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B.Tech.  
Gender: Male  
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Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	12	Sir padampat singhania school	2021	97.20%
Matriculation	Cbse	Dav public school	2019	97.00%

Pursuing a minor in **Computer Science and Engineering** under CSE department IIT Bombay

## SCHOLASTIC ACHIEVEMENTS

- Currently ranked **6th** academically out of **140+** students in the Department of Chemical Engineering ('23)
- Secured **9.5+ SPI** in fifth semester | Grabbed **AA/AB** grade in **15+** courses for academic excellence ('23)
- Achieved **AIR 985** in **JEE-Mains** Examination out of **1 million+** candidates appearing for the exam ('21)
- Achieved **AIR 1703** in **JEE-Advanced** Exam out of **0.2 million+** candidates appearing for the exam ('21)

## KEY TECHNICAL PROJECTS

**Video Action Recognition** | Course Project | Prof. P Balamurugan (Aug '23- Present)

- Validated the **NeurIPS 2021** paper Keeping Your Eye on the Ball: Trajectory Attention in Video Transformers
- Conducted a comprehensive **literature review** on prior research in the realm of **video action recognition**
- Compared and highlighted the difference between the results obtained with Joint Space Time attention models

**Graph in Machine Learning** | Summer of Coding | Web and Coding Club (May '23-July '23)

- Developed proficiency in **graph**-based machine learning, specializing in node, edge, and graph prediction techniques
- Deeply explored **Graph Neural Networks (GNNs)** and **message passing** algorithms and studied its applications
- Attained a robust and hands-on comprehension of **node embeddings**, encompassing **random-walk** methods
- Acquired a deep understanding of **PageRank** algorithm by intuitively exploring **Stochastic adjacency matrices**
- Modeled a Graph Convolution Network with **NetworkX & PyTorch Geometric** for document classification

**Machine Learning** | Course Project | Prof. P Balamurugan (Oct '23)

- Trained **DC-GAN** and **VAE** models to generate images of boat, bus & car from a dataset of **low-light images**
- Implemented **image augmentation** techniques on a dataset of **110+** images to counter noise and underfitting issues

**Time Series Forecasting** | Winter in Data Science | Analytics Club (Nov '22 - Dec '22)

- Implemented Auto-Regressive Integrated Moving Average (**ARIMA**) model for stock market optimization
- Plotted **ACF & PACF** graphs to optimize parameters such as lag observation, differencing & window width
- Successfully predicted the opening price of **TESLA** shares with less than **5% Mean Absolute Percent Error**

**Discrete Structures** | Summer of Science | MnP Club (May '23-July '23)

- Conducted extensive research on the subject of **Discrete Structures**, diving deep into its various concepts
- Studied various topics such as **Proofs and structures, Counting and combinatorics, Elements of graph theory, Abstract algebra, and Number theory** and learned their usage in the world of programming

**Credit Card Fraud Detection** | Self Project (June '23-July '23)

- Performed **exploratory data analysis** & applied **synthetic minority oversampling** to handle unbalanced data
- Implemented ML models like XGboost, Random Forest, and Adaboost classifier to achieve a **95 %** accuracy rate

**CodeWars- A Bot Programming Challenge** | Web and Coding Club (Dec '21-Jan '22)

- Strategically implemented the video game involving virus and elixir, used to create robots and steal the elixir
- Used the OS module for fetching contents of main directory and appended the game engine for extra robots
- Increased the number of robots and elixir to 50 times in every iteration of the game overpowering the enemy

**M&A and Bankruptcy: Impact on Stock Market** | Finsearch | Finance Club (July '22-Aug '22)

- Ranked amongst the **top 10 out of 200+** teams and pitched in an offline round to senior analysts from **OneCard**
- Carried out SWOT analysis of **Flipkart, Walmart & e-Bay** M&A to study fluctuations in their stock prices
- Scrutinized the sharp **99.96%** drop in the share price of the **Lehman Brothers** Insolvency case during FY 2007-08

**Data Centre Waste Heat Recovery** | Course Project | Guide: Prof P Sunthar (Jan '23-April '23)

- Led a team of 8 members exploring cooling techniques for data centers & compared them with other techniques
- Estimated efficiencies of various heat recovery strategies for low-temperature, high-volume waste heat generation
- Achieved an efficiency in a range of 15-20%, recommending district heating as the optimal technique for cooling

## INDUSTRY AND RESEARCH EXPERIENCE

**Process Optimization** | *Laxmi Organic Industries Ltd.* | *SLP-IDP* (Aug '23-Dec '23)

- Provided **two** methods to improve the purity of the final product to **99.5%** at an increased production rate
- Successfully **simulated** the whole plant process on **Aspen Plus**, identifying issues in the **wash column** unit
- Visited Laxmi's plant facility at Mahad to gain **on-site** experience and understand root cause of the problem

