Vinayak Srivastava   200100169

Mechanical Engineering   B.Tech.

Indian Institute of Technology Bombay   Gender: Male

DOB: 8/6/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	ISC	D.B.M.S. English School	2020	96.50%
Matriculation	ICSE	D.B.M.S. English School	2018	97.20%

Pursuing a **minor** degree in **AI and Data Science**

SCHOLASTIC ACHIEVEMENTS

- Achieved an **All India Rank 767** in JEE Advanced out of **160,000+** candidates   [2020]
- Achieved a percentile score of **99.94** and an **All India Rank 732** in JEE Mains out of **1,100,000+** candidates   [2020]

TECHNICAL PROJECTS

Analysis and Prediction of Indian Premier League using Data Science   [Oct '21 - Dec '21]
DS203 Course Project | Prof. Amit Sethi, C-MInDS

- Performed **exploratory** and **predictive** data analysis on IPL dataset to predict the outcome of a match
- Analyzed player, match and venue data using Python libraries like - **NumPy, Pandas and Matplotlib**
- Used **feature engineering** to determine the most important variables affecting outcome of a match
- Built **3** ML models - **SVM, MLP Classifier** and **Random Forest Classifier** using **scikit-learn**
- **Optimized** the aforementioned machine learning algorithms and achieved a maximum F1 score of **70%**

Crime Data Analysis   [Jul '22]
Data Analytics and Visualization Team

- Collaborating with Prof. Sunita Sarawagi from CSE, IITB for projects leveraging public Indian datasets
- Performed **exploratory** data analysis on statewise crime dataset using **GeoPandas** and **seaborn**
- The analysis will be used for creation of content for the course DS203 - Programming for Data Science

Moodify (Ongoing Project)   [Apr '22 - Present]
Summer of Code | Web and Coding Club, IIT Bombay

- Working in a **team of 8** to build Deep learning algorithms to classify Reddit posts based on mood
- Developed an understanding of **neural networks** and their implementation in Python using **Pytorch**
- Explored **Convolutional Neural Networks** and **Recurrent Neural Networks**, including the required mathematical background followed by their implementation in Python using **Pytorch**
- Tasked with **developing deep learning models** using CNN for image classification based on mood

Neural Networks and Deep Learning   [Apr '22 - Jul '22]
Summer of Science | Maths and Physics Club, IIT Bombay

- Studied extensively about **variational autoencoders** (VAE) and their uses in image generation
- Explored **GANs**, a generative deep learning model which consists of a **generator** model to generate data and a **discriminator** model to distinguish between real and fake data produced by the generator
- Explored **conditional GANs** and implemented a cGAN model using Keras on Fashion-MNIST dataset
- Implemented **cycle GAN** using TensorFlow and Keras for unlabeled **image-to-image translation**

Algorithmic Trading   [Jun '22 - Present]
Finsearch | Finance Club, IIT Bombay

- Extensively read about algorithmic trading strategies like **mean reversion** strategy and **backtesting**
- Explored **high frequency trading** (HFT) and the advantages, risks and ecological impact of HFT

Guided Projects   [Apr '22 - Jul '22]
Coursera

- Implemented a **bidirectional LSTM** model for tweet classification to achieve a test accuracy of **89.55%**
- Leveraged **Transfer Learning** using various pre-trained models like **ELMo, Universal Sentence Encoder** and **NNLM** available in **TensorFlow Hub** and visualized the results using **TensorBoard**
- Built a **DCGAN** in **PyTorch** to generate handwritten digits using the MNIST dataset
- Implemented image augmentation followed by **U-Net** model for image **segmentation** using PyTorch
- Fine-tuned **BERT** model for text classification using TensorFlow and achieved validation accuracy **96%**
- Built and optimized a **CNN** model in **Keras** to classify traffic signs and achieved an accuracy of **91%**
- Explored **SQL** commands like SELECT, INSERT, DELETE, ORDER BY to create meaningful reports

Rockwell Hardness Test of Cold Worked Aluminium [*Feb '22 - Apr '22*]

