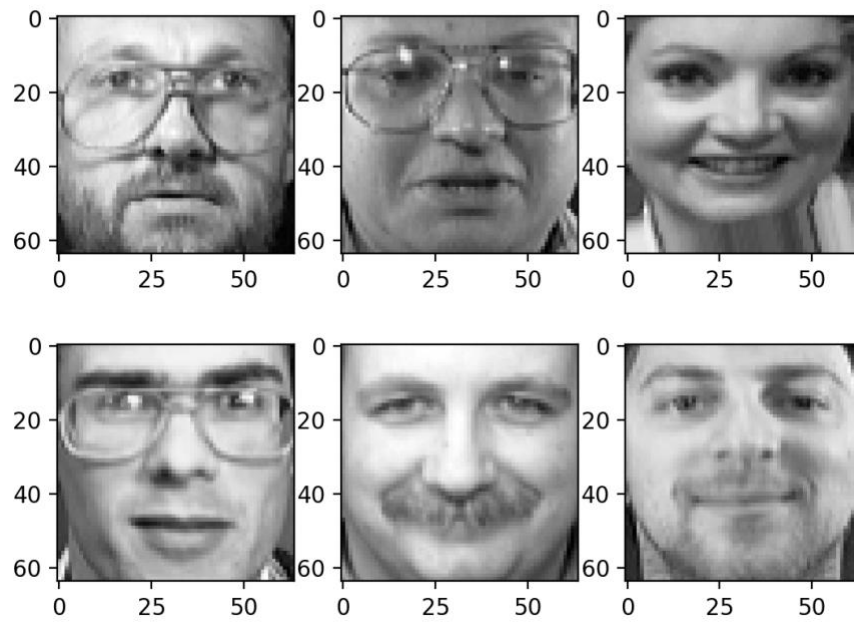## 6 sample faces

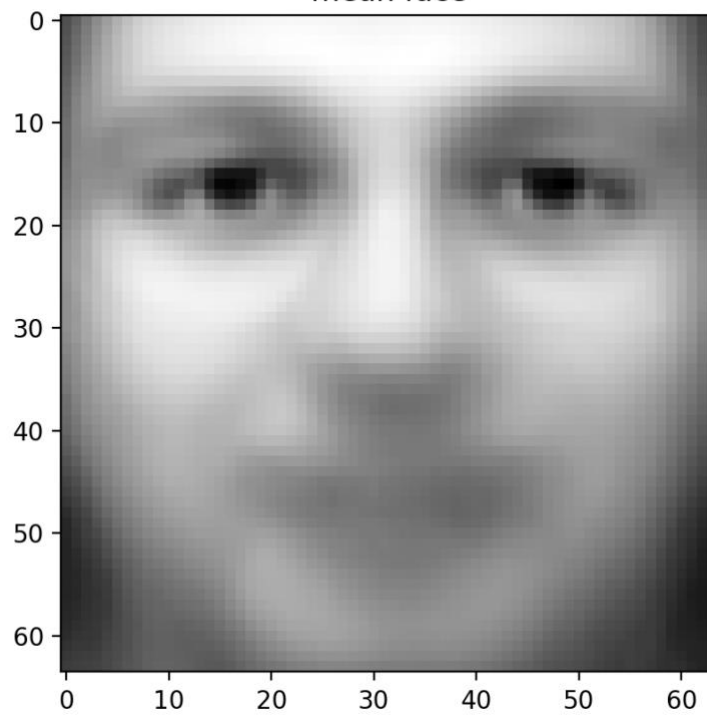Figure 1: First 6 sample faces

mean face

Figure 2: Mean face

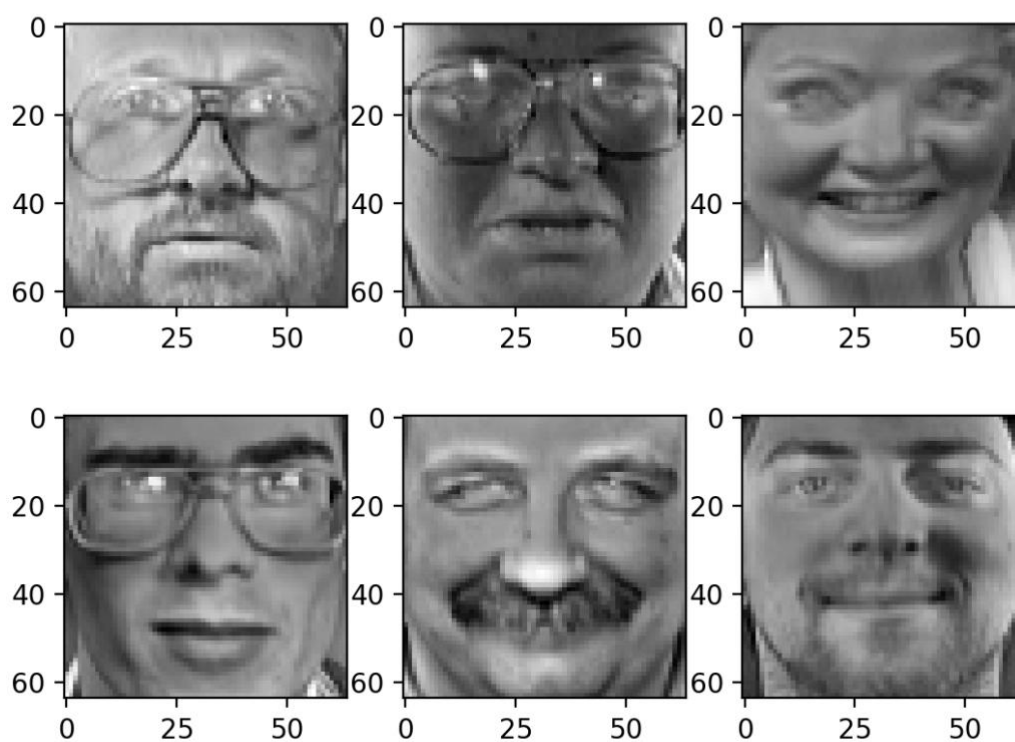## 6 sample faces centralized

