Pursuing a Minor Degree in **Artificial Intelligence & Data Science** from C-MInDS, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Secured All India Rank of **979** in Joint Entrance Examination (JEE) Mains among **1 million+** candidates **('21)**
- Achieved the Rank of **253** in the Indian Olympiad Qualifier (IOQ) in Astronomy and **317** in Chemistry **('21)**

PROFESSIONAL EXPERIENCE

Hero Future Energies | Renewable Energy Intern | Projects Team **(May'24-Jul'24)**

Awarded a Letter of Recommendation from the project mentor for problem solving skills and strong work ethics

- Explored components, SLD of **250MW/375MWp** plants; reviewed policies on load management, dispute resolution
- Studied standards for Renewable Energy Power Plants: **IS17293**, **IS3043**, **BS EN50618**, **IEC-62378** and **IEC-62548**
- Assessed project timeline and schedule of engineering activities for construction of **175MW** solar-wind hybrid plant

Ministry of New & Renewable Energy | National Institute of Solar Energy **(Jun'24-Aug'24)**

- Assembled an iron press system made of **158kg** cast iron TES heated using solar panels(**1.02kW)** reaching **200℃+**
- Conducted literature review for material selection for insulation and press temperature control via composite layers
- Analytically figured out average temperature of the thermal energy storage (**140℃)** and confirmed it experimentally

Avrio Energy | ML Intern **(Dec'24)**

- Assembled Energy Meters for energy data monitoring while documenting the process to streamline the workflow
- Developed predictive models for energy consumption using time series analysis and machine learning techniques

KEY TECHNICAL PROJECTS

Minimizing PV Soiling Losses in Cement Plants | Fourth Partner Energy & Energy Club (Mar'25-Apr'25)

- Secured **1st** position by proposing a **2-step** dust mitigation system using self-cleaning coatings and sprinkler system
- Designed an Electrodynamic Screening system (EDS) using AZO-coated panels to reduce soiling losses by **90-95%**
- Conducted a techno-economic analysis for our solution with SPP of ~2 years & calculated the annual water savings

GRPV System & Solar Mini-Grid Design | Course Project | Guide: Prof. Anand B. Rao **(Jan'25-Apr'25)**

- Analyzed GRPV policies in **5** Indian states & compared frameworks with **4+** countries and proposed policy reforms
- Reviewed deployment status & execution hurdles for GRPV via **15+** consumer surveys & **5+** stakeholder interviews
- Designed **14.4 kW** solar mini-grid system in HOMER; conducted economic, institutional & environmental analysis

Residential Vertical Axis Wind Turbine | Energy Design Project **(Jan'25-Apr'25)**

- Designed a hybrid Savonius–Darrius VAWT for **9m/s** wind speed; achieved **933W** output and **0.409** CoP via CFD
- Modeled generator, inverter, and gearbox components based on the technical specs for residential-scale applications
- Estimated initial capex of the system as **₹57.4k** with **12**-year payback and positive NPV for over **25** years of lifetime

PCM-Based Cooling Pad | Energy Innovation Lab | Guide: Prof. Sandeep Kumar **(Aug'24-Nov'24)**

- Ideated upon an innovative ankle injury cooling pad using PCM for consistent therapeutic relief at **18℃** temperature
- Conducted heat transfer analysis on **500 g** ankle muscle mass; attaining optimal cooling for **1 hour** via **4** PCM strips
- Designing and fabricating entire cooling pad; choosing material for insulation and fabric ensuring athletes' comfort

Modelling of Carrier-Selective Contacts in Si Solar Cells| Seminar | Guide: Prof. Bala R. **(Aug'24-Nov'24)**

- Conducted literature review of **10+** research papers on modelling of carrier-selective contacts (CSCs) in Si solar cells
- Explored mechanisms like recombination, doping, tunneling to identify key factors to optimize solar cell efficiency

Analysis of Gas Turbine Power Plant | Course Project | Guide: Prof. Anish Modi **(Aug'23-Nov'23)**

- Designed and simulated a **300 MW** GTPP, optimizing its performance with intercooling, reheating, and regeneration
- Achieved a system efficiency of **53.17 %** and plant cost of **$ 21.14 million** using cost functions for each component
- Modeled a shell-and-tube HX for the intercooler (approx. area ~ **10935 m^2**) and determined its temperature profile

