MRI Cardiac Segmentation for the Left Ventricle

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Week 4
Progress

- Read papers on feature extraction using Stacked Autoencoders and greedy layer-wise training
- Extracted more patches from some patients
- Switched from Keras to Tensorflow to create my own Stacked Autoencoder model
- Trained the new neural network
First Autoencoder model
Second Autoencoder model

- Removed the decoding layers of the Autoencoders
- Rather than using 3 hidden layers for features, use 2 (saves time in training)
- Train each layer separately using a separate 1-hidden-layer Autoencoder for each hidden layer
  - 1\(^{st}\) Autoencoder learns to reconstruct the input patch
  - 2\(^{nd}\) Autoencoder learns to reconstruct the feature output from the 1\(^{st}\) Autoencoder's hidden layer
Greedy layer-wise training - Autoencoder
Greedy layer-wise training - Autoencoder
Plan for next week

- Continue to train Autoencoder and play around with parameters to try to get better results
- Extract labeled features from Autoencoder and use them to train Mondrian Forest
References

- http://deeplearning4j.org/img/deep_autoencoder.png