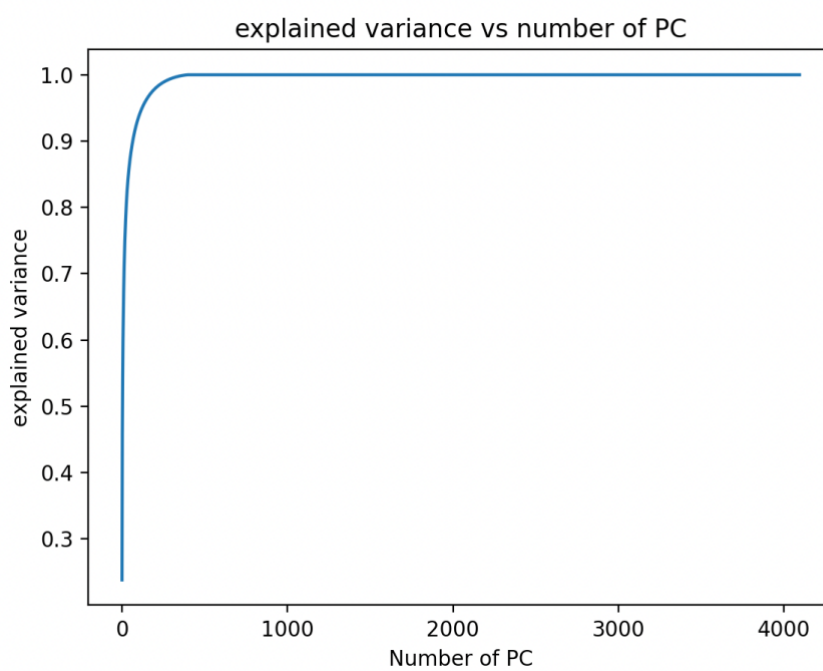

Figure 3: The centralized first 6 sample faces

Figure 4: Explained variance vs. # of PC

```
Total variance:  0.1982909435894626
The required number of PCs to preserve at least 90% of
