

IMAGE RECOGNITION

[CDA_PHASE-3]

DATASET PRE-PROCESSING:



What is data set for images..???

A dataset for images is a collection of images, typically organized for various purposes, including computer vision tasks, machine learning, and image analysis. These datasets contain a wide range of images, often with associated labels or annotations for specific objects, scenes, or characteristics within the images. Image datasets can vary in size and content, from small datasets for research to large, diverse collections for training deep learning models.

Common examples of image datasets include:

1.Image Classification Datasets: These contain images categorized into specific classes, and they are used to train and evaluate image classification models. Examples include CIFAR-10, ImageNet, and MNIST.

2.Object Detection Datasets: These datasets provide images with labeled objects, specifying the location of each object within the image. Popular datasets for object detection include COCO (Common Objects in Context) and Pascal VOC.

3. Face Recognition Datasets: These datasets focus on facial images and are used for tasks like face recognition and emotion detection. LFW (Labeled Faces in the Wild) and Celeba are examples.

4. Medical Image Datasets: These datasets consist of medical images like X-rays, MRIs, and CT scans, often used for medical diagnosis and research.

5. Satellite and Aerial Imagery Datasets: These datasets include images captured from satellites or drones, which can be used for applications such as land cover classification and disaster monitoring.

Image datasets are crucial for training and testing algorithms that analyze, interpret, or manipulate images, and they play a significant role in the development of computer vision and machine learning technologies

BLOCK DIAGRAM:



Preprocessing a dataset for face recognition typically involves several steps to prepare the data for training a model. Here's an outline of the preprocessing steps you might consider:

1. **Data Collection:** Gather a diverse dataset of face images. Ensure that the dataset represents various angles, lighting conditions, and demographics.

2. Data Cleaning:

- Remove any duplicate or low-quality images.
- Manually label and categorize the dataset, if necessary.

3. **Image Resizing:** Resize all images to a consistent size (e.g., 224x224 pixels) to ensure uniformity.

4. **Data Augmentation:** Apply data augmentation techniques to increase the diversity of the dataset. This can include techniques like rotation, scaling, flipping, and adding noise to the images.

5. **Normalization:** Normalize pixel values to have zero mean and unit variance. This helps the model converge faster during training.

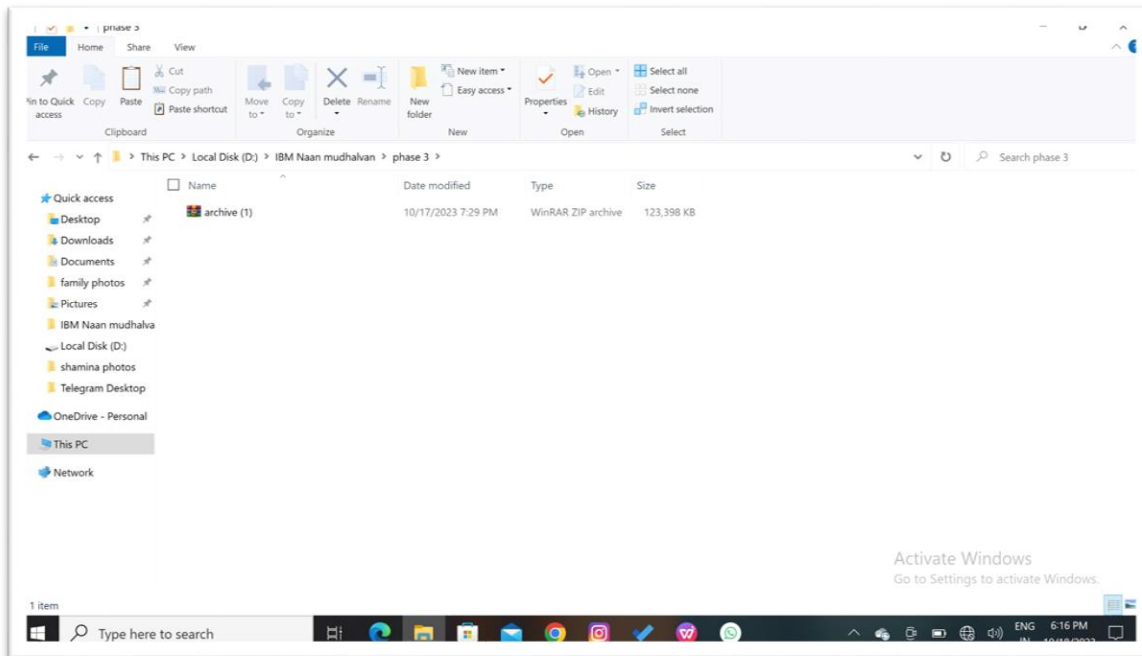
6. **Face Detection:** Use a face detection algorithm (e.g., Haar cascades, MTCNN, or deep learning-based detectors) to detect and extract faces from the images.

