Handwritten digit recognition – Supervised Learning (Classification)

1. Data set : MMIST (http://yann.lecun.com/exdb/mnist/)
2. Image processing : Convolution Neural Network (CNN)
   - CONV, POOL, FC ?
   - Grayscale or RGB image classification ?
   - Activation function : ReLU
   - Link learn : CNN (Andrew Ng) https://www.youtube.com/watch?v=ArPaAX_PhIs&list=PLkDaE6sCZn6Gl29AoE31iwdVwSG-KnDzF
3. Training phase: Neural Network (NN)
   - What is NN ?
     - Perceptron
     - Multi-layer Perceptrons
       - Back-propagation
   - Cost function : Gradient Descent
   - Activation function: Sigmoid, Softmax
   - How NN learn ?
     - Input ? Output ?
     - Analyze network:
       - Particular network performs ?
       - Number of hidden-layers ? Number of neurons of each hidden-layer?
       - What hidden-layers of neurons end up actually looking for ?
     - What is back-propagation really doing?
   - Link learn :
     - Neural Network (general with example is Handwritten digit recognition – view E1,E2,E3): https://www.youtube.com/watch?v=aircAruvnKk&list=PLZHQObOWTQDNU6R1_67000Dx_ZCJB-3pi
     - Neural Network (book): Neural Networks and Learning Machines (3rd Edition),Simon O. Haykin (http://dai.fmph.uniba.sk/courses/NN/haykin.neural-networks.3ed.2009.pdf)
     - Neural Network (video): Machine Learning (Andrwe Ng) – Lecture 8,9 (https://www.youtube.com/watch?v=1ZhtwInuOD0&list=PLLssT5z_DsK-h9vYZkQkYNWcItqhlRJLN&index=43)
   - Link code example : https://github.com/mnielsen/neural-networks-and-deep-learning
4. ……