variation in the data is  65
```
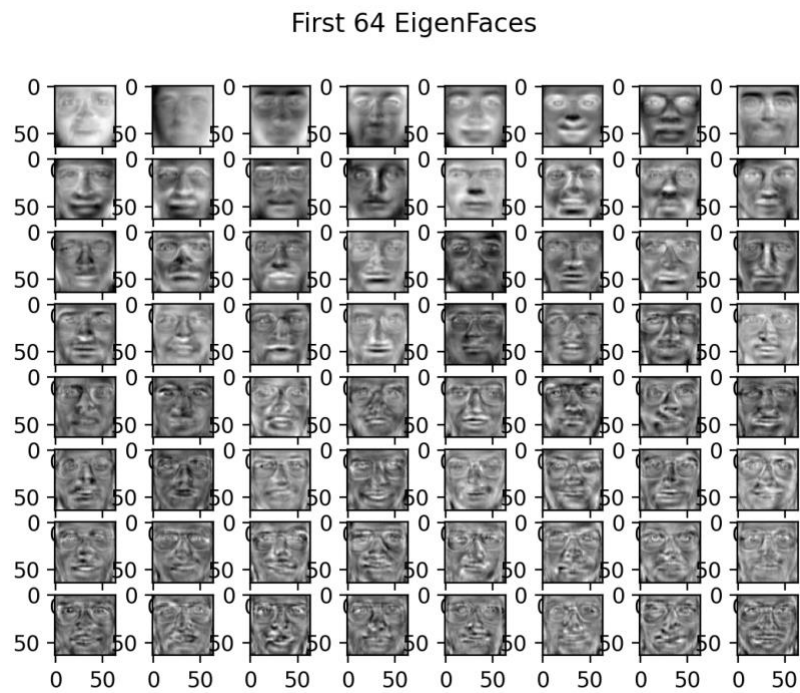
First 64 EigenFaces

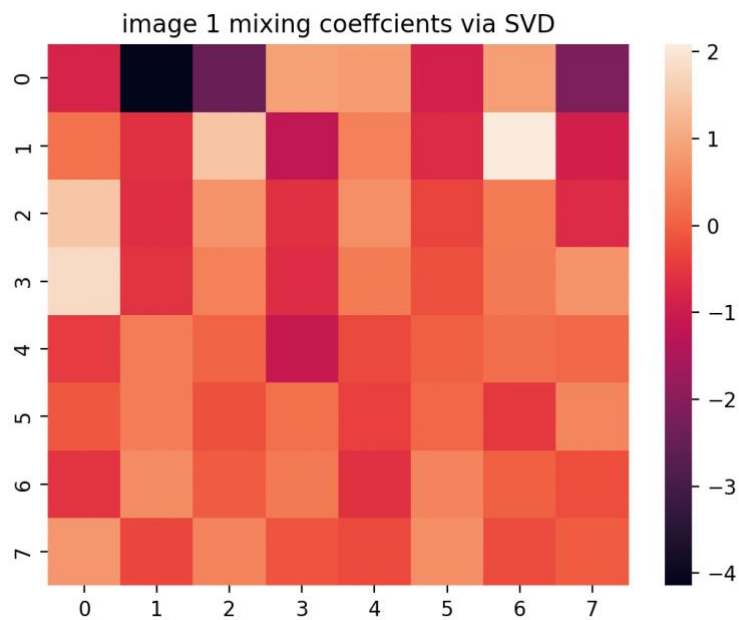Figure 5: 64 eigenfaces of the largest 64 eigenvalues.

