Aditya Krishna Das

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2021 - Present	B.Tech	Indian Institute of Technology, Kharagpur	8.92/10
2021	ISC(XII)	The Modern Academy, Kolkata	99.5%
2019	ICSE(X)	The Modern Academy,Kolkata	96.4%

Scholastic Achievements

- Secured an **All India Rank of 395** in **JEE Mains 2021** and was among the **top 0.1%** out of **1.3 million** applicants.
- Secured an **All India Rank of 3421** in **JEE Advanced 2021** and was among the **top 2.41%** of the **142k** applicants.
- Secured an **All India Rank of 23** in West Bengal Join Entrance Examination **(WBJEE) 2021** among **65170** candidates.
- Qualified in **NSEP**(National Standard Examination in Physics) 2021 organized by Indian Association of Physics Teachers and was among the **top 1%** students nationally.
- Cleared **RMO 2019** and **PRMO 2017,2018,2019** which were organized by Homi Bhabha Centre for Science Education(HBCSE).

Key Projects

- **Image Segmentation using K-means algorithm** (*Oct 10;22*)
  - The **image** is partitioned into **multiple segments** based upon the number of **clusters** which is defined initially. The **k-means** algorithm is written from scratch and as the number of **clusters** increase the **new image** obtained tends to the **original image**. The image is actually a **3D matrix** consisting of **RGB** channels, which is converted into a **2D matrix** by using the **python reshape** function.
  - The **2D matrix** has 3 columns which corresponds to **RGB** values of each pixel. Then the initial **centroids** are chosen from these pixels randomly and **centroids** are calculated iteratively.
  - The **gifs** present in the folder found on opening the *link* helps in visualizing it nicely.
- **Sentiment Analysis using CBOW and TF-IDF** (*Dec 1;22*)
  - Fed a small dataset of restaurant reviews to the **Word2Vec Models(CBOW,TF-IDF)** and fitted the vectorized data into multiple classification models like **Logistic Regression,KNN classifier,SVM, AdaBoost,XGBoost Classifier** etc.. and obtained an accuracy of approximately 75 percent on the testing dataset for positive or negative reviews.
- **Volume control using Hand Gesture** (*April 9;22*)
  - With the help of **OpenCV** we detect the hand landmarks, then we calculate the distance between the **thumb tip** and **index finger** tip. The **distance** is within the range of **30-350**, and the **volume** range was within **-63.5-0.0**,so scaling was done, to resolve this issue.
  - The python audio control library **Pycaw** is used for controlling the audio of the device based upon the distance between the tips of thumb and index finger.The machine learning library **MediaPipe** is used for extracting the key points of the fingers.

Technical Skills

- **Programming Languages and softwares:** Python, C++, C, HTML, CSS, Javascript
- **Libraries:** Numpy, Pandas, Matplotlib, Scikit-learn, Seaborn, Keras, Tensorflow,Pytorch, OpenCV

Relevant Courses

Introduction to Machine Learning,Coursera	Introduction to Deep Learning, Coursera
CS224n	CS231n
Scientific Computing with Python, FreeCodeCamp	Programming and Data Structures
Linear Algebra, Numerical and Complex Analysis	Probability and Statistics

Position of Responsibililty

- **Student Member,Kharagpur Data Analytics Group** (*Feb 20;22 - Present*)
  - Presented a white paper on **non-linear dimensionality reduction** methods like **t-SNE,UMAP** to all members of **Kharagpur Data Analytics Group** which included alumnis as well. Also used these **dimensionality reduction** methods on the **MNIST dataset** and discussed the results.Also discussed about the **Barne's Hut algorithm**.
    Presented a white paper on various **object detection** algorithms like **R-CNN, Fast R-CNN, SSD, YOLO**.Discussed the differences between these algorithms and compared their efficiency.

Extra-Curricular Activities

- Member of **NSS**(National Service Scheme) and received a **gold medal** as a member of Unit 11 for carrying out multiple **awareness programs** and **social activities** in a local village named Malma in Kharagpur,West Bengal.
- Served as the **captain** of the runner's up team in intraschool **football** competition.