SRUJAN PANDYA

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EDUCATION

University of Illinois Urbana-Champaign (UIUC) — ***GPA: 3.77 / 4.00***
Master of Engineering in Mechanical Engineering — *Expected: Dec 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 — *Jul 2022*
Courses: Aircraft & Rocket Propulsion, Control Theory, Synthesis & Analysis of Mechanisms, Multi-body Dynamics

TECHNICAL SKILLS

Programming: Python | MATLAB | R | ROS | PyTorch | OpenCV
Proficiences: FEA | CAD/CAM | Kinematics | Multi-body Simulations | Flight Controls | Robot Dynamics & Controls
Engineering Tools: Autodesk Fusion 360 | Autodesk Inventor | Solidworks | Onshape | Simulink | ANSYS Fluent | ANSYS Mechanical | ANSYS APDL | ANSYS SpaceClaim | COMSOL Multiphysics | ABAQUS | Altair Hyperworks | VBA Macros | LaTeX

EXPERIENCE

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

Finite Element Analysis Intern | **L&T Technology Services Ltd, India** — ***Apr 2023 – Jul 2023***
Computer-Aided Engineering (CAE) Team
- Executed pre-processing 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 Fellowship | **IIT Gandhinagar, India** — ***Aug 2022 – Nov 2022***
Computational Aeroacoustics of Underexpanded Supersonic Jets
- 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.

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.

Automated Card Game using UR3 Robot and Computer Vision | **UIUC** — ***Oct 2023 - Dec 2023***
- Collaborated on integrating a UR3 robotic arm with computer vision technique to automate a card-matching memory game. Employed **template matching** using *OpenCV* library and exploiting inverse kinematics to achieve precise robotic movements.
- Enhanced system reliability through detailed camera calibration, enabling accurate pixel-to-world frame transformation on ROS.

Parametric Optimization of Aircraft Engine | **Prof. Dilip Sundaram, IIT Gandhinagar** — ***Mar 2022 - Apr 2022***
- Designed 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 and **10%** reduction in engine weight compared to existing models.
- Programmed a **Pareto Front** based **genetic algorithm** on Python to maximize engine performance, successfully reducing computational time by **25%** and identifying an optimal configuration improving thrust-to-weight ratio by **15%**.

Patient-Integrated Joint Impedance Control | **Timetooth Technologies - IIT** — ***Oct 2021 - Nov 2021***
- Modeled a 1 DOF robot dynamics to incorporate patient effort into an existing lower limb exoskeleton for rehabilitation purposes.
- Applied **impedance control** at the joints of *limb + exoskeleton* system, simulating scenarios with **100%**, **0%** and variable patient effort.

Aerial Transportation with Dual Quadcopter System | **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%** precision in predicted trajectories.

EXTRA-CURRICULAR

Organizer, Freshmen 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**.