Figure 6: Mixing coefficients of sample image 1 heatmap
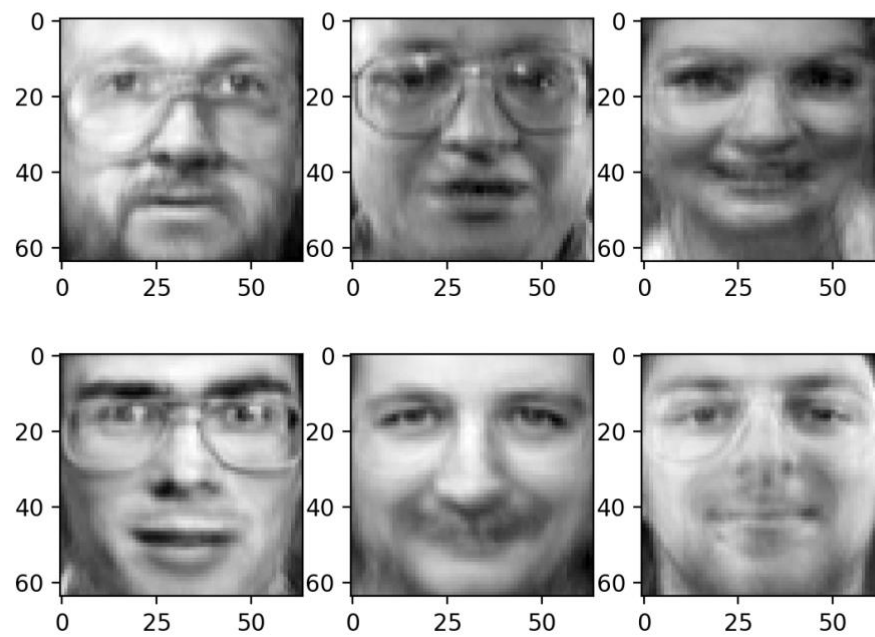
Reconstructed images SVD

Figure 7: Reconstructed images via SVD
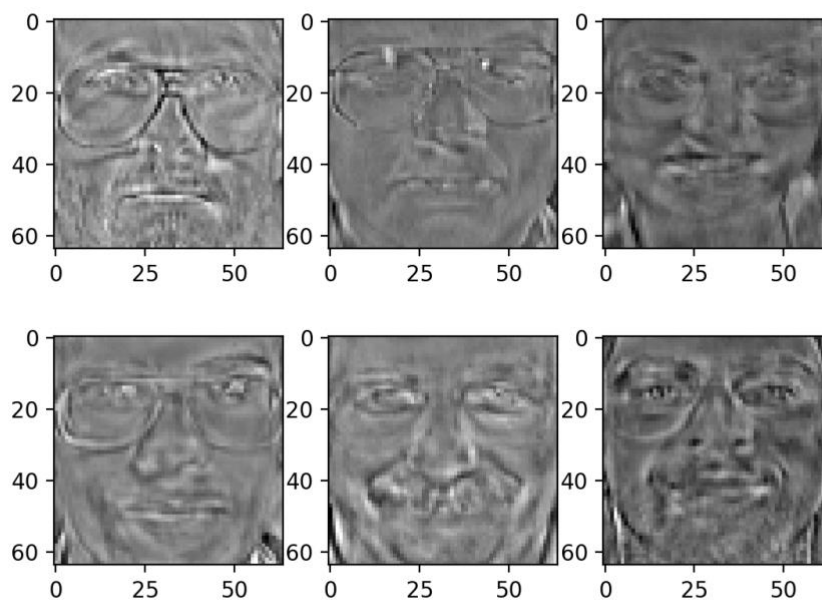
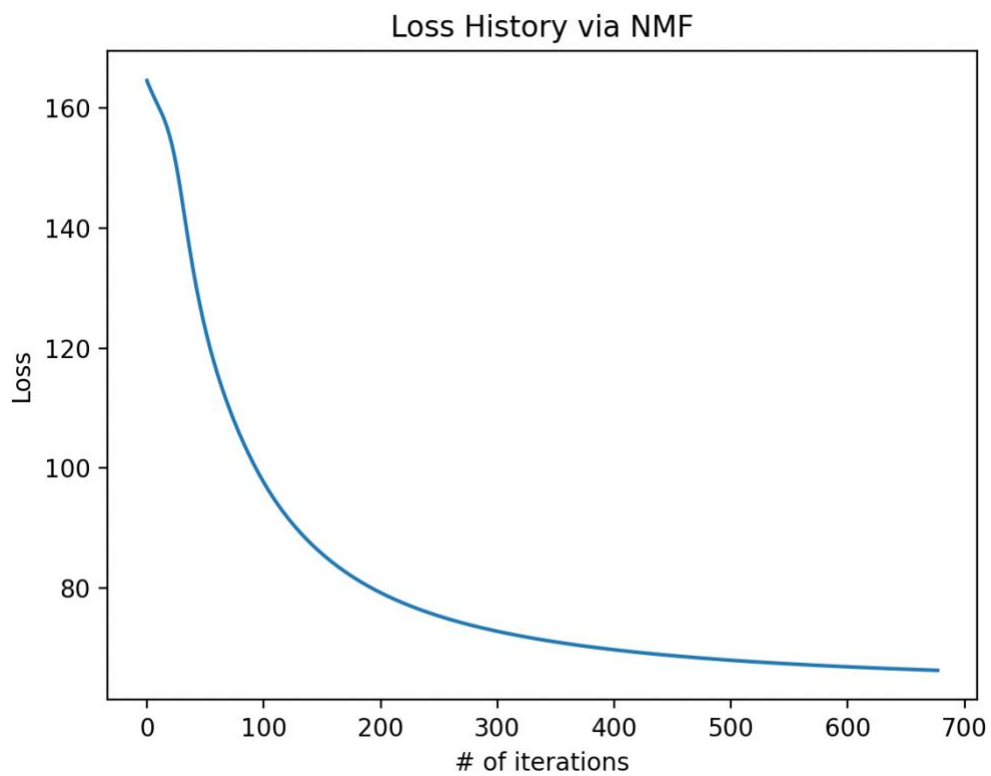## Error images via SVD

