Week 4
## Progress during 20-26th July

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Contents

Progress in this week

1. Tried manifold learning for hidden layer clustering
2. Tried Hypercolumns with kmeans for segmentation
3. Applied to SDSS field datas (large scale)
4. Tried different VAE structures and hyperparameters for better performance
5. Tried different normalization method
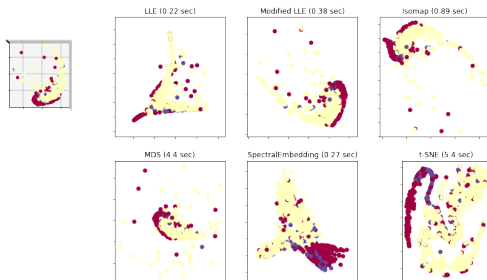6. Promising direction: hidden layer explaination

Manifold learning for hidden layer clustering

Manifold learning use geometric distance instead of Euclidian distance in clustering
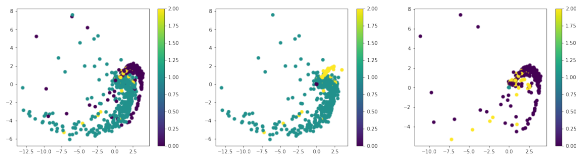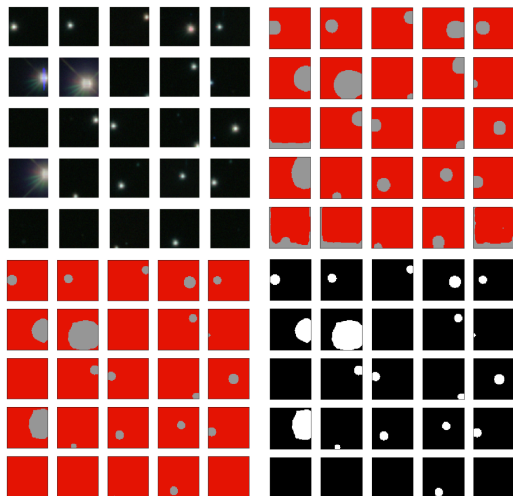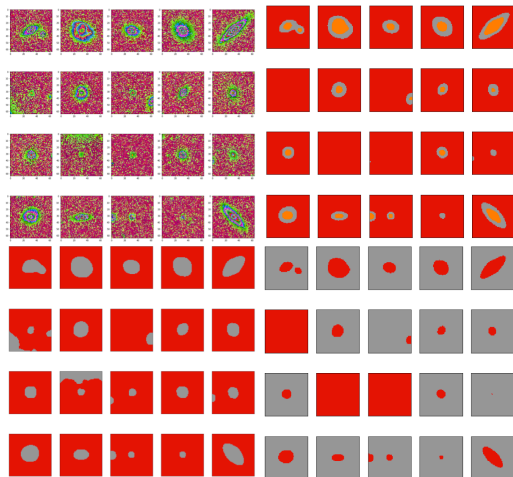
Hypercolumns with kmeans for segmentation

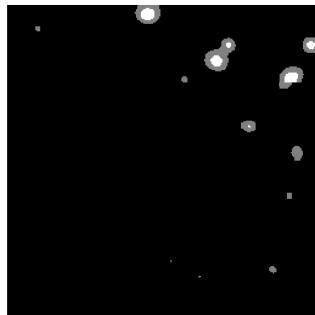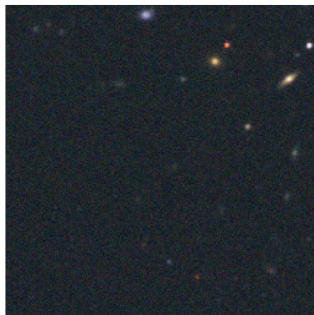Then I use Hypercolumns to perform segmentation: (SDSS field data, cut to 64*64 RGB)

Hypercolumns with kmeans for segmentation

SDSS 64*64 RGB image (color: different normalization method)

Applied to SDSS field datas (large scale)

Apply the method above to the original field image (256*256 RGB image), kmeans with 3 kernels:

Todos

1. Find knowledge from hidden layer(size, luminosity, gravity?) Figures below show the hidden variables when using the same VAE structure with different normalization methods.
2. Try different normalization method
3. Hyperparameter adjustment
4. Use other clustering methods instead of K-means
5. Artificial convolution kernels