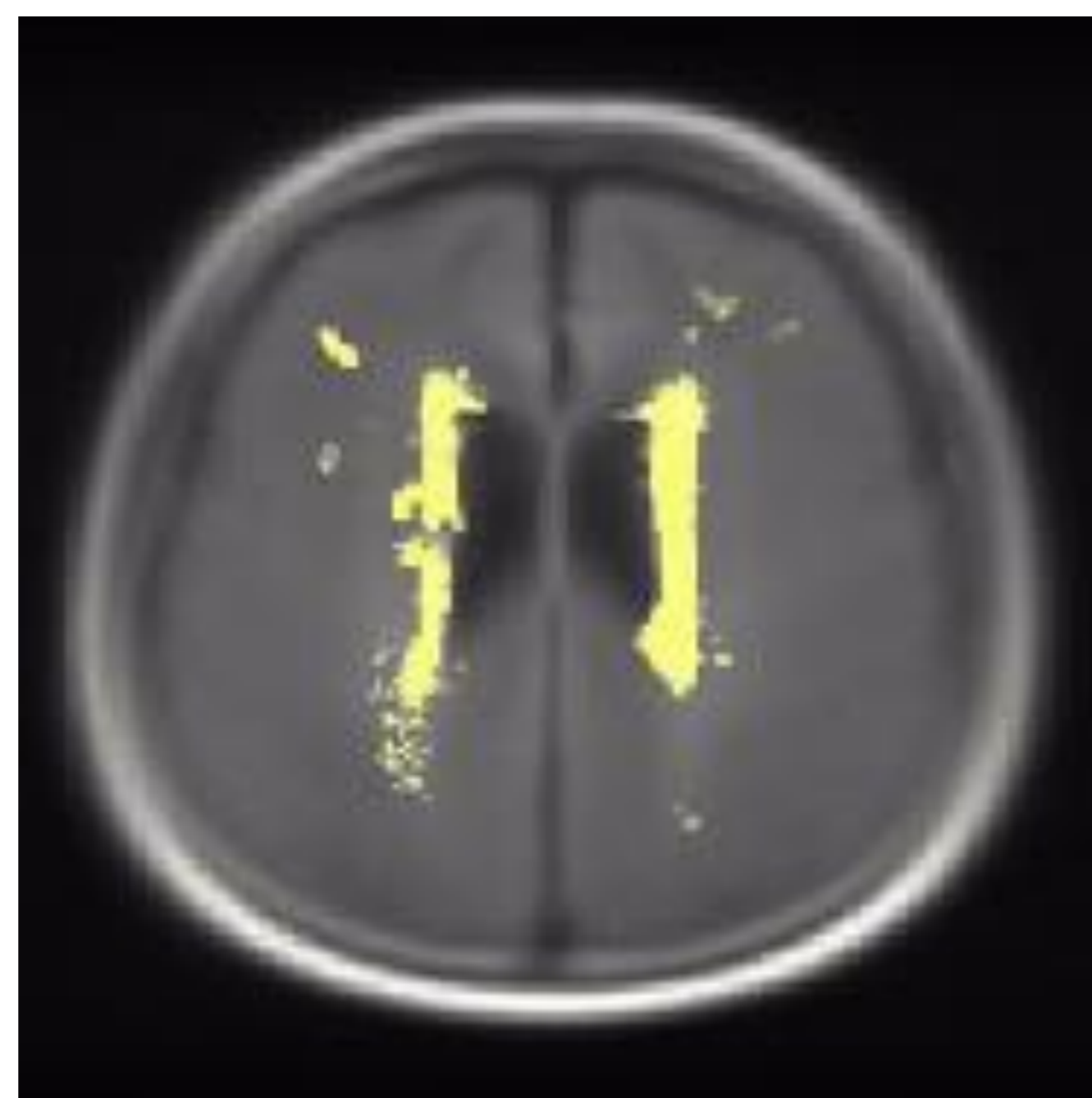


Background

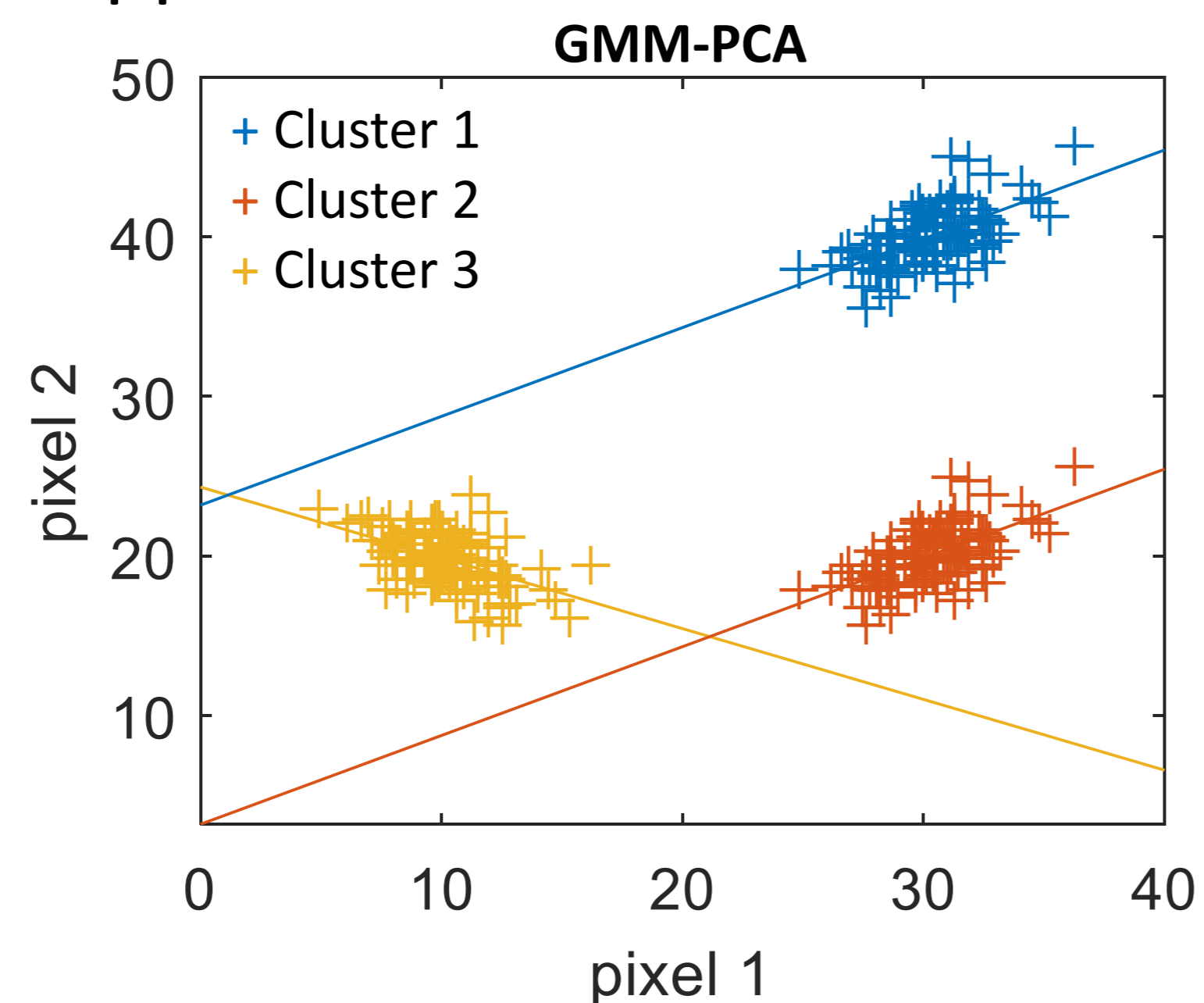
