Pursuing a **Minor** degree in **Artificial Intelligence** and **Data Science** from **C-MInDS, IIT Bombay**

Scholastic Achievements

- Achieved **99.81 Percentile** in **JEE-Main** out of over 1 million candidates *(2021)*
- Secured **All India Rank 1207** in **JEE-Advanced** out of over 0.14 million candidates *(2021)*
- Secured **AP grade** for excellent performance in **PH 108-Basics of Electricity & Magnetism** *(2022)*
- Secured a **Branch Change** to **Computer Science** department on the basis of academic performance *(2022)*
- **Awarded fellowship** in the prestigious **KVPY (Kishore Vaigyanik Protsahan Yojna)** SX *(2021)*

Key Projects

FastChat
Autumn 2022

Guide: Prof. Kavi Arya | Ongoing Course Project : Software Systems Lab *IIT Bombay*

- Developing a messaging software with **end-to-end encryption** by using **RSA+AES** to encode the messages and both **group chat** and **individual chat** support using **python socket library** and **PostgreSQL** database
- Implementing a **load balancer** with **least connect strategy** using **bash** to distribute load among multiple servers. Focusing on obtaining **high throughput** while using only **limited resources** dedicated for the servers
- Used **bash** scripts to simulate common messaging patterns and calculate **throughput** and **latency** of the system

Lunar Lander using Deep Reinforcement Learning
Autumn 2022

Self Project

- Implemented a **Deep Q learning** algorithm with **experience replay** using **TensorFlow** to train a lunar lander
- Used **Tensorflow Core** to define a **custom loss function** and a **custom training loop** using **GradientTape** to train the model. Used **epsilon greedy policy** to select the action with some amount of random decisions
- **Tuned and optimized model hyperparameters**, including learning rate, batch size, and number of episodes, epilon, gamma, number of timesteps to achieve the best results and solved the environment within 500 episodes

Deep Learning and Neural Networks
Autumn 2022

Self Project

- Made a **CNN** to classify images of handwritten digits using MNIST dataset and **TensorFlow, Keras and PyTorch** and compared their performance. Also made a **GUI** to draw digits using **python Tkinter** and classify them
- Made many different types of **CNNs** to classify various types of data such as **Traffic signs recogninition, Crack detection, Smile detection, Hand sign recogninition** using **PyTorch** and **Keras Sequential API**
- Successfully implemented **transfer learning** to train a **pretrained MobileNetV2** to classify images of **alpacas**
- Implemented **ResNet50's architecture** from scratch using **Keras API** and trained it on a hand sign dataset

Machine Learning
Autumn 2022

Self Project

- Learnt about the various machine learning algorithms such as **linear and logistic regressions, clustering using K-means, K-nearest neighbors and decision trees** and implemented them from scratch using numpy and pandas
- Proficiency in using **cross-validation and hyperparameter tuning** to optimize machine learning models
- Used **scikit-learn and XGBClassifer and XGBRegressor** to implement various types of classifiers and regressors to predict and classify various types of data such as **classifying flower species and predicting house prices**

Rail Planner
Autumn 2022

Guide: Prof. Supratik Chakraborty | Course Project : Data Structures and Algorithms Lab *IIT Bombay*

- Developing a railway planner using algorithms such as **Merge Sort, KMP, Quicksort**, etc.
- Utilising Data Structures such as **linked lists, Binary Search Trees, AVL Trees, Hash tables, Tries**, etc.

Technical Skills

Programming Languages:	C++, Python, MATLAB, Java, Bash, Solidity, Sed, AWK
Software & Tools:	Tensorflow, Pytorch, Keras, Scikit-learn, OpenCV, Seaborn, Git, LaTeX, MySQL, NumPy, Pandas, Matplotlib, Doxygen, Sphinx
Web Development:	HTML, CSS, JavaScript, BootStrap

Extracurricular

- Successfully completed one year under **National Sports Organization(NSO)** in **Chess** at IIT Bombay *(2022)*
- Pitched a **Business Model Canvas** for a startup in the health sector which entailed making online ambulance bookings, for the EnB Buzz competition conducted by the **Entrepreneurship cell of IIT Bombay** *(2021)*
- Participated in a team of 3 and wrote a working script and successful submission in **Google Hashcode 2021** *(2021)*
- Worked as team of 4 to make a remote controlled bot using ESP32 for XLR8 - an event of **ERC, IITB** *(2022)*