



Gayatri Shailendra Moghe
Chemical Engineering
Indian Institute of Technology Bombay

22B2451
B.Tech.
Gender: Female
DOB: 13/06/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	
Intermediate	HSC	Sanjay Ghodawat Junior College	2022	91.17%
Matriculation	SSC	Alphonsa School Yadrav	2020	96.60%

Pursuing a **Minor** degree from the department of **Computer Science and Engineering**, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Secured **AA** grade in the department core courses **Chemical Reaction Engineering** (CL 208), **Chemical Engineering Thermodynamics** (CL 207) and **Chemical Engineering Lab 1** (CL 232) [2024]
- Awarded a **change of branch (top 14%)** out of **1300+** students based on academic performance [2023]
- Secured an all India percentile of **99.52** in JEE Main examination among **1.1 million** candidates [2022]
- Secured **95+** percentile in JEE Advanced out of more than **0.16 million** candidates nationwide [2022]

PROJECTS UNDERTAKEN

Direct Air Capture || *Team ChemEcube* | *Guide: Prof. Mahesh S Tirumkudulu* [Feb'24 - Present]
An 8-member team creating sustainable solutions to real world chemical engineering challenges

- Contested with **38 international universities** in the **AIChE** competition to create **1-ft cube** mini plant
- Engineering a **scalable model** to capture **CO₂** from ambient air at **400 ppm** and isolate it in pure form
- Utilizing **Zeolite 13X** and its **Fe** modifications to get adsorption capacity of **0.4 mmol CO₂/gm** of sorbent

Bombardier Beetle's Defense Mechanism || *Course Project* | *Chemical Reaction Engineering* [Apr'24]
Guide: Prof. Sonali Das

- Investigated** specialized compartments of the bombardier beetle such as the rigid-walled reaction chamber and catalytic enzymes, identifying chemical reactions leading to the production of a hot toxic spray
- Formulated and solved systems of ODEs using **Python** to model the beetle's defense mechanism, analyzing the impact of varying inlet and outlet radii on varying reaction rates and product concentrations

Stock price prediction model || *WiDS* | *Analytics club, IIT Bombay* [Dec'23-Jan'24]

- Processed and analyzed financial data from Quandl, engineered features and implemented **K-Nearest Neighbors (KNN)** algorithm for both classification and regression tasks to predict stock market trends
- Conducted hyperparameter tuning using **GridSearchCV** and evaluated model performance using accuracy metrics and Root Mean Square Error (RMSE) and visualized results to compare actual vs predicted values

Role of ESG metrics in Investment Strategies || *FinSearch* | *Finance Club, IIT Bombay* [Jul'24-Aug'24]

- Conducted in-depth research on **key trends, challenges** in **ESG** (Environmental, Social, and Governance) factors, focusing on the challenges faced by company in balancing **profitability** and **sustainability**
- Analysed impact of ESG investing strategies on **financial markets**, focusing on **risk mitigation, long-term value** and understanding regulatory requirements to support sustainable investment decisions

Analysis of velocity profile in a liquid || *Course Project* | *Transport Phenomena* [Oct'23-Nov'23]
Guide: Prof. Guruswamy Kumaraswamy

- Developed a simple set-up to examine fluid behaviour in **laminar** and **turbulent** flows using acrylic tube
- Analysed the particle's velocity through the set-up developed for Particle Image Velocimetry using **ImageJ**

Fabricating bricks from plastic bottles || *Course project* | *Materials Tetrahedron* [Jun'23]
Guide: Prof. Parag Bhargava

- Estimated the ratio of **sand to plastic bottles** required and collected waste plastic bottles through hostels
- Arranged set-up for fabrication of bricks by heat treating plastic and sand together using an LPG cylinder
- Analysed the strength of brick by performing compression tests and evaluated the utility of the process

Guide: Prof. Tanmay K. Bhandakkar

- In a team of **6**, designed a bot that could follow a line using **IR sensors** capable of obstacle detection
- Created **3D model** of chassis of bot using **AutoCAD** and **laser cut** acrylic sheet for actual use in bot
- Implemented code through **Arduino** controlling **L293D** motor driver and sensors for obstacle detection

