# Aryan Nigam

2nd Year Undergraduate
Department of Chemical Engineering

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## Academic Qualifications

| Year | Degree/Certificate | Institute | CPI/% |
|---|---|---|---|
| 2022 - Present | B.Tech | Indian Institute of Technology, Kanpur | 7.5/10 |
| 2022 | ISC(XII) | Dr. Virendra Swarup Public School, Kanpur | 96.8% |
| 2020 | ICSE(X) | Dr. Virendra Swarup Public School, Kanpur | 95.6% |

## Scholastic Achievements

- Secured **All India Rank 3021** in **JEE Advanced 2022** among the 1.6 Lakh shortlisted candidates.
- Secured **All India Rank 8482** in **JEE Mains 2022** among the 9 Lakh candidates (top 1%).
- Secured **All India Rank 4018** in **KVPY SX 2022** among the 50 thousand candidates.

## Key Projects

- **Microsoft powered "Data Science with Python" from Coincent** *(May'23 - Jul'23)*
  - Learn basics of numpy, panda and matplotlib which includes data cleaning and multiple ways of data plotting techniques.
  - Attempted the Microsoft and Robotics Club, IITG powered examination based on the project and scored **9/10** with remarks stating "upto the mark".
  - Successfully implemented the **Exploratory Data Analysis(EDA)** algorithm on IRIS dataset. It is the most beginner friendly dataset for data science enthusiasts which predicts flower type based on their unique characteristics of petals, sepals, etc.
- **ESC113 UG Group Project Y22** *(June'23-Jul'23)*
  **Mentor: Prof. Harshwardhan Hemant Katkar**, Department of Chemical Engineering, IIT, Kanpur.
  - Learned and worked on problems related to level of reactant left in the reactor, useful in determining required flow and time constraints of the reaction flow.
  - Develop a mathematical model in MATLAB based on the Navier-Stokes ODEs to deduce the level of reactant left in a chemical reactor, using assumptions of incompressibility.
  - Using suitable boundry conditions, thus making the equation solvable as an ODE and then using **Euler's Method** to solve. Also showing why **Implicit Euler** is unconditionally stable and hence better suited. Obtained **8.5/10** in the project.
- **Simutech project "Introduction to Data Science" from Chemineers Society** *(Dec'23-Jan'24)*
  - Implemented algorithms of linear regression, logistic regression, KNN and decision trees both from scratch and using established libraries like Scikit-learn. Familiarity with techniques such as feature scaling, handling missing values, dealing with outliers, and assessing model performance metrics for classification tasks.
  - Effectively harnessed data preprocessing techniques including handling missing values, outliers, one-hot encoding, and feature scaling. Acquired knowledge of overfitting, standardization and regularization methods to improve model generalization.
  - Successfully applied logistic regression, both from scratch and using Scikit-learn, for Social Network Ads dataset classification. Conducted thorough model evaluations based on accuracy and F1 scores. Implemented Decision Trees and Random Forest algorithm on red-wine dataset, visualizing data and plotting accuracy for performance analysis.

## Technical Skills

- **Programming Languages:** C, C++, Python, MATLAB, HTML, CSS
- **Libraries and Software:** LaTeX, PyTorch, Matplotlib, Aspen Plus, Scikit-Learn, Jupyter Notebook, MS-Excel, Colab, Seaborn

## Relevant Courses

| | |
|---|---|
| Computer Methods for Engineers (ESC113) | Chemical Process Calculations (CHE251) |
| Fundamentals of Computing (ESC111) | Linear Algebra and Differential Courses(MTH11x) |
| Introduction to Electronics (ESC201) | Thermodynamics (ESO201) |

## Positions of Responsibility

- **Secretary, Antaragni Team** *(Sep'22 -Oct '22)*
  - Coordinated with the Y21 coordinators and guided Y23 students in smooth functioning of events which includes **Kavi Sammelan** and **Talent Fiesta**.
  - Acted as first **point of contact** for some performers of Talent Fiesta from their arrival in the campus to their departure.
- **Secretary, Quiz Club** *(Jun'23-Present)*
  - Actively involved in organizing quizzes for the campus. Framed majority of questions for two campus events - **UCL Quiz** and **Swaraj Quiz**.

- **Secretary, Skating Club** *(Jun'23-Present)*
  - Managed logistics of organizing 3-day skating workshop for the campus. Mentored them in getting proper balance on the skates.

## Extra-Curricular Activities

- Represented in many inter-school quizzes including schools like Billabong International, Shieling House, Seth Anandram Jaipuria.
- Achieved state rank 26 in national aptitude **BrainOBrain** in class 6th and have won a total of 4 golds in the competition.
- Active anchor for the school events team which hosts annual fest **Harmony**, Farewell for 12th, etc.