Figure 8: Error images via SVD

Figure 9: Loss history via NMF
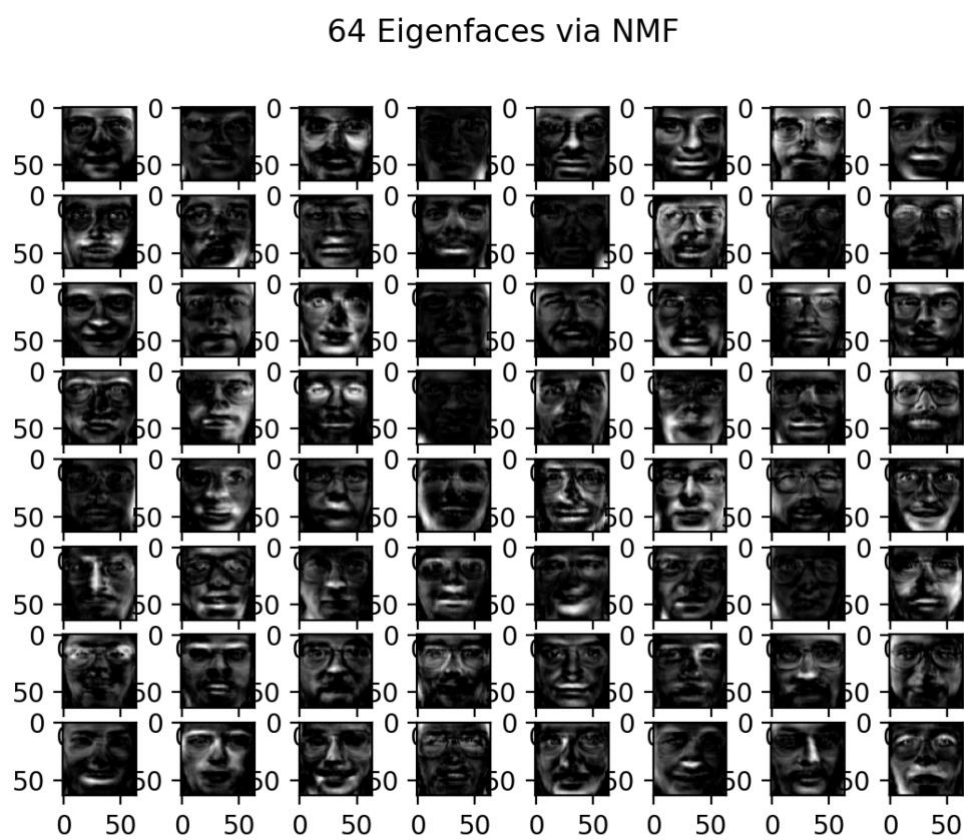
64 Eigenfaces via NMF

