Sumit Kumar
Chemical Engineering
Indian Institute of Technology Bombay

200020145
B.Tech.
Gender: Male
DOB: 22/11/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	Central Board of Secondary Education	Jawahar Navodaya Vidyalaya Ranga Reddy	2020	94.80%
Matriculation	Central Board of Secondary Education	Jawahar Navodaya Vidyalaya Mathura	2018	96.00%

Pursuing a **Minor** Degree in the **Centre of Machine Intelligence and Data Science** at IIT Bombay
Pursuing **Honors** in the Department of **Chemical Engineering** at IIT Bombay

Scholastic Achievements

- Currently **ranked 2nd** academically in a class of **157** in the Department of Chemical Engineering *(2022)*
- Achieved a **perfect 10 SPI** (Semester Performance Index) in the 4th semester, comprising **38 credits** *(2022)*
- Awarded **Letter of Recommendation** for **exceptional leadership and management** by Prof. Venkat Gundabala *(2022)*
- Currently holding **AA grade** awarded for exemplary performance in **13** of the core departmental courses *(2022)*
- Secured **Academic Proficiency**(AP grade), **awarded to one** student out of **163** Chemical Engineering Undergraduates enrolled in the course **Introduction to Data Analysis** for **outstanding performance** *(2022)*
- Achieved **99.70** percentile in Joint Entrance Exam Main among **1,200,000+** candidates across India *(2020)*
- Dakshana Batch 2020 topper in **Physics** in Class **XII** among 300+ students with a score of 99/100 *(2020)*
- Selected as **Dakshana Scholar**, a scholarship awarded to the top **1%** students of **661** J.N.V across India *(2018)*
- **School topper** academically in Class **X** board examination among **70+ selected students** of J.N.V Mathura *(2018)*
- Selected in **J.N.V.Mathura** one among the top **1.6%** students out of **4000+ applicants** of Mathura district *(2013)*

Positions of Responsibility

Manager | ChemE Tinkerers' Laboratory | Institute Technical Council *(May 2022 - Present)*
Nominated representative for managing lab, catering interests of 10,000+ students across Institute| Budget:INR 5Million+

- Managing **1st Chemical Eng. tinkering lab** in **India** aimed at promoting and diversifying chemical engineering tinkering culture
- Launched **Chemexplore** providing technical assistance to **20+** students daily, **Chem-E-Car** and **SLP** for community betterment
- Conducted a focused survey to find out the interest of **300+ undergraduates** to organize guest lectures and workshops

Events Coordinator | Techfest, IIT Bombay *(July'21 - Apr'22)*
*Conducted events and secured reach for the Asia's Largest Science & Technology Festival | Events:**100+***

- Curated a database for contacting several personalities from around the globe for **online lecture series**
- Secured an astounding online reach of **4.5 Million+** and a viewership of **750K+** for the online lecture series

Key Projects

Removal of Arsenic from Water | *Dept.Chemical Engineering, IIT Bombay* *(Dec'21 – present)*
Project Guide: Prof. Rajdip Bandyopadhyaya

- Modeling experimental setup in **Ansys Fluent** to understand the flow pattern of contaminated water
- Developing a **theoretical model** that can explain experimentally observed results from the lab experiments

Thermoacoustic cooling for GPU Chip | *Course Project | Prof. Venkat Gundabala* *(Feb'22 - May'22)*
Optimizing cooling of GPU chip using Thermoacoustic principles

- Worked as a **planner** in a team of 8 to conceptualize a mechanism for deploying the Thermoacoustic model in GPU cooling
- Used heat transfer equations to **compare cooling efficiency** of active cooling by fan method and Thermoacoustic method
- Achieved **22 times** more efficiency in terms of **cooling power** and **7.5 times** more **economical** over conventional methods

Computational Analysis of Numerical Methods | *Course Project | Prof. Sarika Mehra(Oct'21 - Nov'21)*
Optimized the knowledge gained during the course to study the effect of various parameters on problem-solving methods

