Shrey Sahai Gupta

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About me

Doctoral candidate advancing Thermal Sciences for a Sustainable Energy Future

Knack for Interdisciplinary research

Developing realizable Control Strategies for Supercritical CO₂ Power Conversion Systems

Personal

Date of Birth: 1st Nov 1998 From: Agra, India ♥ Marital Status: Single

Areas of specialization

Thermofluids sCO₂ systems Turbomachines Cycle Thermodynamics System Dynamics

Technical Skills

System Simulations Model Predictive Control Software Packages: ANSYS Fluent, Twin Builder COMSOL Mutliphysics

Programming

Python | MATLAB | C++ | Modelica

Research Methodologies

Literature Review Technical Writing and Presentation

Data Visualisation: Matplotlib | MS Excel

Awards

Prime Minister Research
Fellow | Government of India

Top 5 Pitches | **Falling Labs**, **Bengaluru** 2023

Agastya **Science Communication Fellow** 2023

Department Rank-2 | IIT Ropar.

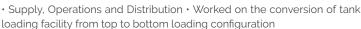
Silver medal | Inter-IIT Tech Meet 2018

WORK EXPERIENCE

Sep,20 to Jun,21

Hindustan Petroleum Corporation Ltd.

OPERATIONS OFFICER · Bathinda, India 💡





May,19 to Jul,19

Diverta Inc.%

SOFTWARE DEVELOPMENT AND AI INTERN · Tokyo, Japan 💡

• Developed a multi-tag select component for RCMS website on VueJS • Developed an Auto-tagging model to cluster similar-looking customers in a shop footage



May,18 to Jun,18

Volvo Eicher Commercial Vehicles Ltd.%

MECHANICAL ENGINEERING INTERN · Indore, India 9

• Feasibility study, process scheduling, cost estimation, etc. for a shifting project of an Air Supplying Unit to higher elevation



EDUCATION

Doctoral Thesis
Mechanical Engineering
Indian Institute of Science
Bengaluru | Aug 2021-Present
GPA:9.7/10

Bachelors in Technology Mechanical Engineering Indian Institute of Technology Ropar | 2016-20 GPA:8.76/10

High School, Central Agra Public School | 2016 | GPA: 9.12/10

PUBLICATIONS

Optimal Part-Load Performance of sCO₂ Brayton Cycles During Inventory Control

Journal of Engineering for Gas Turbines and Power | 2025 Shrey S. Gupta, Pramod Kumar %

Inventory Management and Control Options for Transient Operation Of sCO₂ Brayton Cycles

ASME Turbo Expo | 2025 Shrey S. Gupta, Pramod Kumar %

Off-Design Performance Of sCO2 Waste Heat Recovery Cycles Implications Of System Design

ASME Turbo Expo | 2025 Shrey S. Gupta, Pramod Kumar %

Evaluation of Cold Flow Test Conditions and Fluid for a 60-kW Radial sCO₂ Turbine ASME Turbo Expo | 2024 Syed J. Hoque, Shrey S. Gupta, Pramod Kumar &

PROJECTS

Control Studies on sCO₂ Power Conversion Systems | *Doctoral Research Topic* Investigation of sCO₂ cycles as an energy transition solution for modern power needs | Development of suitable control strategies and feedback systems

Model Predictive Control of an Inverted Pendulum System | Aug 2022 Implementing single shooting non-linear MPC for set-point tracking of an inverted pendulum-cart system.

Potential Flow Simulation Past Cascades | Prof. Raghuram Govardhan | Aug 2021 - Dec 2021 Calculation of inviscid flow field past axial impellers using Vortex panel method on conformal-mapped infinite linear cascade.

Mechanical Tissue Deformation During Thermal Ablation | *Prof. Ramjee Repaka Aug 19 – Jul 20* % | Estimating tissue deformation by incorporating three-state protein denaturation in Pennes bioheat equation.

Ergonomic Crutches | *Inter IIT Tech Meet* | *Nov- Dec 2018* % | Design of Ergonomic Crutch for patients with prolonged crutch usage and are at high risk of crutch palsy

Extra Cirricular

- Student liasion, sCO₂ committee & student reviewer, Turbo Expo 2025, International Gas Turbine Institute, American Society of Mechanical Engineers (ASME)
- Delegated IISc, Bangalore at Technology Exhibition, G20 Clean Energy Meet 2023.
- · Content Creator, Science for Rural India
- · Organising Team, Sports / Cultural Fests, IIT Ropar
- · Placement Coordinator 2019-20, IIT Ropar
- · Plays basketball, chess, and guitar and write poems

TEACHING ASSISTANCE

- Teaching Assistant, Gas Dynamics, National Programme on Technology Enhanced Learning, India
- Teaching Assistant, Transport Processes, National Programme on Technology Enhanced Learning, India
- Course Instructor, Thermal Engineering of sCO2 Power Conversion Systems, PMRF-ISSS Lecture Series
- **Teaching Assistant**, Hydraulic Lab 2024, Dayalbagh Engineering College, Agra