Figure 10: Eigenfaces via NMF
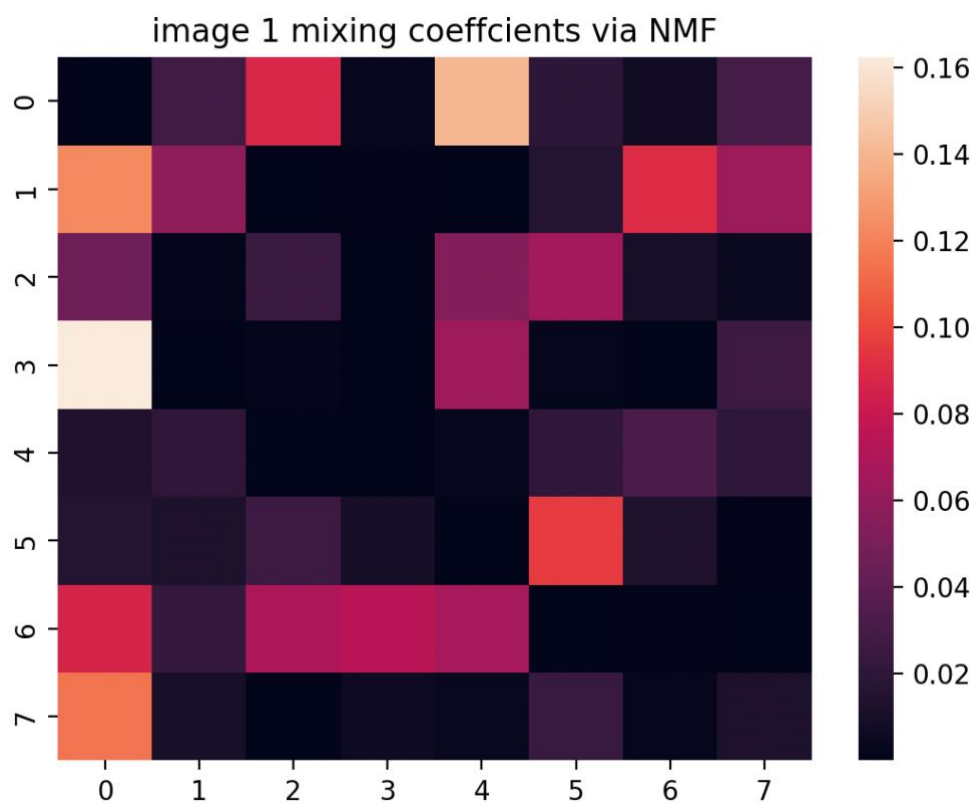
Figure 11: Mixing coefficients of sample image 1 heatmap via NMF

