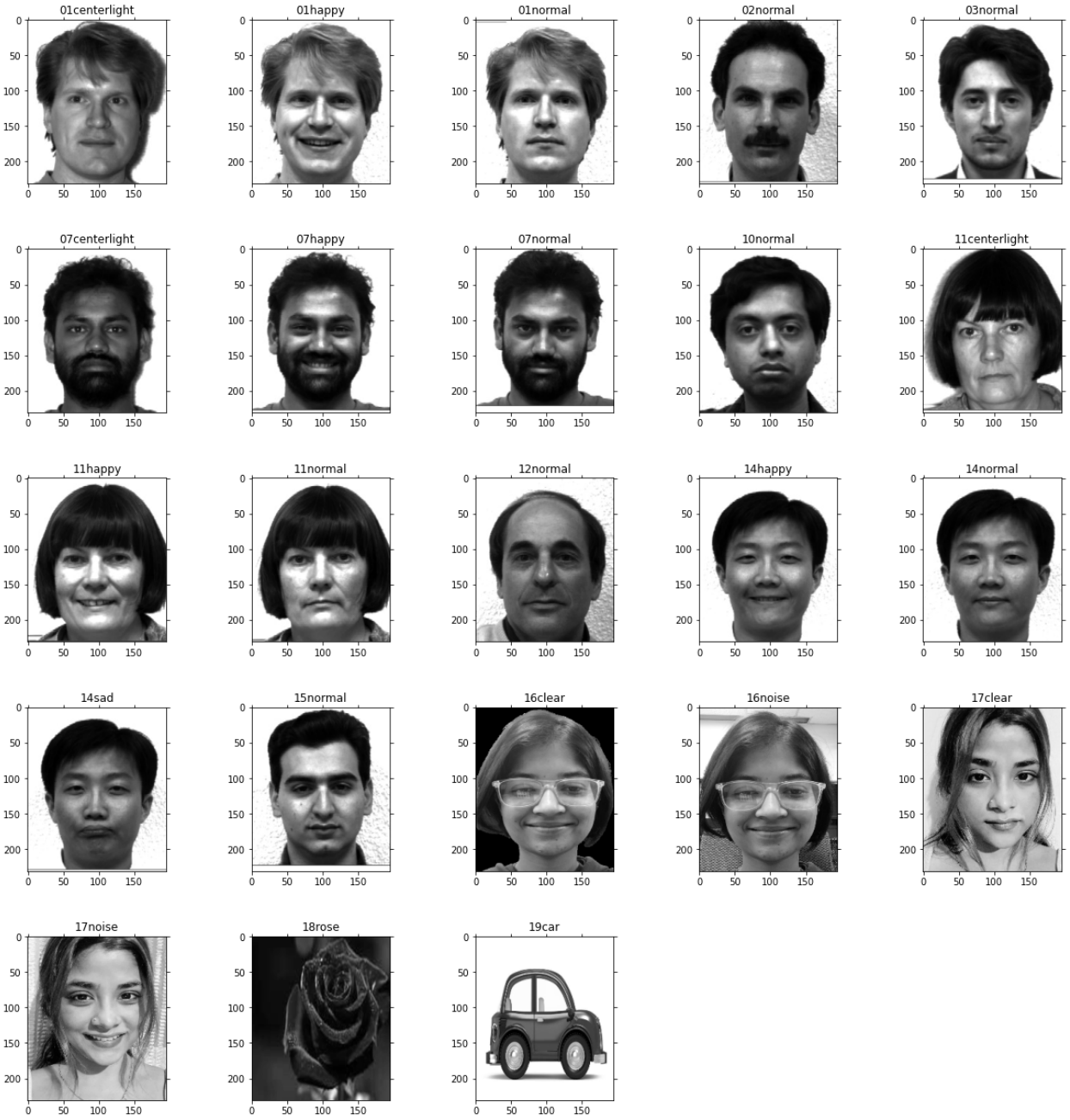
Question 1 : PCA Face Recognition

Testing Images

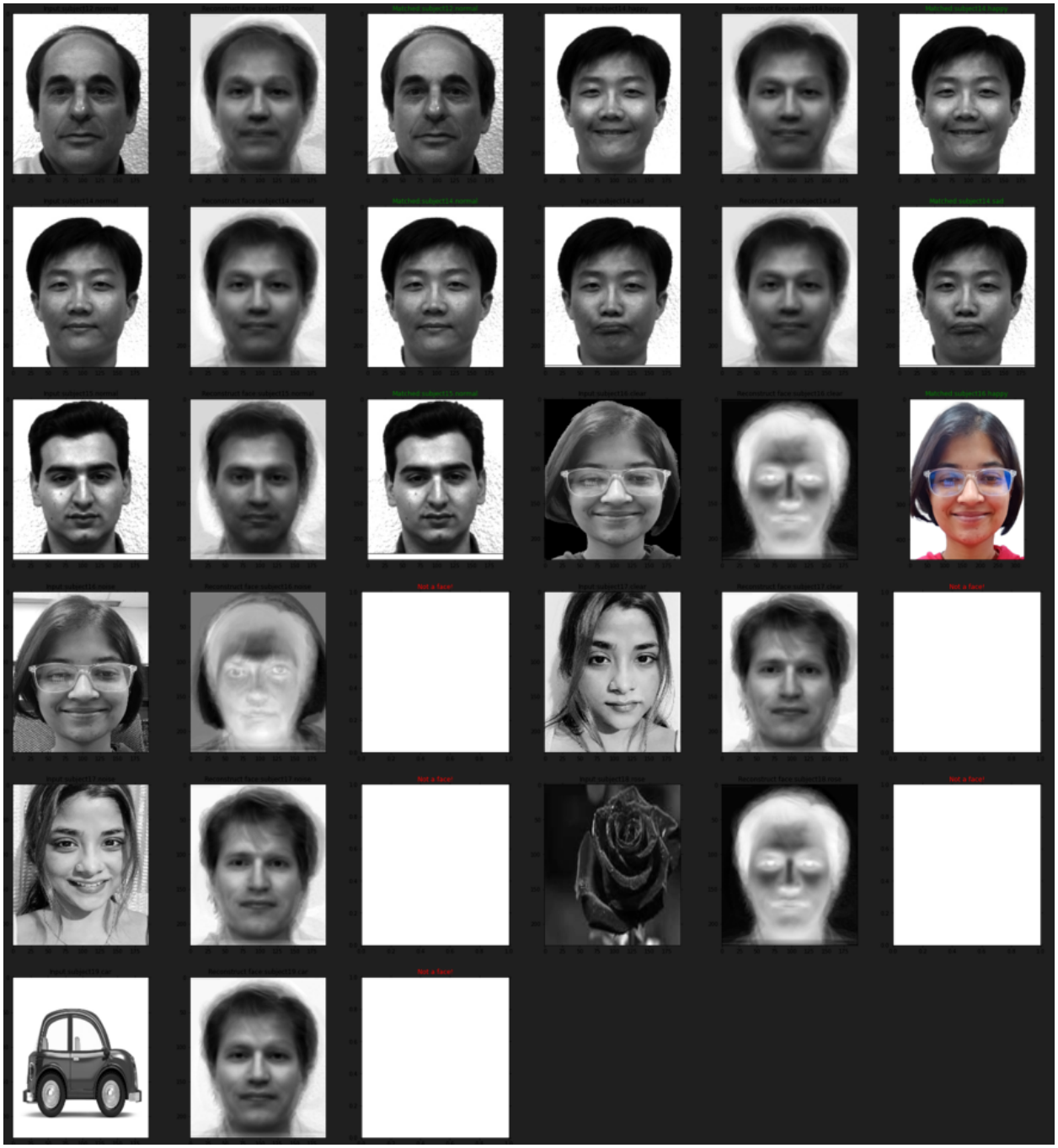


Reconstructed Images

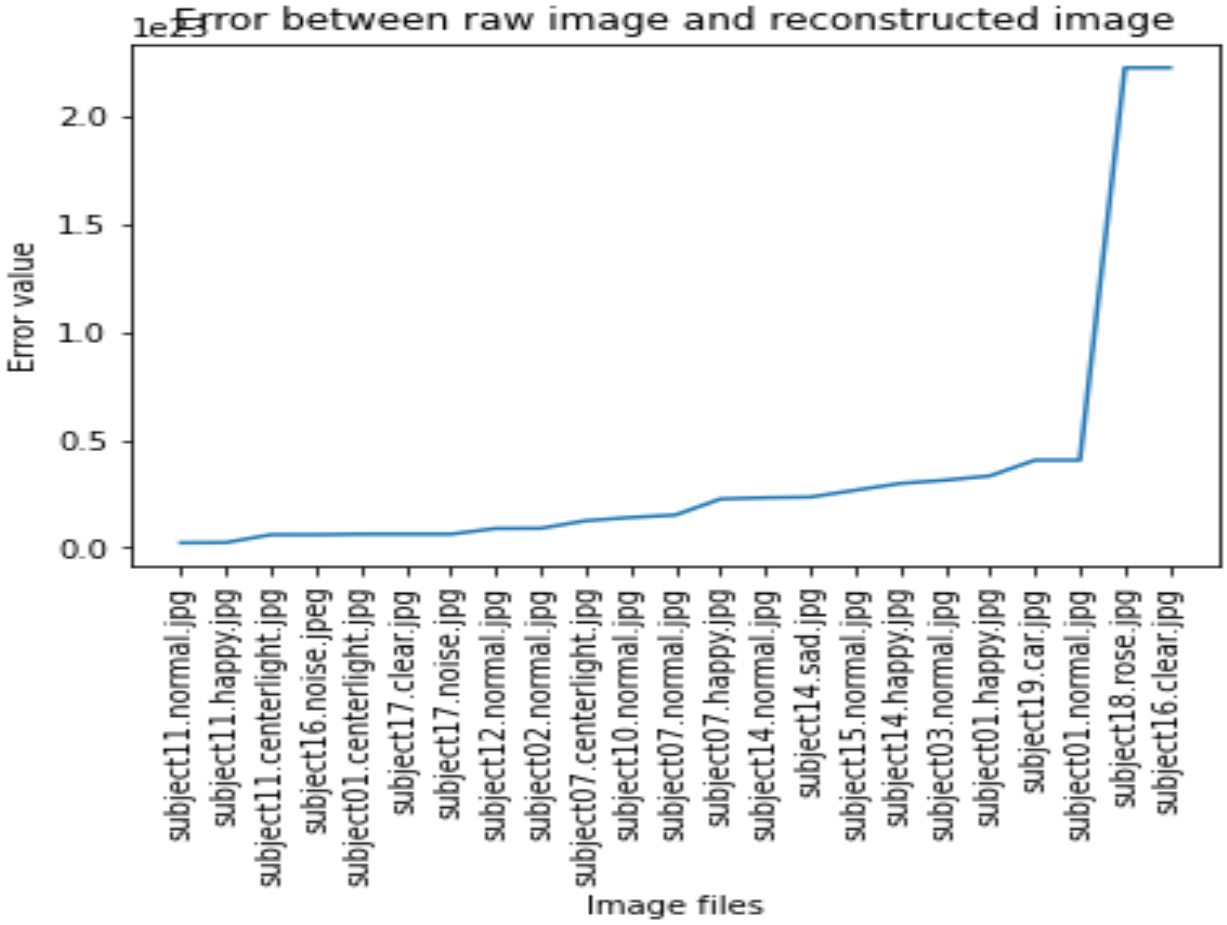
Originar image	Reconstructed Image	Matched with image	Originar image	Reconstructed Image	Matched with image

Reconstructed Images

Originar image	Reconstructed Image	Matched with image	Originar image	Reconstructed Image	Matched with image



Mean-Squared error between raw test images and reconstructed images



Order of Error

Expected Order of Error (Low to high)	Original order of error (Low to high)
subject11.normal.jpg	subject11.normal.jpg
subject11.centerlight.jpg	subject11.happy.jpg
subject11.happy.jpg	subject11.centerlight.jpg
subject01.centerlight.jpg	subject16.noise.jpeg
subject12.normal.jpg	subject01.centerlight.jpg
subject02.normal.jpg	subject17.clear.jpg