Course Project | Prof. Krishna N. Jonnalagadda, Department of Mechanical Engineering

- Worked in a **team of 4** perform **Rockwell Hardness test** on cold-worked aluminium samples
- **Analyzed** and **verified** the trend in Rockwell hardness values with increasing percentages of cold work

POSITIONS OF RESPONSIBILITY

Core Team Member | Data Analytics and Visualization Team [*Jul '22 - Present*]

Part of a diverse 10-member team to produce data-centric, institute level analytics

- Selected as a part of a **10** member team out of **140+** applicants based on assignments and interviews
- The team analyzes institute related data, data from startups and NGOs and participates in hackathons

IIT Bombay Racing

*The team comprises **90+** students who design and fabricate an electric car, which competes in the **Formula Student** conducted by **IMechE** annually at the Silverstone circuit, UK. The team secured **1st** place in the **Concept Class** at **FSUK 2021** and also finished **1st** overall among **73** teams.*

Junior Design Engineer | Aerodynamics and Bodyworks [*Sep '21 - May '22*]

- Simulated a three element wing, modeled using **SolidWorks**, in **ANSYS** to **optimize** angle of attack
- **Designed** a **three element wing** package capable of generating a downforce of **300 N** at **80 kmph**
- Assisted in manufacturing of **Carbon Fiber** panels for bodyworks of the car using **hand layup process**
- Actively participated in **formulating** and **evaluating** the recruitment test for freshmen into the team
- **Mentored 5 interns** in the aerodynamics subsystem under the IIT Bombay Racing internship program

Trainee [*Feb '21 - Sep '21*]

- Gained technical insights into the **aerodynamics and bodyworks**, **brakes** and **chassis** subsystems
- Simulated the **rear spoiler** and **front wing** to determine the drag and lift coefficients using **Simscale**

Teaching Assistant | Biosciences and Bioengineering Department [*May '22 - Jun '22*]

BB101 - Biology | Prof. Ambarish Kunwar

- Selected as one of **44** teaching assistants based on **academic ability** and **communication skills**
- Responsible for conducting weekly **tutorial sessions** for problem solving and doubt-clearing discussions

Horizons Coordinator | 51st Edition | Mood Indigo, IIT Bombay [*May '21 - Jan '22*]

Asia's Largest College Cultural Festival | 1,00,000+ viewership | 3 hours average viewing time

- Invited **5** artists from **2** countries to exhibit performances at the 51st edition of Mood Indigo
- Ideated and structured **Litfest**, which is the annual flagship **panel discussion** event of Mood Indigo
- Negotiated with renowned Indian and foreign artists to showcase more than **3** events

TECHNICAL SKILLS

Programming Languages	: C++ | Python | Java | HTML | CSS
Python Libraries	: NumPy | Pandas | GeoPandas
ML/DL Frameworks	: Scikit-learn | PyTorch | TensorFlow | Keras | OpenCV
Data Visualization Tools	: Matplotlib | Seaborn
Simulation and CAD softwares	: SolidWorks | ANSYS (Fluent) | Simscale
Other	: SQL | LaTeX

KEY COURSES UNDERTAKEN

Data Science and Programming	: Programming for Data Science | Data Structures and Algorithms
Mathematics	: Linear Algebra | Calculus | Differential Equations | Numerical Analysis
Online Courses	: Statistical Thinking for Data Science | Neural Networks and Deep Learning | Improving Deep Neural Networks:Hyperparameter tuning, Regularization and Optimization | Structuring Machine Learning Projects | Convolutional Neural Networks | Sequence Models

EXTRACURRICULAR ACTIVITIES

National Cadet Corps [*'20 - '21*]

One of **180** cadets selected after an extensive selection procedure involving various physical exercises

Freshiezza [*'21*]

Participated in the annual freshiezza photography competition, organized by **PIXELS** - The photography club of IIT Bombay

E-Conclave [*'20*]

Attended E-Conclave, conducted by E-Cell, where top global entrepreneurs interacted with participants