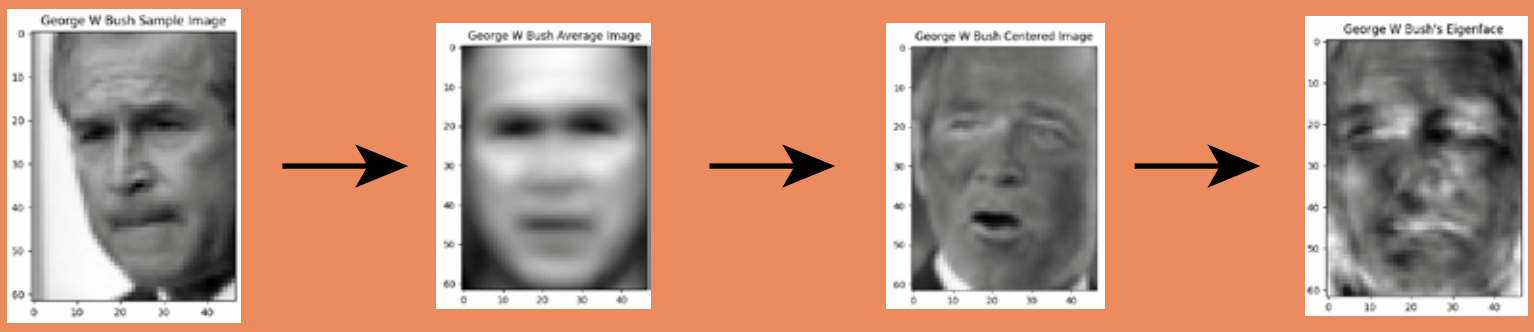
Eigenface-Based Facial Recognition with Principal Component Analysis Dimensionality Reduction



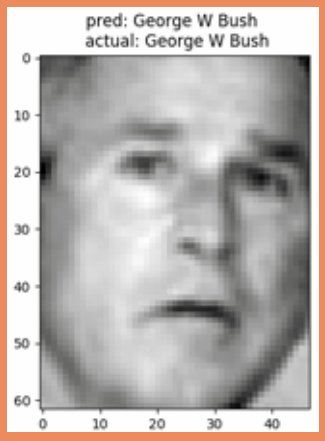
Averaging Faces | Centering Faces | Eigenface

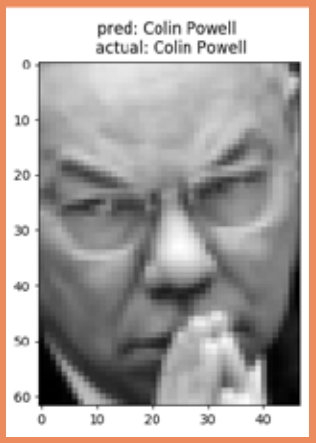
Procedure

- Calculate the average face, A
- Mean center every training imageby subtracting the average face from it
- Calculate the covariance matrix, C, by multiplying the mean centered image matrix, M, by its transpose
- To calculate less eigenvectors and eigenvalues, find the eigenvectors of transpose of M and M
- Multiply the found eigenvectors by M to find a subset of the eigenvectors of C, which describe the face
- Calculate a set of weights for each image class using these eigenvectors
- Classify other face images by comparing their sets of weights to the weights of known faces classes

Results

Peak Training Accuracy: 80%
Peak Test Accuracy: 76%





Scan the QR codes above to see the code and this article, or go tohttps://github.com/NikhilSuresh24/P-CA-Facial-Recognition