

Anubhav Agrawal

☎ +91 7024 880 719 | @ anubhavagr.mail@gmail.com |  [GitHub](#) | 📍 Bangalore, India

EDUCATION

Bhilai Institute of Technology

Bachelor of Technology - Computer Science

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2019 – 2023

EXPERIENCE

Innovation imaging Technologies Pvt. Ltd.

Image Quality Engineer Intern

Nov 2022– present

- Working on Image Stitching for fluoroscopy images
- Developed an **Optical flow based image sequence registration** module for medical stent enhancement
- Developed an algorithm for generating a summary image of Digital Subtraction Angiography(DSA) fluoroscopy loop

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Computer Vision Intern

Sep 2022– Dec 2022

- Developed multiprocessing file balancers and video summary image generation techniques to optimize data processing and visualization
- Implemented algorithms for image stitching, generating high-quality mosaics from multiple input image
- Conducted research on advanced computer vision techniques such as real-time object detection, object dimension measurement, and foreign object debris detection using deep learning models such as YOLO, Faster R-CNN

International Institute of Information Technology, Naya Raipur

Summer Intern

May – June 2022

- Supervised by **Dr. Shailesh Khapre**
- Created a new binary image classification dataset containing 320+ samples with classes Smoking and Spitting
- Developed a **Real-time Smoking and Spitting detection** system using deep learning
- Achieved an accuracy of 92% on the test video, demonstrating the efficiency of the developed model
- Techniques applied - Deep learning, Data Augmentation, CNN, Transfer learning, Fine-tuning, Mixed Precision
- **Tech stack** - Python, Fastai, Tensorflow, OpenCV, Matplotlib

PERSONAL PROJECTS

Universal Image Steganalysis | Python | [GitHub](#)

- Developed a deep neural network for detection of stego images
- **Fine-tuned** dnn architectures like **Resnet50**, **VGG19** and **InceptionV3** using **fp8** and **MixedPrecision** training
- Techniques used - **Data Augmentation**, **Transfer Learning**, **Ensemble Learning**
- Achieved an accuracy of over 98% on unseen test data
- **Tech stack** - Python, Pytorch, Fastai

Predicting NDVI Trends in Gujarat with boosting based Time Series Analysis | Python | [GitHub](#)

- Conducted feature engineering to improve model performance and prevent overfitting
- NDVI satellite dataset used- AWIFS, MODIS and SENTINEL
- Achieved mean squared error of 0.007, 0.005 and 0.044 on AWIFS, MODIS and SENTINEL test datasets respectively
- **Tech stack** - Python, XGBoost, CatBoost, LightGBM, NgBoost, AdaBoost, H2OBoost

Legal judgement text summarizer | Python | [GitHub](#)

- Implemented huggingface summarization pipeline
- Customizable length summary generated of given input
- **Tech stack** - Python, Pytorch, HuggingFace, Colab

Condio - a lossless to lossy audio converter | Python | [GitHub](#)

- Developed a parallelized version of an audio format converter capable of utilizing all available CPU cores

- Supports audio formats such as WAV, FLAC, M4A with variable bitrate
- Demonstrated expertise in optimizing performance and ensuring lossless conversion
- **Tech stack** - Python, FFmpeg, Glob, Multiprocessing

Bengali Font Classification | Python

- Fine-tuned a convolutional neural network (**ResNet34** architecture) on a dataset containing images of Bengali alphabets (CMATERdb3.1.2)
- Trained using ***Transfer learning*** technique
- Achieved an accuracy of 98.96% on testing set
- **Tech stack** - Python, Fastai, OpenCV

Neural Style Transfer | Python | [GitHub](#)

- Implemented the paper titled "A Neural Algorithm of Artistic Style" by Gatys et al.(2015)
- Built using the VGG-19 architecture, the model blended the contents of a content image with the style of a style image, generating a new image with a unique artistic style
- **Tech stack** - Python, Pytorch, OpenCV, Matplotlib, Numpy, Pillow

TECHNICAL SKILLS

Programming Languages: Python, C, MATLAB, C++

Libraries(Python): Fastai, Pytorch, Tensorflow, Numpy, Pandas, Scikit-learn, OpenCV, Matplotlib

EXTRA-CURRICULARS

1st Runner-up Smart India Hackathon 2022

Winner Brainstation India Ideathon 2021

Machine Learning Lead at Google developer scholars club (GDSC BITD) 2021-22

ONLINE CERTIFICATIONS AND SPECIALIZATIONS

Edx:

MIT 6.86x: Machine Learning with Python-From Linear Models to Deep Learning

Coursera:

Generative adversarial Networks (GANs) specialization

AI for Medicine Specialization by deeplearning.ai

Deep Learning Specialization by deeplearning.ai

TensorFlow Developer Professional Certificate deeplearning.ai

NVIDIA Deep Learning Institute:

Fundamentals of accelerated computing with CUDA Python