7. **Face Alignment:** Align the faces to a consistent position and scale within each image. This can improve model performance by reducing variation.

STEPS FOR DATA SET PRE-PROCESS:

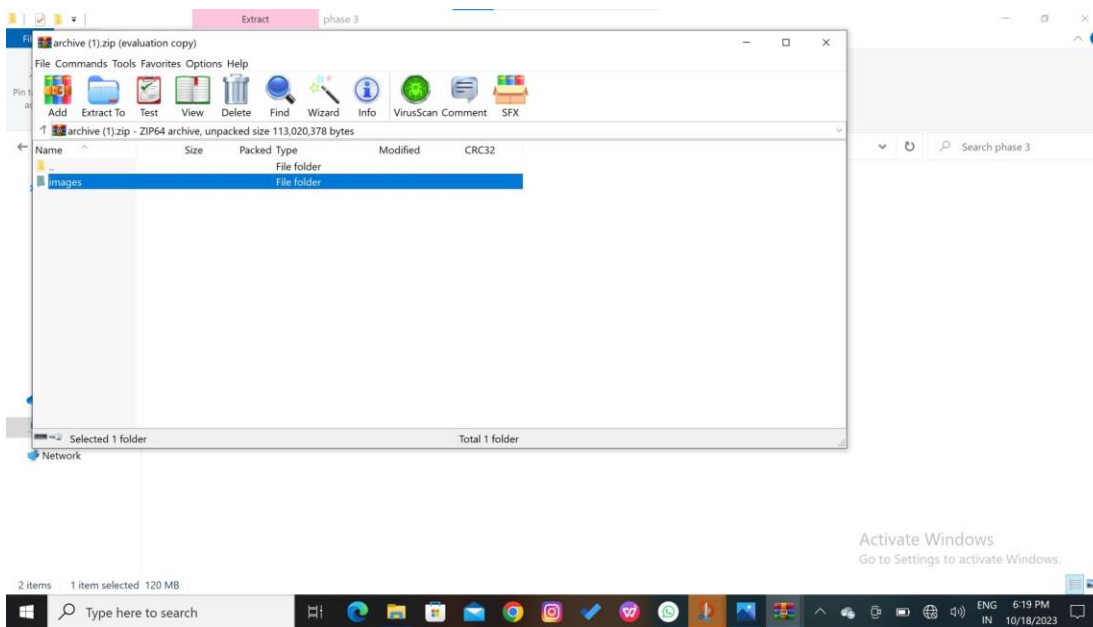
Step 1:

Dataset zip file:



