

Artificial Intelligence 3

Lectures 9-12ish

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Core Questions

1. Partial Order Planning: 2011 paper 4 question 2 [Link](#)
2. Problem sheet 8.1
3. Learning: 2013 paper 4 question 2 [Link](#)
4. The MNIST database of handwritten digits has a training set of 60,000 examples, and a test set of 10,000 examples. <http://yann.lecun.com/exdb/mnist/>

Your task is to implement and train a neural network to classify the written digits.

Your neural network will have two fully-connected hidden layers each with 100 nodes. The nodes will have a sigmoid activation function and your loss function should be the cross-entropy loss. Do not forget to include bias terms in each layer.

A comprehensive python tutorial can be found [here](#) [Link](#), but you may use any programming language of your choice. This tutorial does not include hidden layers so you will have to add those yourself.

Report the training and test accuracies.

Tryhard questions (for exam preparation)

1. Planning + CSP: 2017 paper 4 question 1 [Link](#)