CS-4850 Machine Learning – Final Exam Review Study Guide

Final objectives since midterm:

- Machine learning concepts
  - Machine learning as a transformation function
  - Loss functions
  - Optimizing a cost function
  - Gradient descent optimization
- Regularization and overfitting
  - Bias-variance tradeoff
  - Methods for regularization
  - Overfitting, underfitting, generalization
  - Residuals and irreducible error
- Neural Networks and Deep Learning
  - Machine learning as a series of transformations
  - Representation learning
  - Forward-propagation and Backpropagation
  - Hyperparameters versus learned parameters
  - Activation functions
  - Regularization, dropout
  - Multi-layer perceptrons
    - Fully connected "dense networks"
  - Convolutional neural networks
    - Feature maps, convolution filters, striders, padding
    - Pooling
  - Recurrent neural networks
    - Vanishing gradient
    - LSTM