Reconstructed images via NMF

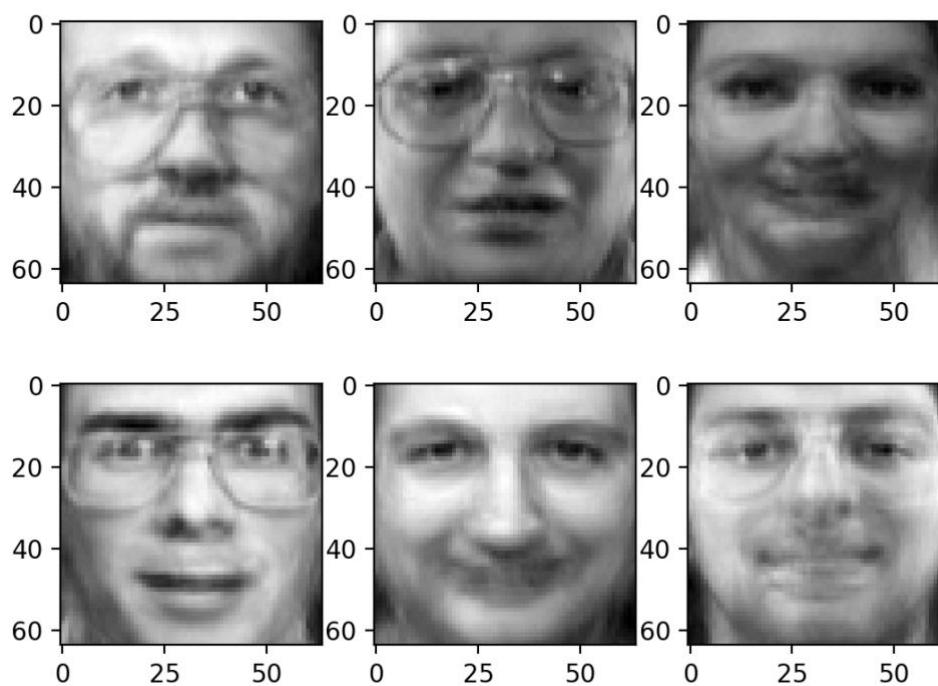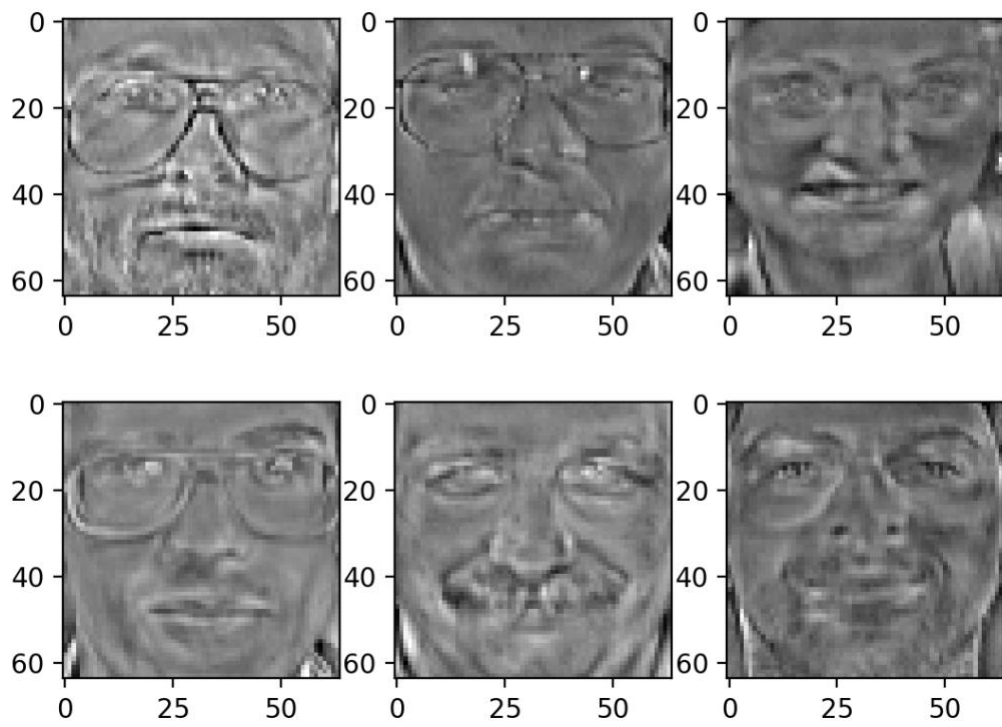Figure 12: Reconstructed images via NMF

Figure 13: Error images via NMF