Varun Ram Narayanan			**22B0347**	
Chemical Engineering			**B.Tech.**	
Indian Institute of Technology Bombay			**Gender: Male**	
			DOB: 17/08/2004	

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	
Intermediate	CBSE	Narayana E Techno School Tbarahalli Bangalore	2022	
Matriculation	ICSE	Ebenezer International School Bangalore	2020	

Pursuing **Minor** in **Artificial Intelligence and Data Science** offered by C-MInDS.

SCHOLASTIC ACHIEVEMENTS

- Ranked **4th** in a batch of **150+** students in the Department of Chemical Engineering, IIT Bombay [2023]
- Bagged **AA (10/10)** grade in **7 out of 9** Chemical Engineering departmental courses undertaken [2024]
- Secured All India Rank **674** in JEE Mains out of **10** lakh candidates with **100** percentile in Maths [2022]
- Secured All India Rank **1539** in JEE Advanced Examination out of **160,000+** candidates [2022]
- Secured State Rank of **25** in Karnataka Common Entrance Test-KCET [2019]
- Secured an **SPI of 9.8** in the 3rd Semester which consist of core Chemical Engineering courses [2023]

PROFESSIONAL EXPERIENCE

Data Analyst | Group Data and Analytics | Aditya Birla Group [May-July 2024]
- Assisted in developing a tool to optimize iron ore procurement, **maximizing profits** and resource **efficiency**
- Transformed the procurement process to a **batch process**, increasing **resource efficiency** and profits by **5%**
- Meticulously defined **Supply, Demand, Mass Balance, and Quality** constraints for the iron ore procurement

POSITION OF RESPONSIBILITY

Data Analytics and Visualization Team (DAV) | UGAC,IIT Bombay [July 2024-Present]
- Part of a **12** member team working to provide **data-driven solutions** to the institute and external organizations
- Selected from a pool of **100+** candidates across the institute via a **rigorous technical assignment** and interview
- **Initiated** a project to **analyze the revenue of institute eateries** and aim to enhance sales by **10%** quarterly

Analyst-Investment Team | Finance Club, IIT Bombay [July 2023-March 2024]
Selected out of over 200 candidates for developing a comprehensive, long-term growth-focused investment strategy .
- Conducting comprehensive research in the Equity Division to manage a fund of **5 lakh** across diverse sectors
- Prepared an in-depth business analysis report on the Kabadiwala startup working in the **Circular Economy**
- Developed a comprehensive **competitive analysis** report on **Smytten** in partnership with **RootsVentures**.

DAMP Mentor | Chemical Engineering, IIT Bombay [May 2024-Present]
- One of the selected **41** from a pool of **120+** applicants based on rigorous interview process & positive peer reviews
- Responsible for providing academic and general **counsel** to a group of **6 sophomores** through their second year
- Enhanced content of **DAMP blogs** by collating academic information and internship experiences from seniors

Class Representative | Chemical Engineering, IIT Bombay [May 2024-Present]
- **Elected** as CR for **140+** students based on responsibility, **effective communication** and inter-personal skills.
- Articulating student opinions and assisting in **scheduling academic activities** over a year for **140+** students.

KEY PROJECTS

Course Development | Virtual Labs, IIT Bombay [May 2024-Present]
An initiative under the aegis of National Mission on Education through Information and Communication Technology to design web-enabled laboratory experiments for remote operation by high-school and undergraduate students across India
- Designed **10+** experiments on reaction engineering topics such as **Reaction Kinetics and Reactor Design**
- Created **Storyboards** for experiments detailing functionality to be implemented on the student and server side
- Generating **code blocks** of various functions using **GNU Octave** for calculations to be performed at the backend

Predictioneer | Water Availability with ML | Azeotropy, IIT Bombay [Dec-Jan 2024]
With this project,I learnt how to use ML models to predict water availability; and combat global scarcity effectively
- Secured **4th** place out of **50+** teams in a ML competition by predicting groundwater depth with minimal **MSE**
- Conducted extensive **EDA** and **feature engineering**, discarding irrelevant data and **imputing** missing values
- Used **LSTM model** for prediction of groundwater depth over 3 years, capturing **temporal** patterns effectively

Chemical Plant Optimization | Course Project | DS 203   [Oct-Nov 2023]

