Selfies' principal components

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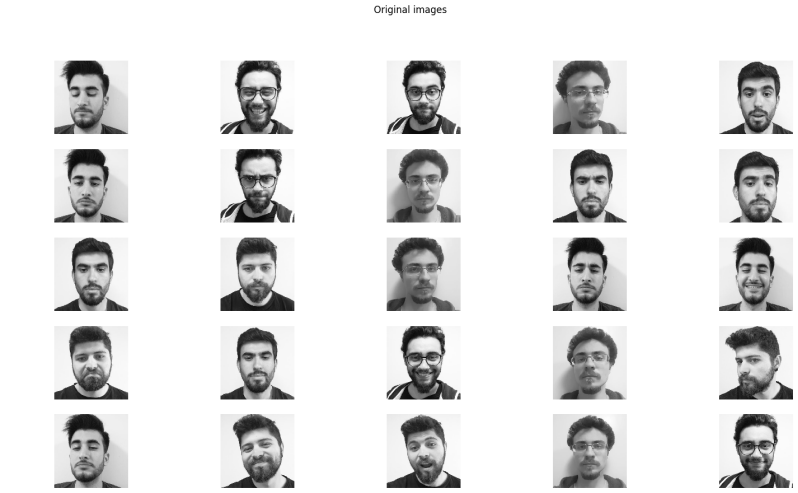
1 Setup

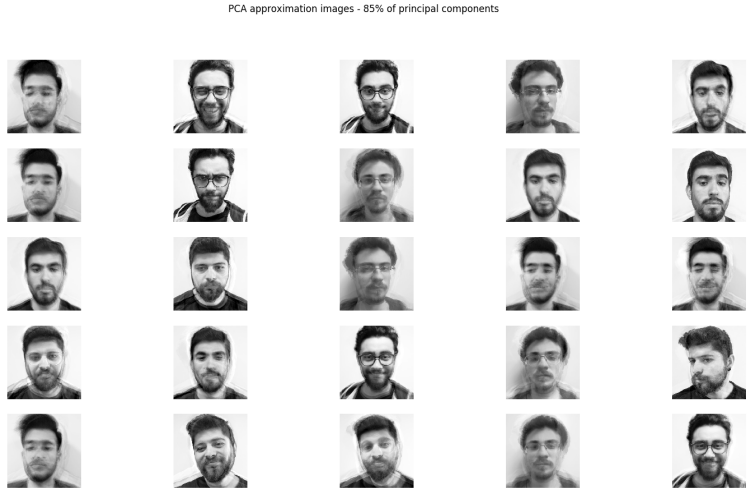
After obtaining images, for minimizing the dependency of background color, faces on images are cropped. In this process, a program called "autocrop" is used. It can be found on
https://github.com/leblancfg/autocrop
Then, all RGB images are converted to grayscale in togray.py
Therefore, images become ready for the principal component analysis.

2 Results

2.1 Reconstruction of images

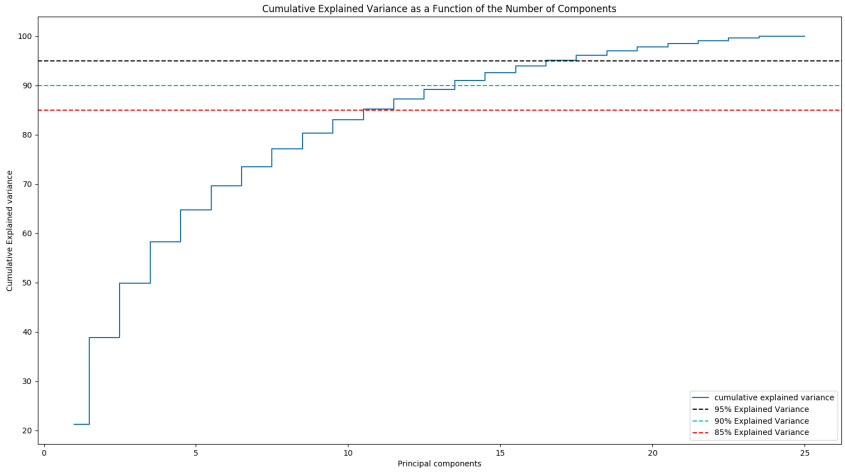
Only 85% of principal components are used. Then, approximate images are constructed using this principal components. Results are shown below.



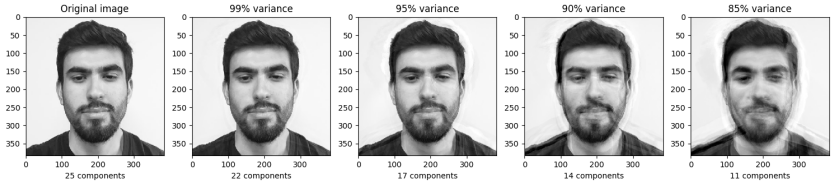


2.2 Cumulative Variance

Graph below shows that as number of principal components increases, cumulative variance goes to zero.



2.3 Affect of principal components



As number of components increases, approximated image resembles more to original image.

2.4 Mean face

Mean face is the mean of the eigenvectors of the covariance matrix.