DHRUVAL JAVIA

Dhruval is an ingenious mechanical engineer, enthusiastic about solving global climate and energy problems through innovation and sustainability-driven outlook. With two years of experience, he is adept in thermal and electrochemical system modelling and analysis.

in www.linkedin.com/in/dhruvaljavia



EDUCATION

Year	Institute	Qualification	CGPA	
2024 – present	Stanford University	M.S. in Mechanical Engineering	3.739/4	
(Expected 06/2026)	(CA, United States)	(Depth in Energy Systems)	3./39/4	
2018-2022	Indian Institute of Technology, Bhubaneswar	B. Tech. in Mechanical	9.39/10	
	(Odisha, India)	Engineering	9.59/10	



WORK EXPERIENCE

THERMAX LTD. | Advent Trainee | August 2022 - July 2024

- Performed tasks such as boiler furnace modelling in EXCEL using stirred reactor and plug flow models, data driven modelling of boiler, tracking a boiler unit on factory shop floor stage-wise end-to-end and suggesting points for manufacturing process improvement and automation, site visit & subsequent report generation for Residual Life Analysis (RLA) and Root Cause Analysis (RCA) activities.
- Lead a team project on standardization of the design and techno-commercial offering of a biomass-fired thermal oil heater, leading to a 7.4% reduction in total weight and a 10.2% decrease in total footprint area as compared to the previous design. Activities involved include grate & BOP/auxiliary equipment sizing, layout preparation, thermal & pressure drop simulations, and maximum film temperature & efficiency calculations.
- As part of the project, developed a thermal model of the APH, Economizer and MPA furnace in EXCEL with VBA automation to iteratively design the heater, and validated it with existing data. The model provided inlet/outlet temperature values within 2%, 6% and 10% error in APH, Economizer and MPA furnace respectively.

ACADEMIC PROJECTS

EFFICIENT BATTERY THERMAL MANAGEMENT SYSTEMS FOR EV | COMSOL, Electrochemical Modelling 2021-2022 | Final Year B. Tech. Thesis Project | Supervisor: Dr. B. R. Pattabhi

- Performed degradation studies through multiphysics numerical simulations using COMSOL software by employing a coupled 1-D electrochemical and 2-D thermal model of the battery pack integrated with a capacity fade model.
- Published the work in the "Energy Storage" journal having an impact factor of 3.2.

MACRO-SCALE DESIGN ASPECTS OF EV BATTERY PACK | MATLAB, Excel, Battery Pack Design 2021 | Summer Research Internship Project | Supervisors: Dr. Sundararajan Natarajan (IIT Madras) and Dr. B. R. Pattabhi (IIT Bhubaneswar)

- Performed battery pack design calculations by developing a system of equations in **EXCEL** and implementing it in a **MATLAB app**. The app sliders be used to analyse the effect of battery pack design parameters on EV performance.
- Developed **MATLAB code** for generating data for single cell current variation with time based on the adopted vehicle velocity profile by using vehicle dynamics equation.

AEROCASE | Sheet Metal Working, TIG Welding, Sand Casting, Wood Working, 3D Printing, Fusion 360 2025 | Individual Course Project | ME 203: Design and Manufacturing, Stanford University

- Designed and fabricated a compact, innovative, and functional instrument case that ensures the safe storage of Aerodrum instruments while reflecting the aesthetic essence of music.
- Materials used include Al 5052 aluminum sheet, A356 cast aluminum, pine wood, Duron, and polyurethane foam.

GAS DYNAMICS SIMULATOR | MATLAB, Vector Algebra, Hash Grid Optimization 2025 | Individual Personal Summer Project

- Built a MATLAB-based simulator for particle dynamics and association chemical reactions in an ideal gas, implementing **hash grid optimization** to reduce collision detection algorithm complexity.
- Developed an interactive MATLAB app with numeric and GUI-based input to improve user experience, providing timeseries plots and dynamic animations as post-processing outputs for analysis.

X	TECHNICAL SKILLS	SolidWorks	A١	ISYS	сомя	OL	Arduin	0	Python	MAT	LAB	Cantera
	COURSEWORK	Thermodynamics		Spectroscopy		Heat Transfer		Physical Gas Dynamics		Chemical Kinetics		

EXTRA-CURRICULAR ACTIVITES

- Associated with the **robotics society** and **music society** (as a drummer) at IIT Bhubaneswar (2018-2022).
- Held the position of **Student Placement Coordinator** (2022) and *coordinated with various internal and external stakeholders* such as institute's placement cell, company recruiters and students for ensuring a smooth placement process.
- Participated and lead a team of 4 members in the **annual e-yantra robotics competition** (eYRC 2019-2020) organized by IIT Bombay.
- Achieved **5th rank** out of 82 participants in the **GrabCAD shop challenge** (2020) held online on the GrabCAD community website. The challenge involved *designing an innovative product which can be 3d printed*; have made a *2-in-1 mechanical hand blender cum egg beater*, and have submitted CAD files along with a stress analysis report. **SolidWorks** and **ANSYS** was used for CAD modelling and analysis.
- Achieved **2nd rank** in the *eastern fusion group music competition* **"Sargam"** organized as a part of Spring Fest 2020 at IIT Kharagpur.