- Solved the **ordinary differential** equation for heat transfer in the straight fin of uniform cross-section using **MATLAB**
- Implemented finite difference **Jacobi Method**, inbuilt solvers **bvp4c** and **bvp5c** for obtaining temp. v/s dist. graph
- Applied concepts of **step size & data plotting techniques** to conclude the conditional utility of the different methods

Cheerios Effect | *Course Project* | *Prof. Guru Kumaraswamy* *(Sep'21 - Nov'21)*
Critical study & presentation of a research paper on the Cheerios Effect by Dominic Vella and L. Mahadevan

- Studied the **causes** of cheerios effect and understood **behavior** of **small objects** in presence of a different kind of small objects
- Rederive the results of the paper using concepts of **surface tension** and pointed out the **field of improvements** in research paper

IPL Match Analysis, Winner and Score prediction | *Course Project* | *Prof. Amit Sethi* *(Sep'21 - Nov'21)*

- Performed extensive **exploratory data analysis** on **4 IPL data sets** to predict the outcome of any match
- Effectively forecasted **3 of the 4 qualifying teams**, accurately calculating the 2 underperforming teams of IPL 2021
- Compared ML regression models like **Support Vector Machine (SVM)**, Decision Trees (DTs), Random Forest Classifiers, Logistic Regression, etc. using Scikit-learn library to get the best prediction model

Stock Market Analysis | *S*ummer Of Science | Maths and Physics Club, IIT Bombay *(May'22-present)*
Annual initiative to encourage & discover joy of learning beyond coursework, gaining insights in fields of interest

- Deployed basic **Machine Learning techniques** to develop a web-based app in **Python** for stock trend prediction
- Successfully conducted an extensive **literature review** on IPO, Corporate Actions, Mutual Funds, Fundamental Analysis

Professional Experience

Industrial Training Intern | *Porus Laboratories* | *Visakhapatnam* *(May'22 – June'22)*
Deployed Chemical Engineering knowledge to automate distillation column

- Worked with **4 senior engineers** in PDTS (Product Development Technical Services) Department
- Employed **DWSIM** to simulate **Plate Heat Exchanger**,find out the area ($3m^2$) and thermal efficiency**(87.5%)**
- Analyzed the **boiler** of automated distillation column and calculated the **heat duty and area** of the Boiler
- Received training in **Powder Transfer Systems** to transfer the final product of the distillation process

Physics Tutor | *Kunduz Tutor* *(Jul '21 -Aug'21)*

- Responsible for answering **Physics questions** asked by students preparing for competitive exams, **J.E.E.** and **NEET**
- Devised simple and accurate solutions for **350+questions** posted on app and achieved a **satisfaction** rate of **90%+**

Courses Undertaken

Key	Introduction to Numerical Analysis, Computational Methods Lab, Introduction to Data Analysis, Introduction to Transport Phenomena, Process Fluid Mechanics
Core	Heat Transfer, Chemical Engineering Thermodynamics I, Chemical Engineering Thermodynamics II, Introduction to Chemical Engg., Chemical Reaction Engineering*, Mass Transfer I*, Solid Mechanics*, Advanced Transport Phenomenon*
Computer Science	Programming for Data Science (Minor), Computer Programming and Utilization
Mathematics	Linear Algebra, Differential Equations, Differential Equations II, Calculus I, Calculus II
Miscellaneous	Engineering Graphics and Drawing, Organic and Inorganic Chemistry, Physical Chemistry, Biology, Sociology, Economics

**To be completed by October 2022*

Accolades & Extracurriculars

Social	• Developing **Re.Liv**, a platform aimed to address problems of **senior citizens** and integrate them into society • Selected for **Level1-Cohort8-2022**, conducting an **extensive customer discovery** in Mumbai
Cultural& Sport	• **Secured 2nd** rank in **essay writing competition** among **500+** scholars of J.N.V Mathura • Successfully completed **year-long** training in **badminton** under **NSO** Sports • Awarded a certificate for participating in **National Handwriting & Coloring Context 2013**
Technical	• Completed **Simulink Onramp** and **Stateflow Onramp** by **MathWorks Training Services** • **Skills :** C/C++, Python, MATLAB, R, LaTeX, HTML, JavaScript ,Octave, Ansys, MS Excel