient, lossless data transmission with ML classifiers and signal processing techniques to optimize real-time data transmission from downhole tools via mud pulse telemetry with limited bandwidth.

Parametric Optimization of Aircraft Engine | **Prof. Dilip Sundaram, IIT** *Mar 2022 - Apr 2022*
- Developed a high-efficiency turbofan engine model for **Boeing 737** and **Airbus 320**, optimizing for weight, speed, range, size, and operational altitude, resulting in a **12%** increase in fuel economy, **10%** reduction in weight & improving thrust-to-weight ration by **15%**
- Programmed a **Pareto Front** based **genetic algorithm** on Python to optimize performance, reducing computational time by **25%**.

Deformation Analysis of Tapered Inflated Beam | **Research Internship, IIT** *May 2021 - Jul 2021*
- Utilized ANSYS Mechanical APDL for deformation analysis of **tapered inflatable cantilever beams** subjected to concentrated force, using advanced **3D membrane modeling (FEM)** with SHELL 181 elements and *Timoshenko's beam theory* to incorporate shear deformations.
- Optimized structural design (minimizing material usage) through parametric relation of taper ratio on beam deflections to achieve high-fidelity simulation results with maximum deviation of **5%** from theory, validating the accuracy and reliability of the model.

Aerial Delivery Transportation with Dual Quadcopter | **Prof. Sachin Goyal, UC Merced** *Feb 2021 – Apr 2021*
- Implemented trajectory planning algorithm and set-point tracking control system for a cable-suspended payload carried by a dual quadcopter system, with MATLAB's **Simscape Multibody** toolbox and Simulink, resulting in precise payload delivery within **1-m accuracy**.
- Adopted the **leader-follower scheme** to tackle complex dynamics and fine-tuned PID attitude controller for quadcopter stability. Validated control strategies to ensure robust performance with over **90%** accuracy in predicted trajectories.

EXTRA-CURRICULAR

Organizer, Freshermen Week 2019 | **IIT Gandhinagar, India** *Aug 2019 - Sep 2019*
- Co-led a team of 12 people to host *Freshmen Party* for the entire student community (**1700** people), administering a budget of **450K**.