



ABHINAV ANURAG
Chemistry
Indian Institute of Technology Bombay

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B.S.
Gender: Male
DOB: 16/11/2000

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	5.19
Intermediate	cbse	hariyana vidya mandir,salt lake	2019	84.00%
Matriculation	icse	north point english academy,malda	2017	96.40%

INTERNSHIPS

Machine Learning Engineer | GARUDAIRE Pvt Ltd. [Mar'23-June'23]

- Developed and trained **s.o.t.a. object detection models** for accurate **drone detection**
- Conducted **exploratory data analysis and signal processing** on **RF based Drone Data**
- Built highly accurate **classification** models for **RF-based drone detection**
- Developed **Flask apps** on **Azure VM**, demonstrating proficiency in cloud computing and web development
- Conducted research on **Drone Forensics**, contributing to the advancement of knowledge in the field

KEY PROJECTS

Resource Efficient Image Processing Using 2D Wavelet Transform | Course Project [Jan'23- Apr'23]

Guide Prof. Amit Sethi | Dept. Of Electrical Engineering, IITB

- Developed a highly **resource-efficient Image Processing** architecture(**WaveMix**) for image processing
- Implemented **Discrete 2D Haar wavelet transform in self similar blocks** to transform images
- Extended the **Wavemix** to an **single object detection** architecture
- Evaluated on a subset of Caltech Dataset** and achieved an **mAP score of 0.48**

Oil Stock Price Prediction using LSTM |Azeotropy 2022, ML Hackathon | [Aug'22]

Among Top 7 teams | Predictioneer, Azeotropy

- Conducted a solo project to scrape and train over **8 years of WTI crude oil prices**
- Developed a **multivariate LSTM-based** neural network to forecast **60 day ahead** future crude oil prices.
- Achieved an impressive **r2_score of approximately 0.98** on the validation set and made into **top 7 finalists**

Log Anomaly Detection using BERT LLM | [Oct'22]

1st Round Qualifier | Convolve [PAN IIT Hackathon]

- Designed a supervised **log anomaly detection model using BERT**
- Implemented **random undersampling** to deal with **class imbalance**
- Used Transfer Learning by **freezing weights** to reduce computational complexity
- Achieved a mean **f1_score of 0.90085**, ranking in the top **100**

Defect recognition in Welding Systems [Dec'22]

Finalist | Techfest Godrej Weldright [ML Hackathon]

- Solved a **time series anomaly detection** problem with extreme class imbalance
- Implemented a combination of unsupervised (**Z-score threshold and Clustering**) and supervised methods
- Hypertuned a **LightGBM classifier** to improve its performance on the classification task
- Used **borderline SMOTE** to balance the dataset and achieved an **F1 score of 0.96** on unseen test data

Hyper Spectral Image Classification using Hybrid Spectral Net | Self-Project [Sep'22]

- Developed a **Hybrid 3D-2D Spectral Neural Network** on the **Indiana Pines data set**
- The Hybrid Network emphasized **joint spatial-spectral feature representation for improved performance**
- Implemented **CBAM attention** between the hybrid layers, improving f1 classification scores over **16 classes**
- Reduced the dimensionality along the spectral dimension **from 200 to 40 PCA components**
- Verified the model on ground truth dataset, achieving an **F1_score of greater than 0.99**

Document Query App Developed using LangChain | Self-Project [Aug'23]

- Developed a **Langchain App** using **Streamlit**, **Instructor embeddings** and **OpenAI embeddings**
- Implemented Huggingface LLM model **Flan T5 XXL** to chat with multiple PDF files
- Used **FAISS** as a **vector store** for efficient storing and retrieval using **cosine similarity**, while maintaining the **chat session history** and context for each document

Extractive Question Answering system using HAYSTACK framework | Self-Project [Jun'23]

- Developed a custom **question answering** system using **Haystack** and **FARMReader**
- Fine-tuned the system on the **SQuAD 2.0** dataset using **"distilbert-base-uncased-distilled-squad"**
- Achieved an **F1 score of 0.684**, and a **top-n accuracy of 0.969** after training for 1 epoch
- Created a pipeline in Haystack to run inference on the trained model and extract answers from documents

LIPNET using Bi-directional LSTM | Self-Project [May'22]

- Developed and deployed a **deep learning lip reading app** using **Python**, **Tensorflow**, and **Streamlit**
- Utilized a custom **3D convolutional** and **Bidirectional LSTM** to extract features from video and audio data
- Fine tuned and tested the model on a custom dataset featuring various speakers and phrases
- Created a user-friendly interface for the app and evaluated its performance using sklearn and seaborn

People and Pedestrian Detection using YOLOv8 | Self-Project [Sep'22]

- Developed an overhead **YOLOv8-based overhead people and pedestrian detection and tracking system**
- Fine tuned the architecture achieving an **mAP 50-95 of 0.187**
- Used **Roboflow** to import overhead drone images and fine tune a custom YOLOv8 model
- Integrated the trained model with a tracking repository using the **BoTSORT tracking algorithm**

ABHIFLIX- A Next.js Movie Application | Self-Project [May'23]

- Developed a fully-responsive **Netflix-inspired movie app using Next.js**
- Incorporated features such as **Tailwind CSS**, **React server**, and **static webpages and DARK MODE** .
- Utilized **RapidAPI** to integrate external data sources and enhance the functionality of the app.

SUSHI DELIVERY App using HTML and CSS | Self-Project [Sep'22]

- Created a responsive sushi website using **HTML**, **CSS**, and **JavaScript**
- Implemented features such as **dark mode**, **smooth scrolling animations using AOS**, and a **contact form**.
- Developed the website with the **Mobile First methodology**, ensuring compatibility with all mobile devices

MENTORSHIP EXPERIENCE

Mentor | Winter In Data Science (WIDS) | Analytics Club , IITB [Dec'22-Jan'22]

- Chosen **16** from 50+ applicants after a rigorous procedure comprising **SoP reviews and personal interviews**
- Led the students to complete a project on **Image Caption Generation** using transfer learning
- Fine tuned a pretrained **VGG19 model** and an **LSTM network trained on FLICKR 8k Dataset**
- Prepared stepwise tutorials and weekly assignments using **Github Classroom** for smooth learning
- Conducted weekly assignments on **CNN, RNN, LSTMs**, and their confluence in language and image models

TECHNICAL SKILLS

Scripting Languages	Python, HTML, CSS, JavaScript, C++
Version Control	Git, Github
Web Development	Flask, Streamlit, HTML, CSS, JavaScript, Tailwind, React.js, Next.js, Framermotion
Cloud Computing	AWS, Azure VM
Data Science Platform	Kaggle, Google Colab
Operating Systems	Windows, Linux