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Environmental Science & Engineering  
Indian Institute of Technology Bombay

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Dual Degree (B.Tech. + M.Tech.)  
Gender: Male  
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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 Erechtkhoukova*

- 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

**Closing the Gap: Predicting Question Closure on Stack Overflow** Nov '22 - Dec '22  
*Guide: Prof. Amit Sethi | Course Project | Centre of Machine Intelligence and Data Science, IIT Bombay*

- Developed predictive models (Gaussian Naive Bayes, Random Forest & LSTM) for **Stack Overflow** question **closure**
- Achieved **60% accuracy using LSTM**, showcasing the better performance of neural networks over other ML models.
- Employed **feature engineering** and rigorous evaluation to gain insights into **question closure dynamics**

**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, L <sup>A</sup> T <sub>E</sub> X, MATLAB
Softwares & Tools	Unity, VS Code, AutoCAD, SolidWorks, Visual MINTEQ, QGIS, ArcGIS, EPANET
Libraries	NumPy, Pandas, Matplotlib, Sklearn, SciPy, Keras, Tensorflow, OpenCV, Flask