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| Name: | Edward Eisenberger |
| ID# | 1066164 |
| Assignment 8 | |
| Due Date | March 18, 2019 |
| Date of Submission | March 17, 2019 |

# Overview

Assignment 8 consisted of implementing Principal Component Analysis (PCA) and testing the implementation on the ATT Dataset. The PCA algorithm was trained with 200 images of 40 different people. The application allows the user to select the number of Eigen faces (e.g. 20, 30, 40, 50) to initialize the PCA algorithm with, then test it on any image.

# Output

The PCA algorithm was tested on the same image with Eigen faces varying from 10 to 50. It was apparent that as the number of Eigen Faces increased, the Euclidean Distance decreased, indicating a higher degree of accuracy. The following table lists the Eigen Face count with the corresponding Euclidean Distance calculated for a single image match:

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| **Eigen Faces** | **Euclidean Distance** |
| 10 | 1445048.31111959 |
| 30 | 744326.426199747 |
| 40 | 506408.109615126 |
| 50 | 306632.091584855 |

The following images are example outputs of the application.