Project Guide: Prof. Vinay Kulkarni

- Performed data preprocessing including **normalization, imputation, and outlier detection** for robustness
- Implemented **feature engineering** strategies to boost **model predictive power** and enhance interpretability.
- Refined RandomForest through **hyperparameter tuning** and cross-validation to achieve superior performance

FinSearch | Option Pricing Models | Finance Club, IIT Bombay   [June-Aug 2023]

This project allowed me to delve into the fascinating realm of option pricing models

- Developed and implemented a **Monte Carlo Simulation** in Python to determine the intrinsic value of options
- Thoroughly **optimized** the option Greeks, including **Delta, Gamma, and Vega**, to enhance model **accuracy**
- Gained proficiency in the Binomial and Black-Scholes Models, showing strong quantitative financial analysis skills

The Bombardier Beetle | Course Project | CL 208   [Mar-May 2024]

This project allowed me to study Bombardier beetle's defense mechanism via chemical reaction engineering principles

- Conducted in-depth analysis of **James et al. (2013)** and **10+** references on Bombardier Beetle defense mechanism
- Analyzed the defense mechanism to innovate **fire suppression** systems & **drone based fertilizer discharge**
- Analyzed **mathematical models** from James et al.'s (2013), proposing **novel hypotheses** on beetle behavior

Equity Research Project | JSW Steel | Finance Club, IIT Bombay   [Aug-Sep 2023]

This equity research project employs rigorous analysis to provide insights into investment opportunities in JSW Steel

- Secured a finalist position among **10** teams out of **500+** registrations by thoroughly researching JSW Steel stock
- Conducted **SWOT** analysis and estimated company valuation using a **DCF** model for investment insights
- Performed extensive analysis of **financial ratios** to gain financial insights & assess investment opportunities

OTHER PROJECTS

Mountain Cargo Challenge | Course Project | MS101   [May-June 2023]

Project Guide: Prof. Ankit Jain

- Engineering **Arduino** based autonomous robot for precise track navigation with **2 IR sensors** and **4 DC Motors**
- Harnessed the functionalities of **Fusion360** for 3D modeling and **LaserCAD** for precise **laser cutting** designs
- Optimized design for a **30%** weight reduction and increased the load-bearing capabilities to a maximum of 0.3kg

KEY COURSES UNDERTAKEN

- **Chemical Engineering:** Material and Energy Balances, Introduction to Transport Phenomena, Process Fluid Mechanics, Chemical Engineering Thermodynamics, Chemical Reaction Engineering, Separation Processes, Fundamentals of Heat and Mass Transfer, Introduction to Numerical Analysis, Process Control*, Chemical Processes*.

- **Technical Courses:** Programming for Data Science, Artificial Intelligence and Data Science, Introduction to Machine Learning, Introduction to Deep Learning.

- **Non-Technical Courses:** Introduction to Management, Consulting 101, Finance 101, Economics, Introduction to Risk Analysis, Design Thinking for Innovation.

- **STEM Courses:** Organic and Inorganic Chemistry, Physical Chemistry, Calculus I, Calculus II, Differential Equations, Linear Algebra, Introduction to Quantum Physics, Introduction to Classical Mechanics.

*Courses marked with * are to be completed in Dec '24.*

TECHNICAL SKILLS

- **Programming:** C++, Python, JAVA, MATLAB,Octave,MySQL.
- **Software Skills:** Canvas, MS Office, Fusion360, Fracktory, LaserCAD, Latex.
- **Data Analytics and ML:** Numpy, Pandas, Matplotlib, Seaborn, Scikitlearn, Tensorflow, Plotly, Pyomo, nltk

EXTRACURRICULAR ACTIVITIES

Sports	• Selected as the **Best Lawn Tennis Player** for achievements in inter-school tournaments • Completed an intensive year-long training in **Table Tennis** under **NSO, IIT Bombay** • Was a **crucial member** of the School Cricket Team which won over **10** inter-school titles
Culturals	• **Trinity College** London certified Electronic Keyboard Player with **6** years of training • Achieved **fluency in French** through **9 years** of **dedicated** and consistent study
Social	• Organized fundraisers, Sports Day, and Annual Day as part of Student Council in school • Conducted **TSC** for **CL 102** excellently, teaching and **mentoring** junior batch students