

# Shourya Sahdev

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

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## 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

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## Technical Skills

- **Software:** Solidworks, ANSYS Static Structural, ANSYS Fluent, Fusion360, AutoCAD, Star CCM, MS Office
  - **Programming Languages & Libraries:** C, C++, Python, MATLAB, Numpy, Matplotlib, HTML, CSS, Arduino
  - **Processes:** Mechanical Design, Vehicle Architecture, Design for Manufacturability, GD&T, Rapid Prototyping
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## 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 and Structural Optimization of a Fixed Wing UAV**

- Executed Multi-Disciplinary Optimization of a Fixed-wing UAV design, focusing on 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
- Compiled comprehensive research findings and contributed to published work in the field

Maruti Suzuki - Gurugram, India

June 2019 - July 2019

**Industrial Engineering Intern**

- Identified 7 failure modes observed in a spindle assembly to help reduce lead time and maintenance costs
  - Trained assembly workers to correctly install bearings in spindle assembly, reducing premature breakdowns
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## Academic 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 multi-wheel vehicle dynamics to design a recumbent bike and tadpole frame in CAD, featuring a 40% lower frontal area, and optimized vehicle ergonomics, aerodynamics, and handling
- Performed tolerance stack-up on assemblies, used DFM to create optimized designs for production
- 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

**Unmanned Aerial Vehicle**

- Designed the quadcopter frame components, 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 40% reduction in overall weight, and manufactured the vehicle using 3D printing