



Satyam Rath
Metallurgical Engineering and Materials Science
Indian Institute of Technology Bombay

200110100
B.Tech.
Gender: Male
DOB: 6/5/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	CBSE	Delhi Public School, Navi Mumbai	2020	96.00%
Matriculation	CBSE	Delhi Public School, Navi Mumbai	2018	96.40%

Pursuing **Minor** in Computer Science and Engineering

Scholastic Achievements

- Ranked **6th** in the Department of Metallurgical Engineering and Materials Science out of 117 students [2022]
- Secured an All-India Rank of **3650** in the Joint Entrance Examination- Advanced out of **150000** candidates [2020]
- Achieved **99.488 percentile** out of **1.2 million** candidates in the Joint Entrance Examination- Mains [2020]
- Scored **800 out of 800** in Mathematics (Level 2) in SAT Subject Tests conducted by the College Board [2019]
- Stood **Second** in the Inter DPS Mathematics Talent Test during Advance Enrichment Programme 2018 in Mathematics held at Delhi Public School, Navi Mumbai [2018]

Research Experience

Surfactants for Layered Semiconductor Synthesis

[July'22 - Present]

Summer Undergraduate Research Program | Guide: Prof. Tanushree Choudhury

- Analyzing the various models of surfactant-mediated epitaxial growth
- Examining the SPPARKS package to model the surface and thin film growth using **Kinetic Monte Carlo Simulations**
- Carrying out literature review to investigate the role of surfactants in suppressing 3D islanding

Key Projects

Mini Motorways Solver | Seasons of Code

[May'22 - Present]

WnCC, IIT Bombay

- Implemented **Depth First Search** Algorithm to reduce the nodes and edges in the graph
- Examined different road structures using the octagon-tessellation model
- Assembled raw information like cell positioning into a graph to be used in the **Neural Networks** model

1-D Transient Heat Transfer

[MM204 Course Project - Spring 2022]

Prof. Deepoo Kumar, Metallurgical Engineering and Materials Science, IIT Bombay

- Led a team of **4** in solving a 1-D transient heat transfer problem using explicit finite difference method
- The method determines the temperature at 20 equally-spaced nodal points at varying times when 2 plates of different materials and initial temperatures are brought into contact
- Coded this method to produce various plots and calculated the time for the external acrylic surface to reach its softening temperature

Thermodynamics Programming Assignment

[MM209 Course Project - Autumn 2021]

Prof. Nurni N. Viswanathan, Metallurgical Engineering and Materials Science, IIT Bombay

- Generated a plot showing **3** different regions of stability for species Fe, FeO and Fe₃O₄
- Deployed Python libraries **Matplotlib** and **NumPy** to generate the said plot

Logistic Regression with Python and Numpy Guided Project

[Jan '22]

Coursera.org

- Implemented **Logistic Regression** using Python and Numpy
- Applied Logistic Regression to solve **binary classification** problems

Investigating the Wastage of Agricultural Produce

[MM152 Course Project- Spring 2021]

Prof. Parag Bhargava, Metallurgical Engineering and Materials Science, IIT Bombay

- Framed a problem statement from scratch and investigated the factors contributing to the problem
- Interviewed **16 stakeholders** involved in agriculture consisting of scientists, businessmen and local traders.

Relevant Courses

Computing and Mathematics	Data Structures and Algorithms (CS213 M) Logic for Computer Science (CS228 M)* Computer Programming and Utilization (CS101) Calculus, Differential Equations, Linear Algebra, Introduction to Numerical Analysis
Departmental Courses	Data Analysis and Interpretation, Transport Phenomena, Thermodynamics of Materials, Mechanics of Materials
Other Online Courses	Machine Learning (Coursera.org), Neural Networks and Deep Learning, Hyperparameter Tuning, Regularization and Optimization (deeplearning.ai)

*Courses to be done in 5th semester

Technical Skills

- **Programming Languages:** C/C++, Python, HTML, CSS, Bootstrap, Django, MySQL, R Programming
- **Operating System:** Windows, Macintosh
- **Simulation Software:** MATLAB, Octave, SolidWorks, MSC Adams, LTSpice

Extracurricular Activities

- Completed training for **National Sports Organisation** (NSO) in the freshman year [2020-21]
- Awarded the **Gold Medal** for academic excellence for **6 consecutive years** at Delhi Public School, Navi Mumbai [2013-19]
- Participated in Advanced Enrichment Programme in Mathematics at Delhi Public School, Navi Mumbai [2018]
- Participated in Mumbai Marathon 2017 and completed **7km** dream run [2017]