Shourya Sahdev

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*Available for **full-time internship** from June 15, 2024, to May 15, 2025*

Education

University of Illinois Urbana-Champaign (UIUC) **Expected May 2025**

- *Master of Engineering in Mechanical Engineering* GPA: 3.68/4.00
  Coursework: Computational Mechanics, Applied Aerodynamics, Computational Design and Dynamics of Soft Systems, Experimental Stress Analysis, Carbon Capture and Storage, Finite Element Analysis

Delhi Technological University (Formerly DCE) **August 2017 - June 2021**

- *Bachelor of Technology in Production and Industrial Engineering* GPA: 3.06/4.00
  Coursework: Solid Mechanics, Fluid Mechanics, Thermodynamics, Robotics, Mechatronics, Quality Engineering

Work Experience

SLB (Formerly Schlumberger) - Champaign, IL **February 2024 - May 2024**

Capstone Project | *Topic: Shock Damper Design*

- Engineered dampers in ring and solenoid configurations with viscoelastic polyurethane and neoprene rubber, ensuring manufacturability, reliability, and maintainability while achieving damping within spatial constraints
- Employed FEA in ANSYS to implement a Dynamic Explicit model for linear and hyper-elastic materials using Neo-Hookean and Holzapfel-Gasser-Ogden models, assessing damper effectiveness under sudden shock

Delhi Technological University - Delhi, India **December 2021 - January 2023**

Mechanical Engineering Intern | *Topic: Aerodynamic Optimization of a Fixed Wing UAV*

- Executed engineering tradeoffs to optimize the aerodynamics of a fixed-wing UAV with electric propulsion
- Implemented governing equations in Python to select optimal airfoil parameters (Cl, Cd) for airfoil selection
- Optimized wing size, wing sweep, tail size, and tail position for balanced cruise and takeoff performance

Delhi Technological University - Delhi, India **June 2020 - January 2021**

Mechanical Engineering Intern | *Topic: Evaluating the effect of process parameters on FSP of AL5083 alloy*

- Developed a thermomechanical model of the novel metal forming technique, Friction Stir Processing (FSP) of aluminum, using FEA in ANSYS to study frictional stress and temperature variations across varied conditions
- Identified parameters for desired stir zone properties, ensuring enhanced microstructural homogenization
- Documented comprehensive research findings and contributed to published work in the field

Maruti Suzuki - Gurugram, India **June 2019 - July 2019**

Industrial Engineering Intern

- Conducted Failure Mode Analysis to identify 7 failure modes in spindle assembly, reducing lead time and costs
- Trained assembly workers to correctly install bearings in spindle assembly, reducing premature breakdowns

Projects

Human Powered Vehicle (Team Raftaar, DTU)

- Guided a team of 20 students through the design and development phase as the Vice-Captain
- Leveraged expertise in vehicle dynamics to design a recumbent bike and tadpole frame, featuring a 40% lower frontal area, and optimized vehicle ergonomics and handling, applied DFM to create production-ready designs
- Designed aerodynamic fairing based on NACA airfoil, minimizing flow separation and enhancing performance
- Improved the mold manufacturing process, reducing costs by 60% through innovative use of styrofoam for pattern creation and implemented vacuum-assisted resin infusion for manufacturing carbon fiber fairing
- Built the prototype hands-on and achieved a speed of 50 mph solely by human power during testing

Unmanned Aerial Vehicle

- Optimized the quadcopter frame design, created engineering drawings according to GD&T standards
- Engineered an electromechanical manipulator system for precise cargo pickup and place operations
- Developed a mathematical model in Simulink to analyze impact of environmental disturbances on the vehicle
- Applied Pugh's selection process for material selection, fabricated vehicle using additive manufacturing

Mobile Robotic Arm

- Designed a cost-efficient mobile robotic arm system capable of performing pick-up and place operations
- Enhanced the robot's design by optimizing weight and strength through Topology Optimization in Fusion360, resulting in a 30% reduction in overall weight, and manufactured the vehicle using 3D printing

Technical Skills

- **Software:** Solidworks, ANSYS Static Structural, ANSYS Fluent, Fusion360, AutoCAD, Star CCM, CATIA
- **Programming Languages & Libraries:** C, C++, Python, MATLAB, Numpy, Matplotlib, HTML, CSS, Arduino
- **Processes:** Mechanical Design, Vehicle Architecture, Design for Manufacturability, GD&T, Rapid Prototyping