

I used the following steps, methods to solve the problem:

1. Images and CSV file Loading -

I used the python pandas library for reading the .csv file in Google Colab. I used python's GLOB library for loading the images from the folder that contains all the images.

2. Image Visualization -

For visualizing the images I used python's Matplotlib and show the images how they look

3. Feature Extraction from Images -

As we know Images are a type of Unstructured Data, for machine learning we need to data in a numerical form in a structured way. To extract the features of the images I used the Transfer Learning Technique. I used pre-trained model Resnet 50 and with the help of this model, I extract features from the images by removing the last two layers of the original model. As a result, I got a vector of size 2048 for every image.

Saved the feature in a dictionary with key image code and value feature vector and save .pkl of image encoding.

I tried different similarity metrics to get the result like (cosine similarity, manhattan distance) but due to the very small gap between the values of the similarity and distance I could not conclude anything (see the code)

After performing this task, I added the features of the column 'image1' and 'image2' and developed a new feature with the name 'image5' which is made by adding up the features of the two columns.

Then I convert the 'image5' column into a pandas series.
(see code for more explanation)

4. Model Building -

After doing the feature extraction and all I had a final dataframe of Shape (23917,2048).

Now split the data into the training and testing purpose .

Built a Simple Artificial Neural Network Model and trained it. (see the code)

5. Model Evaluation -

After training, I tested on the x_test and got accuracy by sklearn.metrics.

6. Prediction on the given Unseen Data-

Now, we are at the final stage, I predicted the label for the images given the test.csv.

Made a dataframe of the predicted values and then convert it into the .csv file.

7. Run.ipynb -

This have code that predicts for the new data.

Like if we give the path of the two images, this will predict whether two images are similar or not.

NOTE **

My Image Encoding File and .h5 file are very large. I cannot upload that to GitHub because GitHub accepts files till 25 MB.

I have uploaded those files in the drive and I have shared the link of that --

<https://drive.google.com/drive/folders/1f8ihG7X5qhLBt9aVvnQWMJ7tBT7uDCTY?usp=sharing>