

Pursuing **Minor in Artificial Intelligence and Data Science**, offered by **CMinDs, IIT Bombay**

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 338** in **JEE (Advanced)** among 1,40,000+ students (2021)
- Achieved **All India Rank 124** in **JEE (Main)** among 9,00,000+ students (2021)
- Secured **All India Rank 82** in **KVPY 2021 - SX Stream**, held by **IISC, Bangalore** (2021)
- Recipient of the prestigious **NTSE Scholarship** by **NCERT, Government of India** (2019)
- Among the **National Top 1%** in Indian Olympiad Qualifier in Chemistry (IOQC) (2021)
- Among the **State Top 1%** in Indian Olympiad Qualifier in Astronomy (IOQA) (2021)
- Achieved **State Rank 3** in **State Scholarship Exam** conducted Govt. of Maharashtra (2017)
- Achieved **State Rank 6** for two years in **Maharashtra Talent Search Exam (MTSE)** (2019, 2018)

KEY PROJECTS

Student Satellite Program IIT Bombay

A 70+ member student team striving to make IIT Bombay a centre of excellence in space technology

- **CubeSat | Guidance and Navigation (GNC) Subsystem** (May '22 - Present)
A Nanosatellite mission to be proposed to ISRO for launching into Low-Earth Orbit (LEO)
 - working on the **Multiplicative Extended Kalman Filter**, which will be the estimator used on Cubesat and on the **QuEst** algorithm, used to find the initial attitude estimate
 - currently working on the **Estimator** block in **CLS** to optimize the **attitude** of the satellite
 - wrote and tested the code for **Extended Kalman Filter** for attitude estimation of a quadrotor
- **Kalman Filter | Learning Task** (Apr '22 - May '22)
 - conducted extensive literature survey on Random vectors and processes, estimation techniques like **least square** estimation, Best Linear Unbiased Estimator and Minimum Variance Unbiased Estimator
 - studied about the **Kalman Filter Algorithm** and its derivation, and implemented the algorithm for estimating the position and velocity of an object undergoing oscillatory motion
- **Attitude Parametrization | Mini Project** (Mar '22)
 - studied about different types of methods to represent attitude of a satellite, like **Euler Angles**, **Rotation vector**, **Rotation matrix**, and **Quaternion** and their drawbacks, like **Gimbal Lock**
 - studied about the **Euler Rotation Theorem**, Motion in Rotating frames and **Transport theorem**, and numerical methods of Integration like **Runge-Kutta (RK)** methods
 - wrote and tested the code for interconversion between different parametrizations of attitude

Data Science Project

- **Real Estate Rent Prediction Model | DS Minor Project** (Ongoing)
Guide: Prof Amit Sethi
 - Scraped and collected data about factors affecting rent from various resources available on web
 - Planning to analyze different types of data using python libraries like **NumPy**, **Pandas**, **SciPy**
 - Aiming to perform EDA on factors like location, size, interior and predicting models using MLE
 - Intend to train the prediction model using **Long Short Term Memory (LSTM)** neural network

VHDL Projects | Digital Systems Lab

Guide: Prof Maryam Shojaei

- **Sequence Detector** (Autumn' 22)
 - Designed a **Sequence Detector Mealy Finite State Machine** which detected a **alphabetical sub sequence** inside a given sequence using **Behavioural Description**
- **Arithmetic and Logic Unit** (Autumn' 22)
 - Implemented a basic **Arithmetic and Logic unit**, using Behavioural Description
 - Verified the outputs of the implemented code using **Scanchain Mechanism on Xenon Board**
- **Sequence Generator** (Autumn' 22)
 - Designed a sequence generator **Finite State Machine** using sequential circuit elements like **Data Flip Flops in Structural Modelling mechanism** and verified output on Xenon Board
- **Multiplier** (Autumn' 22)
 - Designed a **Multiplier** using Behavioural description and verified outputs using Scanchain mechanism
 - Ran **RTL and Gate-Level Simulations** using **ModelSim Altera** with the help of a generic testbench

Bubble Trouble | Course Project

(Autumn' 21)

CS101 course project | Prof Parag Chaudhuri

- Enhanced a **GUI** based bubble shooting game using **Simplecpp graphics** with 300+ lines of C++ code
- Added features such as splitting a bubble into multiple bubbles with randomized movements to enhance the game using **Object Oriented Programming**, function overloading, vectors and classes
- Implemented a Health counter of the shooter and a time counter using classes and strings
- Added levels and increased difficulty of each level in the game using **Object Oriented Programming**

TECHNICAL SKILLS

Languages	Python, C++, VHDL, HTML, CSS
Python Libraries	Numpy, Scipy, Matplotlib, Pandas
Softwares	AutoCad, Quartus, Git, L ^A T _E X

KEY COURSES UNDERTAKEN

Electrical Engineering	Probability & Random Processes*, Introduction to Electrical Engineering, Analog Circuits*, Digital Circuits*, Signal Processing*, Power Engineering I
Programming	Computer Programming and Utilization, Programming in Data Science*
Maths and Physics	Partial Differential Equations*, Ordinary Differential Equations, Calculus, Complex Analysis, Quantum Physics and Application, Linear Algebra, Introduction to Electricity and Magnetism
Others	Physical chemistry, Engineering Drawing and Graphics, Biology Organic and Inorganic Chemistry

** to be completed by Autumn 2022*

EXTRACURRICULARS

- Built a **Ultrasonic Radar Detection System** using **Arduino micro controller** in 10 std
- Actively engaged in **Competitive Programming** and currently a **2 star coder** on **Codechef**
- Awarded the **Student of the year Award** for **Best Overall performance** in 10th std (2019)
- Secured **Rank 5** in Chess Tournament **Freshie Rapid Open**, organised by IIT Bombay (June '22)
- Underwent excessive training in **Chess** under by **National Sports Organisation** (2021)
- Participated in **All India Open University Chess Tournament** under **Avahan IIT Bombay**
- Participated in **All India Chess League 3.0** and **4.0** in which IIT Bombay bagged **1st** position in both the years in which all major Indian Universities participated