Pranav Chaudhari
Environmental Science & Engineering
Indian Institute of Technology Bombay

20D180023
Dual Degree (B.Tech. + M.Tech.)
Gender: Male
DOB: 17/05/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	8.92

Pursuing a **Minor** in **Centre of Machine Intelligence and Data Science**, IIT Bombay

PROFESSIONAL EXPERIENCE

MITACS GRI'23 | Investigation of Deep Learning Models for Hydrological Forecasting   *May '23 - Jul'23*
MITACS Globalink Research Internship based at York University, Toronto under professor Marina Erechtchoukova

- Conducted comprehensive **Time Series, Multivariate and Cross Correlation Analysis** of river flow, rainfall, and water quality data, namely; pH, conductivity and DO from multiple gauge stations along the Grand River, Ontario.
- Leveraged **QGIS** software to perform sophisticated **geospatial analysis**, unravelling **spatial patterns** and **correlations** among the gauge stations, providing valuable insights into the river's dynamic behavior.
- Employed **advanced LSTM models**, integrating **24 previous hours timestamps**, to predict, initially river flow and then water quality parameters with **lead times** ranging from **1 hour to 24 hours**.
- Showcased expertise in **environmental data analysis**, cutting-edge time-series forecasting, and geospatial methodologies, contributing to **better water resource management and sustainability practices**.

Curiosity-Driven AR Developer | YoZu | Unity Developer Internship   *Aug '21 - Jan '22*
Deep-Tech startup building an AI curiosity companion to solve for curiosity in kids

- Spearheaded the seamless fusion of scientifically intricate Blender models, into an **interactive Unity3D application**
- Proficiently orchestrated **model integration**, while intricately **refining lighting nuances**, culminating in an engaging **augmented reality** encounter that captivated 8th-grade students' inquisitiveness.
- Skillfully curated augmented reality interactions through the **smartphone camera**, resulting in an **immersive edTech solution** that brought 8th-grade science experiments vividly to life

KEY PROJECTS

Min Heap-Based File Compressor and Decompressor   *May '23 - Jun '23*

- Implemented file compression-decompression tool using **C++ and Huffman coding** algorithm for reducing file sizes
- Engineered a custom **Min Heap** data structure to construct and maintain **Huffman trees** efficiently
- Built proficiency in working with **binary files** and **I/O operations**, enabling seamless compression-decompression

CodeCipher Keeper: Password Manager   *Jul '23 - Aug '23*

- Developed **Python-based** password manager with **MySQL integration** to securely store and manage credentials
- Designed an intuitive **command-line interface** (CLI) for user interaction, enhancing user-friendliness and ease of use
- Enabled users to **add, search, and retrieve entries** using a variety of parameters such as **site name, site URL, email, and username** with integration of **Rich library** to present results in a visually appealing **tabular format**
- Utilized Crypto libraries for key derivation & **AES encryption** & implemented **secure copying feature** using the **Pyperclip library** to copy decrypted passwords to the clipboard while **maintaining data confidentiality**

Socio-Economic Voting Patterns: An ML Approach | Datathon | DPhi   *May '22 - Jun '22*
Predicted the political party of the taxpayer using various ML models on the socio-economic features of the public

- Conducted extensive **exploratory data analysis** and **feature engineering** to inform precise model selection
- Employed a diverse set of ML algorithms (**logistic regression, SVM, KNN, random forest, MLP**) and fine-tuned hyperparameters using **GridSearchCV**, resulting in optimized political party preference predictions.
- Demonstrated expertise in data preprocessing, model evaluation, and result interpretation, leading to successful implementation of robust ML solution for predicting **political affiliations based on socio-economic factors**

WeatherNet: Deep Learning for Weather Image Classification | Datathon | DPhi   *May '22 - Jun '22*
Processed the image dataset and classified it into 5 types with the help of Convolutional Neural Networks

- Developed a weather image classification system using **Neural Networks**, achieving **83% accuracy**
- Conducted **comparative analysis** of CNN models (VGG16, ResNet50, ResNet101) for optimal performance
- Utilized **OpenCV** library for **image processing** and performed exploratory data analysis to gain valuable insights

TECHNICAL SKILLS

Programming	C, C++, C#, HTML, CSS, JAVASCRIPT, Python, LaTeX, MATLAB
Softwares & Tools	Unity, VS Code, GitHub, AutoCAD, SolidWorks, Visual MINTEQ, ArcGIS, EPANET
Libraries	NumPy, Pandas, Matplotlib, Sklearn, SciPy, Keras, Tensorflow, OpenCV, Flask