Wifi controlled Bot || XLR8 Competition | Electronics & Robotics Club, IIT Bombay

[Jan'23]

- In a team of **4**, developed a bot which overcomes hurdles in minimum time, executing smooth turns
- Controlled the bot through **WiFi** remote control using **ESP32** microcontroller and the motor driver **L293D**

PROFESSIONAL EXPERIENCE

Analysing Combustion Instability in Solid Rocket Propulsion

[May'24-Jul'24]

Guide: Mr. Rohit, Scientist 'F' | HEMRL, DRDO, Govt. of India

- Conducted in-depth literature review on solid rocket propulsion technology, focusing on the mechanisms of **combustion instability** phenomena including **acoustic & non-acoustic resonance** and **flow dynamics**
- Performed experimental analysis on a **T-burner** to study combustion instability under controlled conditions
- Applied **Fast Fourier Transform** and analyzed the pressure-time data using **MATLAB** to determine growth and decay constants as well as the characteristic **Pressure Coupled Response function (Rpc)**

GHG Emissions Analyst | Prachi Services Inc

[Dec'23-Jan'24]

- Researched & analysed about types of **greenhouse gas emissions** & their **scopewise inventorization**
- Developed an **Excel** based program to quantify the GHG emissions and calculate the **GHG credit score**

Educational Content Creator | Ankur Pratishtan

[Jul'23-Aug'23]

- Researched and analysed **learning methods** to promote effective learning for underprivileged students
- Developed **modules** with activities for **3rd to 8th** class students to create learning based on application

POSITIONS OF RESPONSIBILITY

Competitions Manager | Azeotropy | IIT Bombay

[Jul'24 - Present]

India's largest intercollegiate Chemical Engineering symposium with **11K+** footfall from **350+** colleges

- One of the **14** core members of a **3 tier** team responsible for conceptualizing and executing the symposium
- Diversifying competitions by incorporating topics based on **data analysis & process optimization**
- Ideating new competitions while restructuring existing ones targeting **10% YoY** growth in national outreach

Business Team Member | Mars Rover Team | IIT Bombay

[Sep'23 - May'24]

Team of **60+** members developing Mars Rover prototypes to participate in major international competitions

- **Executed** awareness and publicity campaigns for the team in events including Abhyuday outreach program, E-Summit, Alumination, Azeotropy, Zephyr & Aavhan with a cumulative footfall of **1 lakh+** attendees
- Drafted **sponsorship proposal** for logistics support for the team to participate in the URC competition

NEC Mentor | Entrepreneurship Cell | IIT Bombay

[Sep'23- Mar'24]

Asia's Largest Entrepreneurship promoting student body by NEN | Patronage by **UNESCO**

- Mentored **30+** teams to set up their own **Entrepreneurship Cell** and served as their point of contact
- **Ideated** tasks with the team of **20** in a systematic manner for the participant teams in NEC

TECHNICAL SKILLS

Programming

C, C++, Python

Software

MS Office, SolidWorks, Ansys, Autodesk Fusion 360, L^AT_EX, MATLAB

EXTRACURRICULAR

- Passed **level 4** examination of classical singing conducted by Gandharva Mahavidyalaya [2017]
- Bagged **1st** position for singing in Cultural General Championship conducted by NCC IIT Bombay [2023]
- Achieved **B Certificate** in NCC under the Ministry of Defence, completing 1-year Military Training [2023]
- Participated in **Powai lake clean-up** by NCC IIT Bombay as part of Puneet Sagar Abhiyan [2023]
- Completed **3+** km cross country in crossy GC by NCC IIT Bombay, demonstrating physical endurance [2023]
- Achieved rank **9** in Pre-Secondary Scholarship Examination by Maharashtra State Council of Examinaton [2018]
- Awarded with a scholarship and medal with **special proficiency** in Ganit Pradnya competition [2018]