subject14.normal.jpg	subject17.noise.jpg
subject14.sad.jpg	subject12.normal.jpg
subject14.happy.jpg	subject02.normal.jpg
subject10.normal.jpg	subject07.centerlight.jpg
subject07.centerlight.jpg	subject10.normal.jpg
subject07.normal.jpg	subject07.normal.jpg
subject07.happy.jpg	subject07.happy.jpg
subject15.normal.jpg	subject14.normal.jpg
subject03.normal.jpg	subject14.sad.jpg
subject01.happy.jpg	subject15.normal.jpg

subject01.normal.jpg	subject14.happy.jpg
subject16.noise.jpeg	subject03.normal.jpg
subject16.clear.jpg	subject01.happy.jpg
subject17.clear.jpg	subject19.car.jpg
subject17.noise.jpg	subject01.normal.jpg
subject19.car.jpg	subject18.rose.jpg
subject18.rose.jpg	subject16.clear.jpg

Possible reason for images with high MSE looking more similar than images with low MSE -

MSE (Mean Squared Error) is a metric used to measure the difference between two images. In general, a lower MSE indicates that the two images are more similar, while a higher MSE indicates that they are less similar.
However, it is possible for images with a higher MSE to appear better than those with a lower MSE. This is because the MSE metric measures only the difference in pixel values between the two images, without taking into account the perceptual quality of the images.
For example, an image with a lot of noise or compression artifacts may have a low MSE but appear distorted or blurry to the human eye. On the other hand, an image with a high MSE may appear better if it has fewer artifacts and looks more natural.
Therefore, it is important to use MSE as only one of many metrics to evaluate the quality of reconstructed images. Other factors, such as visual quality, sharpness, and overall fidelity, should also be taken into account.