

## Harsh Meel

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### EDUCATION

Cornell University, Sibley School of Mechanical and Aerospace Engineering Aug 2024 – Exp. July 2026

Master of Science (Research) in Mechanical Eng.; Conc: Dynamics and Control, Atmospheric Sci.

Indian Institute of Technology Bombay (IIT Bombay), Mumbai, India

July 2019 – May 2023

Bachelor of Technology in Civil Engineering with Minor in Mechanical Engineering

### SKILLS AND RELEVANT COURSES UNDERTAKEN

*\*Ongoing*

**Software** Python, MATLAB, SolidWorks, Ansys, Control System Design, System modeling\*, Optimization Tools

**Prototyping** 3D Printing, Electro-Mechanical Assembly, Metal and Composite Milling and Fabrication, Adhesives

**Courses** Feedback Control Systems, Statistics and Learning, Earth System Modeling\*, Renewable Energy

Tech., Manufacturing Processes, Fundamentals of Urban Sci., Thermodynamics, Climate Dynamics

### KEY EXPERIENCES

**Battery Design Engineer, IIT Bombay Racing | Formula Student Electric** [\[Reports\]](#) [Nov'19-Jun'22]

*3-tier cross-functional team of 70+ undergrad students; Winner Formula Bharat'21 Overall and Eng. Design*

- Responsible for design, manufacturing and testing of a 400V, 7.8 kWh LiPo accumulator (battery)
- Designed new parallel configuration of cells, theor. cutting battery heat by 50% and volume by 33%
- Improved battery size estimation using driver mix data and transient simulation of car - increasing reliability and performance; initiated technical alliance with cell recyclers to handle discarded cells
- Trained and managed 3 junior engineers; led engineering recruitment tests for 140+ new aspirants

**Regionally Informed Robust Global Climate Engineering, Climate Eng. Lab | MS Thesis** [Oct'24- Current]

*Principal Advisor: Prof. Douglas MacMartin, MAE, Cornell University; Minor Advisor: Prof. Daniele Visoni, CALS*

- Researching method to address uncertainty around the impacts of Stratospheric Aerosol Injection on regional climate systems; Using decision trees, data analytics, system dynamics and feedback control

**Optimization Tools (Minotaur) for Electric Vehicle (EV) Charging | Research Assistant** [Nov'23 – June'24]

*Guided By: Prof. Ashutosh Mahajan, Industrial Engineering and Operations Research, IIT Bombay, India*

- Pointed out opportunities and limitations of using optimization tools in aiding the Indian EV charging infrastructure using cost optimization; Conducted field research and generated test cases for solver

**Wind-Test Setup, ideaForge Technology Ltd., Mumbai, India | R&D intern** [May'22 – June'22]

*Industry leader in UAV technology in India | Developing drone solutions for Defense, Surveying, and Enterprises*

- Designed plan of modular wind-test setup producing real world wind profiles to test multiple drones
- Analyzed axial fan flow to reduce total power load; work received recommendation from the CTO

### RELEVANT PROJECTS

**Feedback control of simplified Earth's surface temperature | Course Project** [\[Report\]](#) [Aug'25-Dec'25]

- Designed PID feedback controller stabilizing against ramped disturbance in presence of time delay
- Achieved settling time(2%) < 7yrs and margins (phase>30°, gain >2), derived insights on saturation

**Reliability Analysis of Renewable Grid Transition Using Data-Driven Models** [\[Report\]](#) [Nov'24 – Dec'24]

*Guided by: Prof. Scott Steinschneider, Biological and Environmental Engineering, Cornell University*

- To detect vulnerability in NY state CLCPA, used regression, decision trees, and ensemble methods to find fit between price spike events and renewable grid expansion using load and fuel mix data

**Vehicle Overtake Assist System | Institute Technical Summer Project** [\[Repository\]](#) [May'20 – Aug'20]

*Led a first-year undergraduate student summer project, Awarded Special Mention (top 7) out of 64+ projects*

- Designed a driver assistance system, assisting the vehicle in overtake maneuvers on undivided two-laned roads in poor sight conditions; conducted on-road calibration and virtual simulation testing