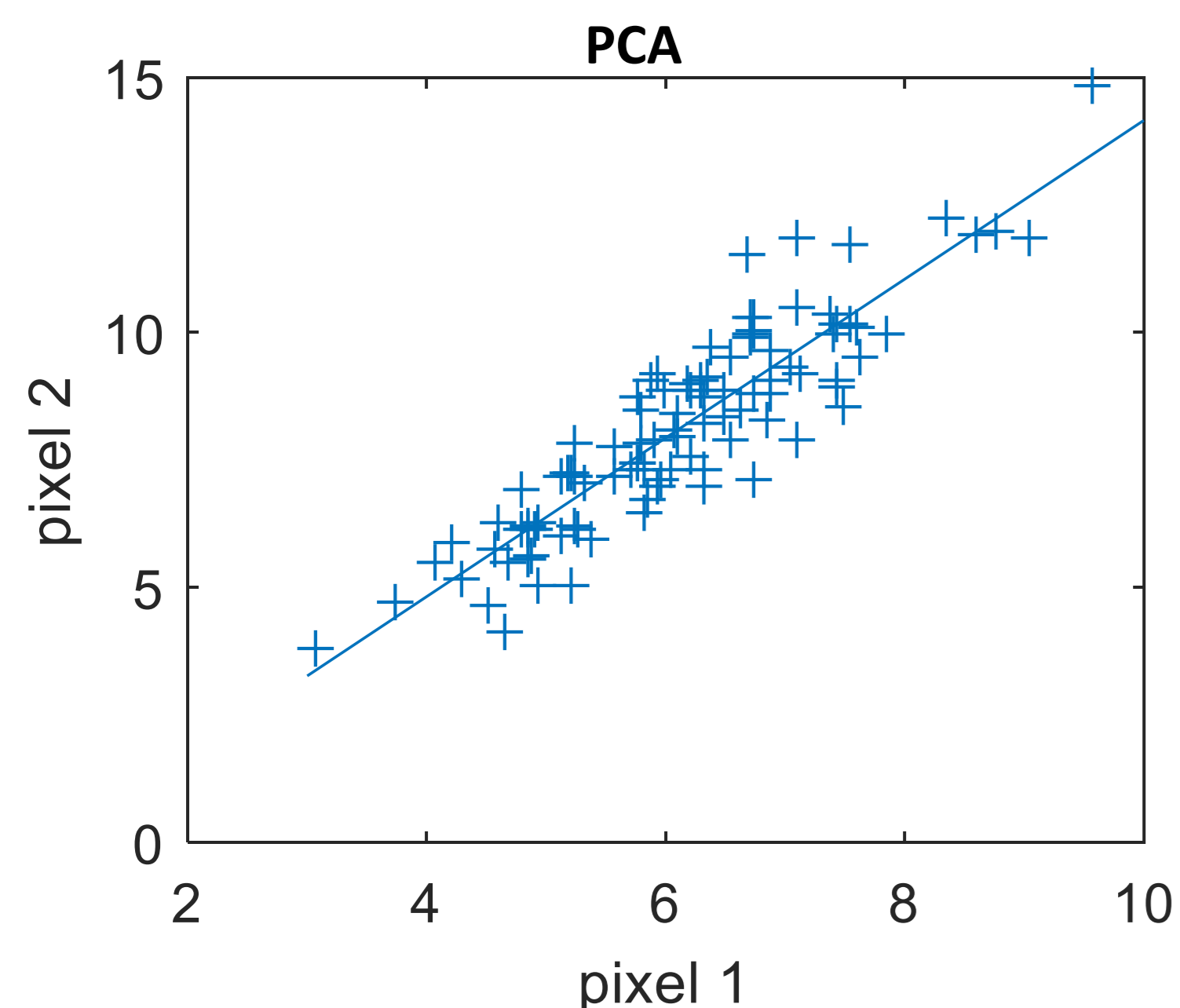
Motivation: Characterizing leukoaraiosis (small vessel brain disease) is important in understanding stroke