Canada Energy Sector Analysis | Course Project | Guide: Prof. Sandeep Kumar **(Jan'23-Apr'23)**

- Analyzed Canada's energy sector via **Sankey** and **PECSS** diagrams, revealing beyond **75%** reliance on fossil fuels
- Estimated Canada's oil and gas reserves to last **89** and **211** years, using **R/P** ratio and logistic curve to available data
- Investigated Canada's emissions data, effects on health, economy, including related policies/implementation barriers

TECHNICAL SKILLS

Languages & Softwares	C ++, Python, Assembly, MATLAB, LATEX, MS Office, JAVA, Ansys, AutoCAD
Python Libraries	NumPy, Pandas, Matplotlib, SciPy, Scikit, Seaborn, SQLite, OpenCV, ASE

COURSES UNDERTAKEN

Solar	Design & Evaluation of Photovoltaic Power Plants*, Semiconductor Photoelectrochemistry & Photocatalysis*, Renewable Energy Technologies, Solar Energy Lab
Electrical	Microprocessor Applications in Power Electronics, Introduction to MEMS, Digital Protection of Power Systems, Controls & Instrumentation, Electrical Energy Systems, Power Electronics, Electrical Machines
Core	Energy Management*, Energy Policy and Planning*, Materials modelling using atomistic first-principles calculations*, Energy Systems Modeling & Analysis, Electrochemical Material Science, Finite Element & Boundary Element Methods, Power Generation & System Planning, Thermo-Fluid Devices, Reaction Engineering & Combustion, Transport Phenomena, Energy Resources, Economics & Environment
CS & DS	Remote Sensing and GIS Applications to Mineral and Hydrocarbon Exploration*, Introduction to Machine Learning, Programming for Data Science, Introduction to Numerical Analysis, Computer Networks, Data Structures & Algorithms

** To be completed by Apr'25*

LEADERSHIP ROLES

Head of Hostel & Department Affairs | Student Alumni Relations Cell, IIT Bombay **(Apr'23-Mar'24)**

*Spearheading two-tier **80+** member body organizing **60+** events bridging **65k+** alumni & **12k+** students | Budget: **5M INR+***

Management	• Orchestrated **2-day Alumination 2023**, IITB's student alumni fest with **30+** events & **20k+** footfall • Organized Mock Interviews with help of **150+** alumni aiding **300+** final year students for placements
Initiatives	• Acquired **80+** internship projects catering **250+** students through Industrial Learning Program (**ILP**) • Pioneered **25+** Core Talks, presenting diverse opportunities in Core fields catering to **1500+** students
Leadership	• Managed team of **20+** Alumni Secretaries coordinating representing **15+** Departments & **5+** Hostels • Linked **650+** final-year students with **300+** alumni mentors via the **Placement Mentoring Program**

Department Alumni Secretary | Student Alumni Relations Cell, IIT Bombay **(Jun'22-Mar'23)**

*Representing DESE and among **15** Department Alumni Secretaries bridging gap between **65k+** Alumni & **12k+** students*

- Contacted **14k+** alumni (**84%** YOY rise); updated **4.7k+** alumni DB (**152%** YOY rise) in **10**-day long Phonathon
- Executed SARC Tank-PAN-IIT level pitching competition featuring **500+** participants; prizes worth **INR 600k+**

EXTRACURRICULARS

Social	• Completed **80+** hours of community service under Green Campus Initiative, NSS IIT Bombay • Coordinated the Bicycle Donation Campaign under SARC reaching **50+** underprivileged children
Culturals	• Performed in Annual InSync's Dance Show (AIDS) organized by **InSync,** Dance Club of IITB • Bagged **1st** prize in **Freshiezza** Group Dance Competition among all the **10**-participating teams
Oratory	• Moderated **CEO Connect 3.0** with CEO of Toppr organized by Student Alumni Relations Cell • Hosted Student Alumni Relations Cell's UG Freshers Orientation 2023 with an audience of **300+**
Miscellaneous	• Managed social media handles and on ground events of **Krittika- The Astronomy Club of IITB** • Elected Class Representative of 2021 DESE batch, representing **35+** students on academic matters