

Navneet Sharma

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Education

Degree	Institution	CPI/%	Year
M.Tech (CSE)	IIT Gandhinagar	8.00	2022-Present
B.Tech (ECE)	Ramrao Adik Institute of Technology	6.16	2014-2018

Experiences

Teaching Assistant, IIT Gandhinagar.

[Aug 2023 – present]

- Guided **50+** first year **students** from various program in the Lab of **Introduction to Computing**.
- Prepared various python-based questions for a **batch of 400+ students**. For the enhancement of problem-solving abilities, and comprehension of **Python** programming **concepts**.

Teaching Assistant, IIT Gandhinagar.

[Jan – April 2023]

- Data-Centric Computing**: Conducted **LAB** sessions for **100+ students**, actively guiding them in problem-solving and doubt clearance on topics such as **Algorithms**, **competitive coding** and etc.
- Assisted in conduction and **evaluation of** assignments, **Lab quizzes**, and **course exam**. Assisted in the orderly distribution of answer sheets and did doubt clearance, streamlining the logistics of the assessment process.

Projects

Image Intensity matching.

[Aug – Sept2023]

- Implemented **intensity** matching of 2 images from scratch, **without** using any **advance libraries**.
- Converted all 4 images in **grayscale**, plotted the **histogram** of all the images, equalized the dimensions.
- Matched the images pixel by pixel with the technique called histogram matching and plotted it using matPLT.
- Delivered outcome that closely **matched** the result obtained using **Scikit-Learn**.

Non-Local Mean Denoising.

[Aug – Sept2023]

- Executed image denoising **NLM** method on **12** noisy images. **Gaussian blur** with mean 0 and different **sigma** values were used to generate these images. Used "**NUMBA**" library to run loop in parallel to increase speed.
- Achieved Maximum **PSNR** value of **37.54** and minimum **RMSE** value **2.42** on the dataset.

Eye Gaze Estimation.

[May 2023 – present]

- Implemented an innovative eye gaze estimation application for the **company 'Decrypt'** using the OpenCV, Dlib, NumPy and Tkinter library to create an intuitive user interface and facilitate the calibration process.
- Extracted various **features**, including the **eye coordinates** from the **frames** captured using the **laptop camera** lens, to calculate the approximate eye gaze coordinates on the screen.
- Implemented existing regression algorithms like **Random-forest**, **MLP** and linear regression models to assess the **Mean Squared Error (MSE)** of the data collected from the application.

Pneumonia detection using chest x-ray.

[Jan 2023 – present]

- Reviewed various past works and methods related to Pneumonia detection using chest X-ray.
- Incorporated dataset **Chest-xray-14** which contains **112,120 images** and **CheXpert** which contains **224,316** chest radiographs of 65,240 patients, which are one of the **largest** free available **datasets**.
- As a further proceed of my work, I will use **Active Learning**, other ML and DL algorithms.

Features Selection: Classification of Emotions using EEG Signals.

[Jan – April 2023]

- Devised '**k**' **important feature** selection method on the **EEG** dataset of the Classification of Emotions.
- Utilized **Kaggle** EEG dataset consisting of processed data, collected from **2 male** and **2 female** for 60 seconds per emotion state. **Pre-processed** this data before applying different **M.L.** algorithms.
- Attained an accuracy of **87.16%** just from **40 features**. Which significantly **decreases computational load** and also helps from **overfitting** of the model, hence improving **generalization** of the **model**.

Achievements

- Secured **97.9 percentile** in **Graduate Aptitude test in Engineering 2022** and percentile of **97.27 in GATE'21**.
- Shortlisted multiple times from among thousands of candidates for the Service Selection Board (SSB).
- Awarded Gold medal for securing 1st position in 4x100 meter relay race, IIT GN Intramural competition.
- Secured Silver medal for getting 2nd position in Football tournament, IIT GN Intramural competition.
- Selected multiple times for regional level quiz competition organized by Indian Air Force.
- Attained 5th position with the RAIT handball team in the 'University of Mumbai' handball competition.

Skill Summary

- Languages:** C++, C, Python, SQL.
- Tools and Libraries:** CV2, PIL, Pandas, Numpy, Tkinter, Dlib, Pytorch, Scikit-Learn, Matplotlib, numba, etc.
- Algorithms:** Decision Tree, Random Forest, Support Vector Machine, KNearest Neighbors, Linear Regression, Convolutional Neural Networks, Multilayer Perceptron.
- Technical:** Machine Learning, Deep Learning, Digital image processing, Computer Vision.