Goal: Mathematically represent leukoaraiosis formation as seen in 3D clinical brain images and correlate it with stroke outcome



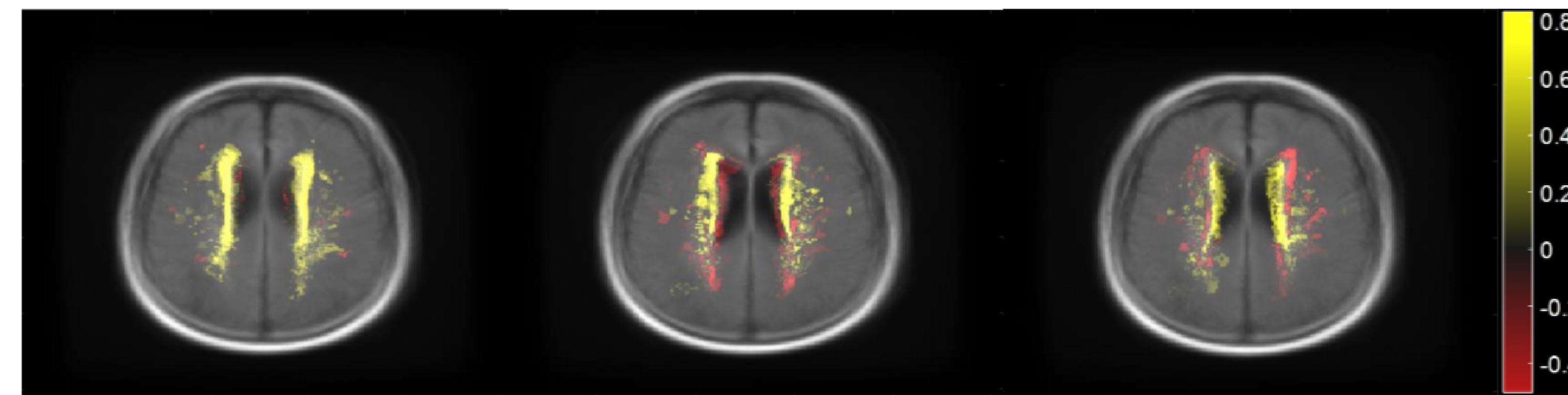
Method

- PCA computes lower dimensional space for data
- GMM-PCA first clusters the data, then applies PCA on each cluster