**Characterization of Acid Catalysts** | *Guide: Prof. Sanjay Mahajani* (Dec '22-July '23)

- Used **Gaussian 16** software to create models of molecular probes and ran their simulations on **supercomputers**
- Calculated the **complexation energy** of **10** liquid acids and **NMR Shift** of their conjugates with **Mesityl Oxide**
- Worked on further optimization and achieved a **linear trend** between NMR Shift and Complexation Energy

## COURSES UNDERTAKEN

- **Math & Physics:** Quantum Physics and Application, Basics of Electricity & Magnetism, Calculus I, Calculus II, Differential Equations I, Differential Equations II, Linear Algebra, Mathematical Structures for Control
- **Miscellaneous:** Data Structures and Algorithms\*, Computer Programming and Utilization, Introduction to Electrical and Electronics Circuits, Economics

(\* - To be completed by April 2024)

## TECHNICAL SKILLS

- **Programming Languages :** C++, Python, MATLAB, HTML, CSS, Git, Java
- **Software and Packages :** VS Code, Microsoft Office, Github, L<sup>A</sup>T<sub>E</sub>X, Gaussian 16, OpenFOAM
- **Libraries :** NumPy, Pandas, Scikit-learn, Pytorch, NetworkX, Scipy, Matplotlib, Pytorch Geometric

## POSITIONS OF RESPONSIBILITY

**Competitions Head** | *AZeotropy, IIT Bombay* (July'23 - Present)

*Part of a 15-membered team of Asia's largest Intercollegiate Chemical Engineering Symposium*

<b>Leadership</b>	<ul style="list-style-type: none"><li>• Leading a <b>3-tier</b> team of <b>50+</b> students to execute <b>10+</b> competitions with national outreach</li><li>• Directing the competitions division drawing <b>100+</b> corporates &amp; <b>11k+</b> footfall from all over India</li></ul>
<b>Initiatives</b>	<ul style="list-style-type: none"><li>• Restructuring &amp; ideating over <b>5</b> new competitions, targeting <b>10%</b> YoY growth in national outreach</li><li>• Devising a unique quizzing format garnering the participation of <b>3k+</b> students across <b>30+</b> centers</li><li>• Ideating AZeotropy Model United Nations for chemical engineering enthusiasts from all over India</li></ul>

**DAMP Mentor** | Student Mentorship Program | IIT Bombay (May '23-Present)

*Involved in a team of 43 members selected based on a stringent interview and peer review system*

- Mentoring **6 sophomores** over the year, guiding them with their academic transition and holistic development
- Responsible for compiling **blogs** on professional (research, internship, industry) & academic experiences of students

**Teaching Assistant** | Prof. Debanjana Mitra | Prof. Prachi Mahajan | Mathematics (April '23-June '23)

*Part of a 40-membered team selected on the basis of exceptional academic performance in mathematics*

- Mentored **1.4k+** UGs across **15+** departments in grasping calculus fundamentals and solving differential equations
- Delivered weekly tutorial sessions which involved discussions, problem-solving, and doubt clearing of students

## EXTRACURRICULARS

<b>Culturals</b>	<ul style="list-style-type: none"><li>• Performed for an audience of <b>2k+</b> people at <b>Showstopper</b>, IITB's Flagship Fashion event</li><li>• Staged a <b>Bengali</b> group dance in the Annual Insync Dance Show with <b>2.5k+</b> viewership</li></ul>
<b>Sports</b>	<ul style="list-style-type: none"><li>• Bagged a <b>Silver</b> Medal in college open <b>Table Tennis doubles</b>, organized by Aahvan IITB</li><li>• Completed a year-long training course in <b>Badminton</b> at National Sports Organisation(NSO)</li></ul>
<b>Social</b>	<ul style="list-style-type: none"><li>• Contributed to Robin Hood Army's <b>Food Distribution</b> drive for underprivileged children</li><li>• Volunteered for <b>Versova Beach</b> and <b>Powai Lake</b> Cleanup organized by Abhyuday IITB</li></ul>
<b>Miscellaneous</b>	<ul style="list-style-type: none"><li>• Among <b>top 40</b> students in the institute, qualified for round 2 of the BCG-organized Ideathon</li><li>• Ideated and designed a remote-controlled plane working in a dedicated team of 4 people</li><li>• Ranked in <b>Top 10</b> in <b>Finseach</b> Competition by <b>AngleOne</b> and Finance Club</li><li>• Recipient of <b>Rashtriya Sanskrit Sansthan</b> Scholarship for exceptional grades in Sanskrit</li><li>• Won merit certificate in National Financial Literacy Assessment Test conducted by NCFE</li></ul>