The toolbox’s intrinsic dimensionality returns 6 for PCA. (eigen values)

But 6 dim reconstruction doesn’t preserve human recognizable information for face identity.

\*\* LDA: just reduce to 1 dim, doesn’t make sense.

\*\* LPP: has a bug

LPP: locality preserving projections

It’s an alternative to PCA,

They are obtained by finding the optimal linear approximations to th eeigenfunctions of the Laplace Beltrami operator on the manifold.

It shares many properties of Laplacian Eigenmaps or Locally Linear Embedding

\*\* Next, NPE

The dataset is too small?

\*\* LLTSA

Doesn’t work

\*\* SPCA: the same as PCA, skip

\*\* PPCA: Probabilistic PCA

It doesn’t contain any hetergenous information. reconstructX is very small compared with the original signal.

\*\* 'FA', 'NCA', 'MCML', 'LMNN', 'Autoencoder'

\*\* Factor Analysis.

* With ‘FA’, when we first reduce dimensions into 20, and it reconstructed face are either black contour or white contours.
* We then tried to reduce dims into 500, see if it preserves more meaningful structure.
* It contains the low frequency information in the images. It’s saved in FAafterPCA\_reconstruction

We next try to do FA directly without PCA.

We use a low resolution dataset with 5000 faces with 32\*32 resolution.

We set the reduced dim into 800 to see the results.

\*\* NCA. Neiborhood component analysis.

Lambda: default is 0, change it later.

Directly throw it into NCA, without doing PCA first. Doesn’t give a good reconstruction

\*\* AutoEncoder: out of memory