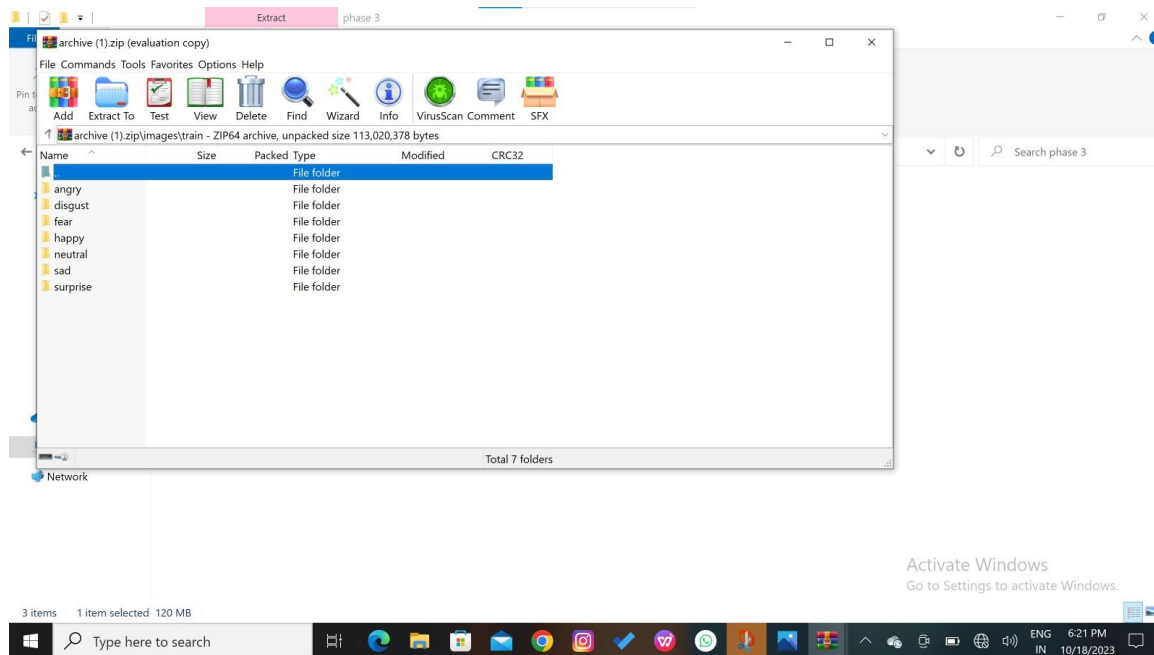
Step 2:

In zip file contain images about facial emotion are:



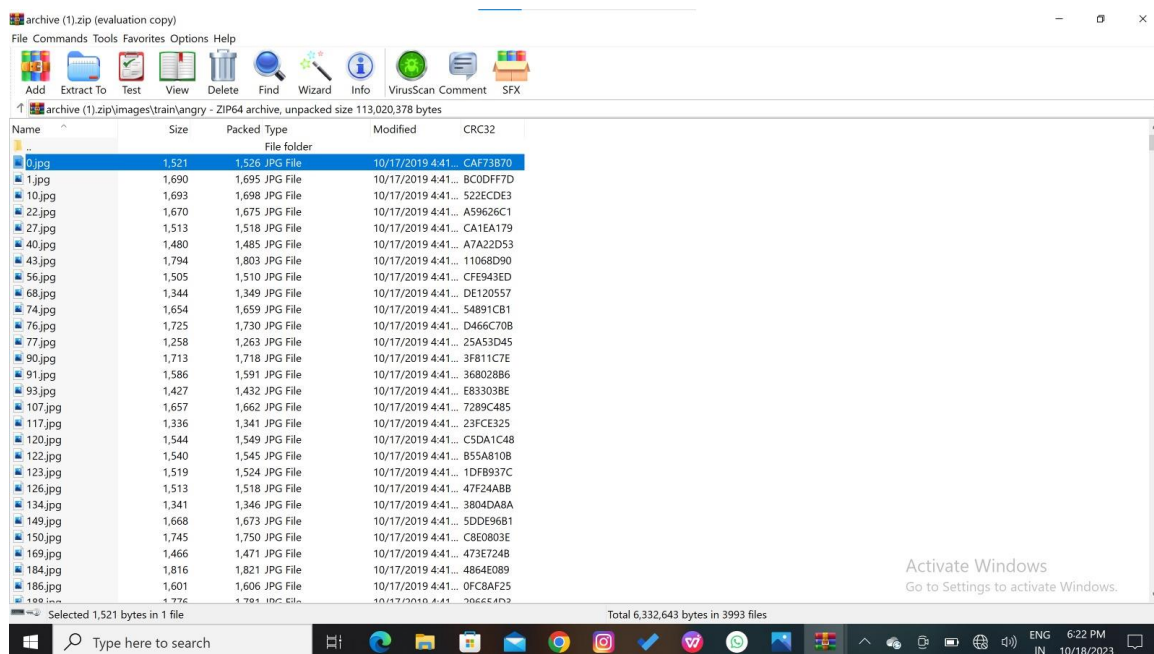
Step: 3

Image contain 8 facial emotional datasets are:



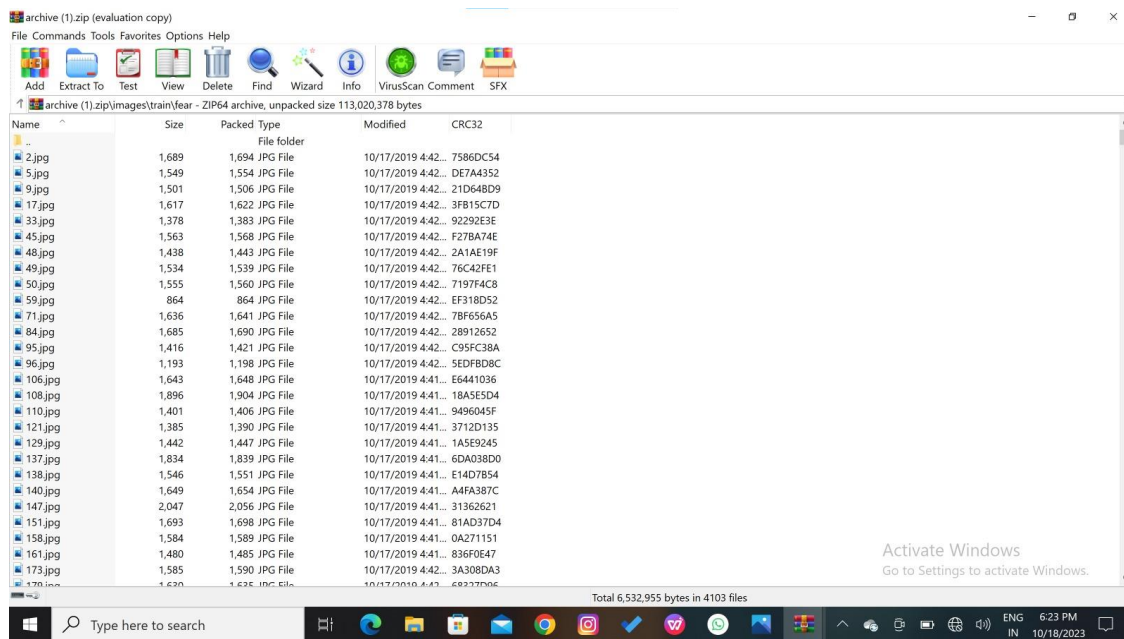
Step: 4

Data set for Angry Face :



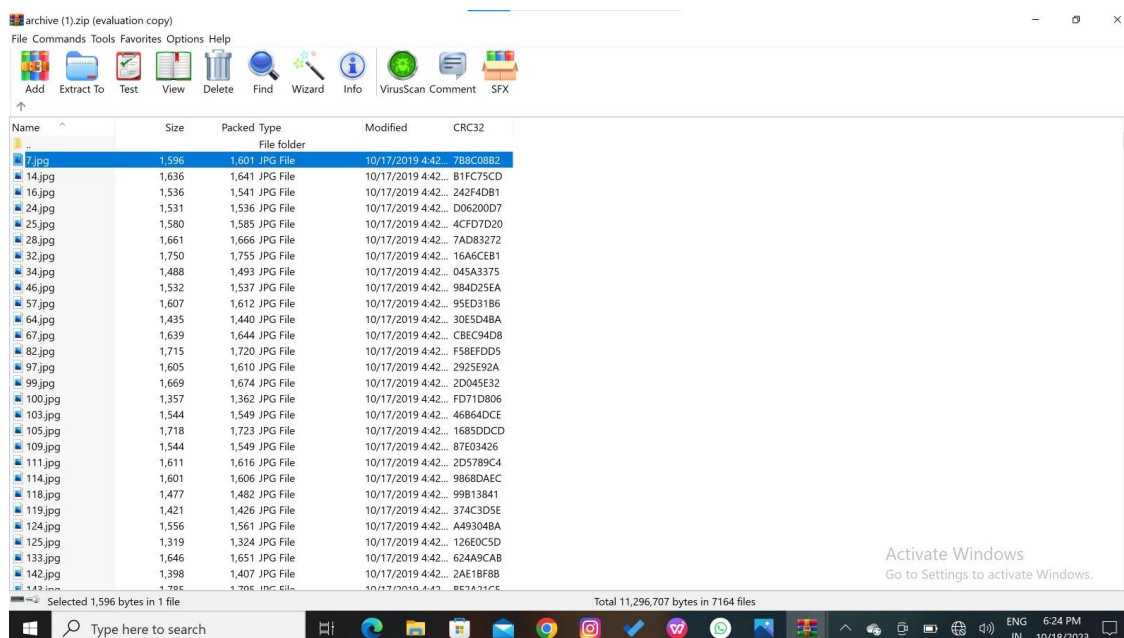
Step: 5

Data set for Fear Face :