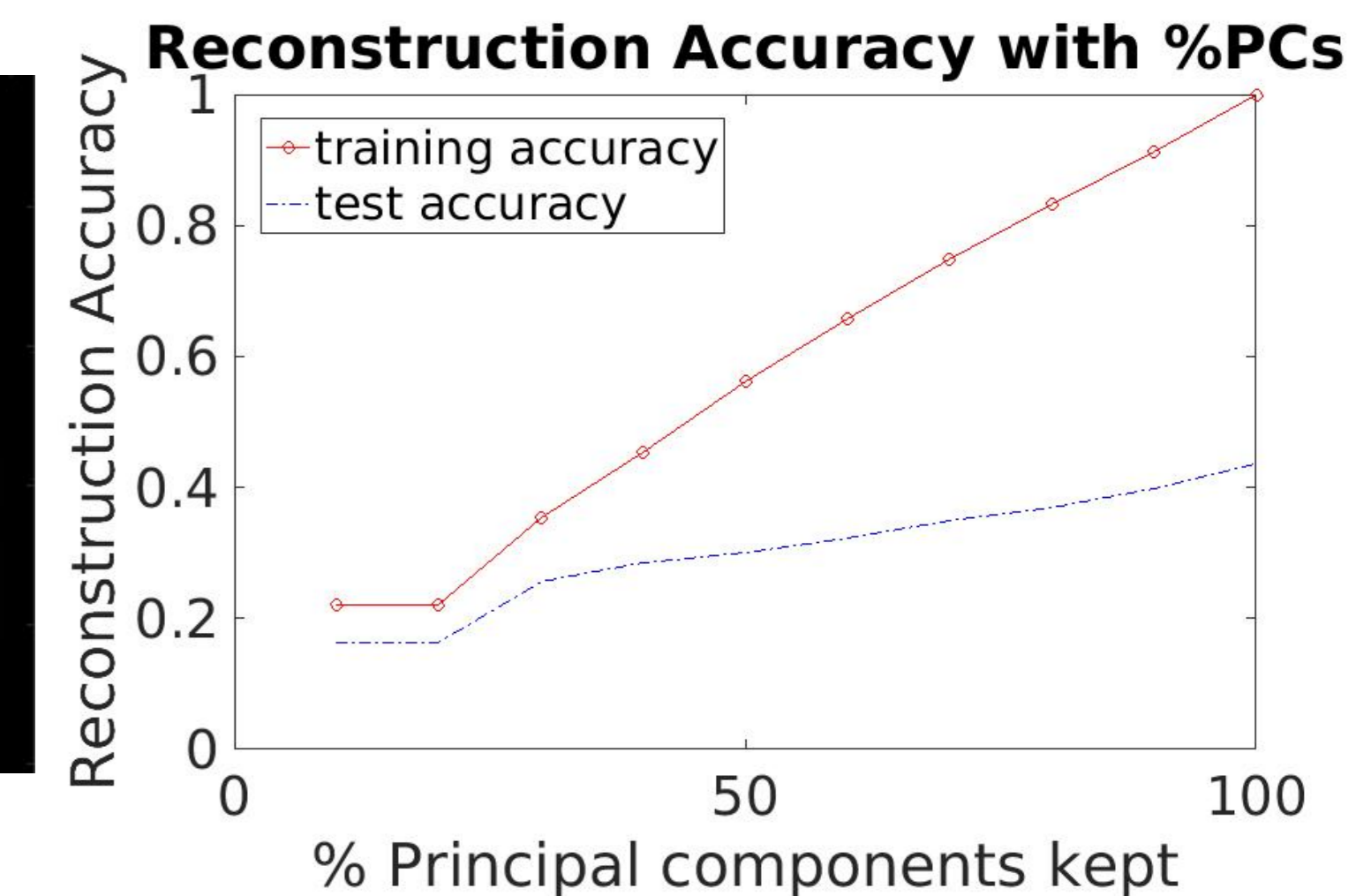
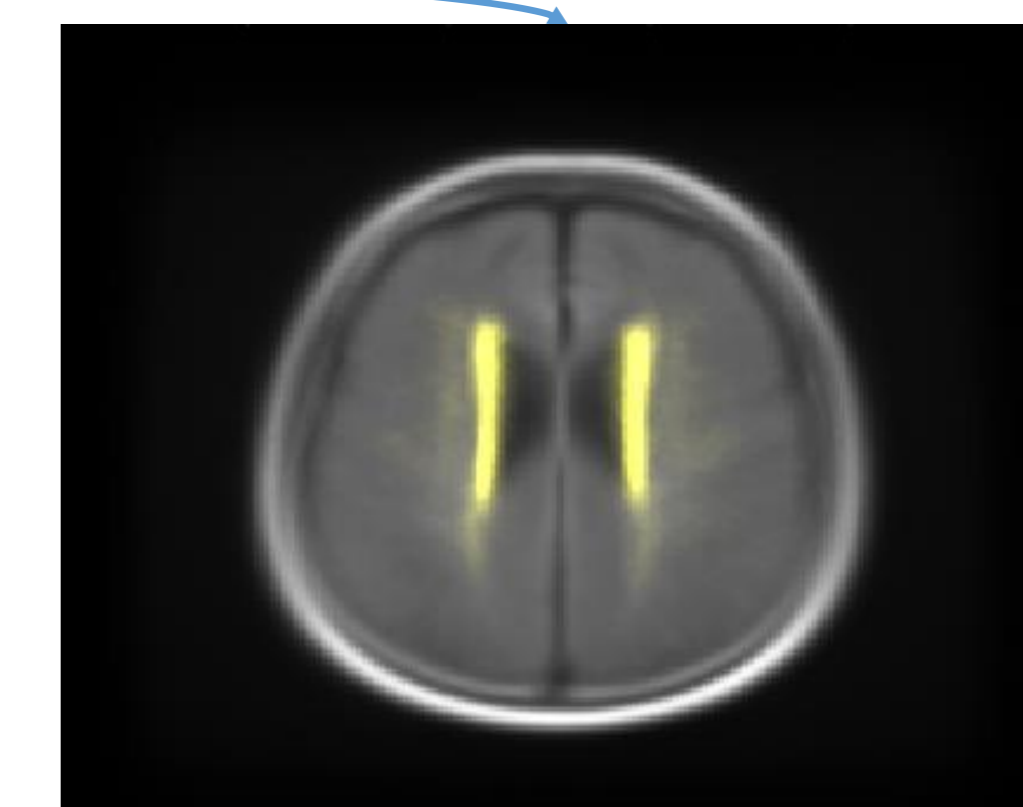
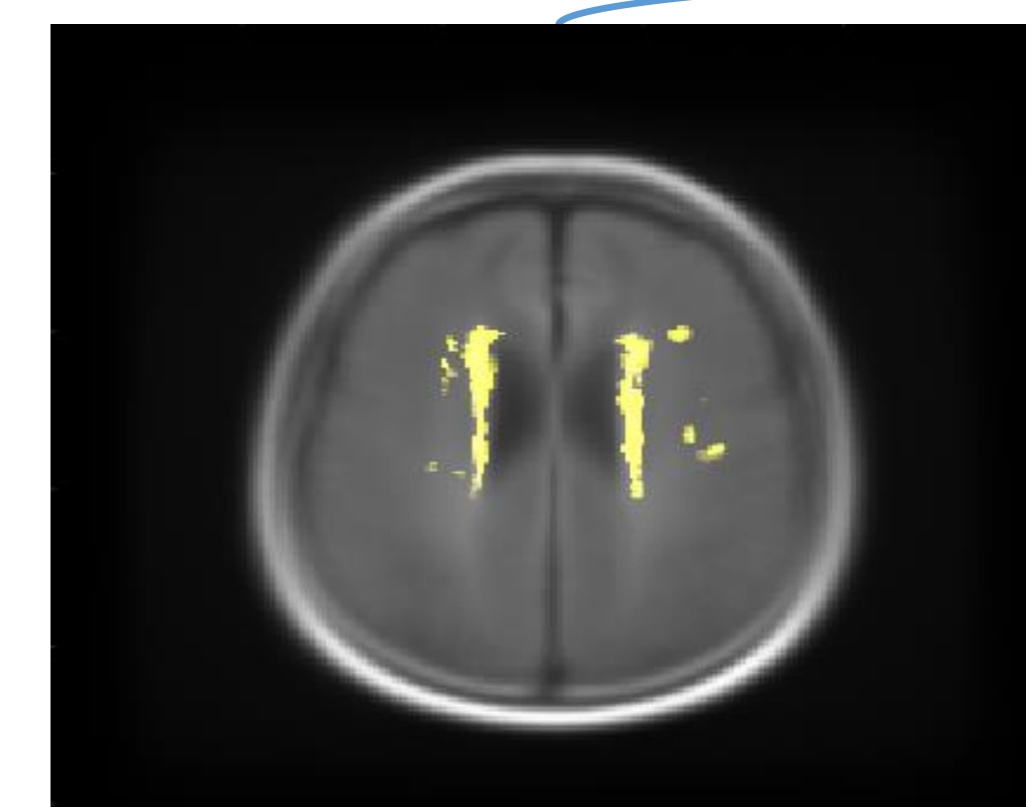


Results

- Top 3 principal components for PCA:



Only 30% of principal components kept!



- Compared to single PCA, GMM-PCA captures more complex data!

Future work

- Finish GMM-PCA framework
- Implement Latent Topic Models with Dirichlet distribution
- Modify Latent Topic Models for binary distribution