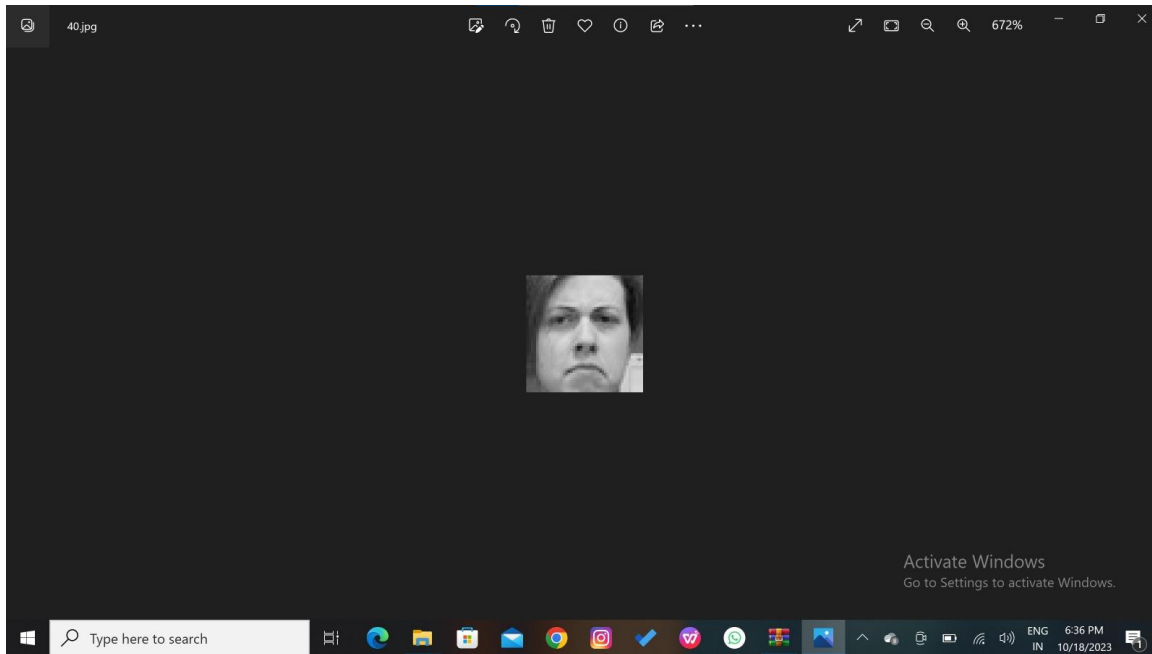
Step:6

Data set for Happy Face:



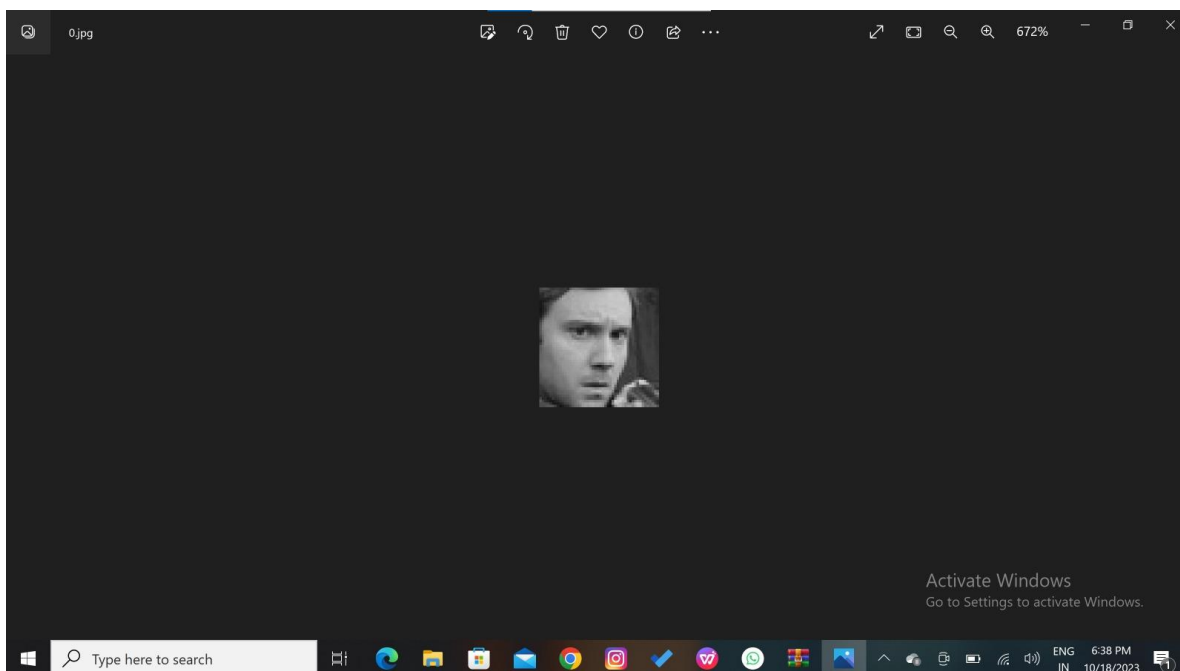
Step: 7

Image for Angry Face :



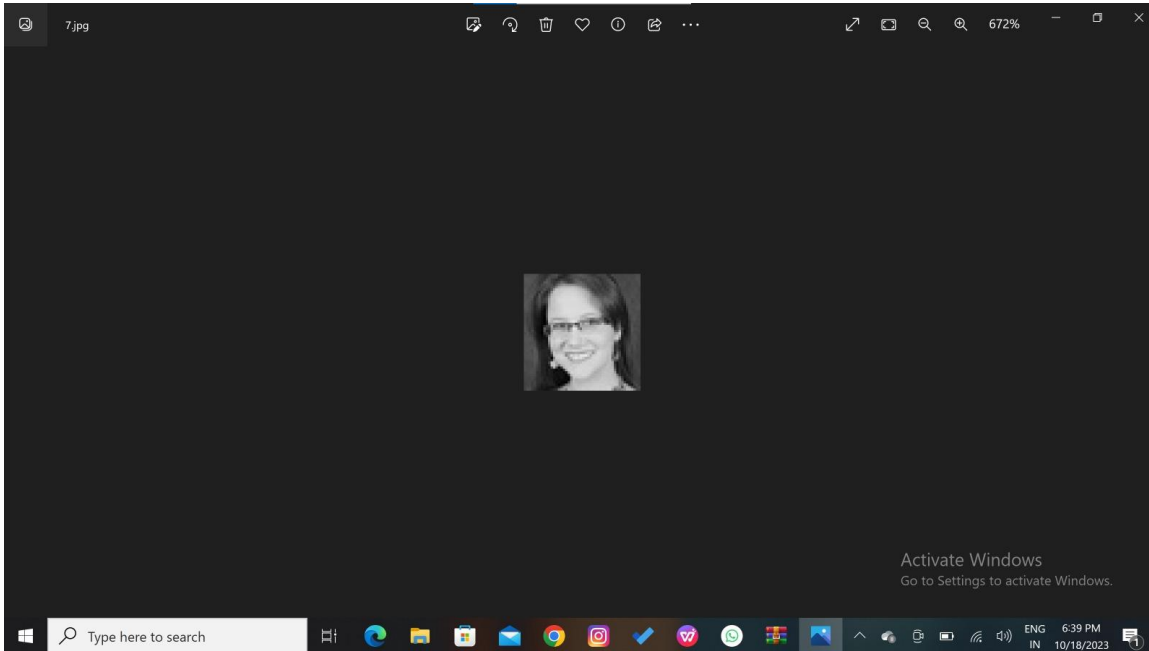
Step: 8

Image for Fear Face :



Step: 9

Image for Happy Face:



Conclusion:

The conclusion for dataset and preprocessing is that careful and thorough data preprocessing is essential to ensure the quality and reliability of any machine learning project. This involves tasks such as data cleaning, handling missing values, encoding categorical variables, scaling features, and splitting data for training and testing.