COMS 4030A

Adaptive Computation and Machine Learning

LAB EXERCISE 5

The objective is to become proficient with using python libraries for neural networks, such as Keras, PyTorch or Tensorflow. (If you need help getting started, please ask the tutors...)

For starters, create a small neural network that can be used for the Iris dataset, but try also the Rice dataset and Raisin dataset from the UCI machine learning repository.

Start with a simple architecture, e.g., 2 hidden layers with 10 nodes in each layer.
Choose an activation function for each layer – either $relu$, σ or $tanh$.
Use a one-hot encoding of the targets and then, for the output layer, either use sigmoid activation and sum-of-squares loss, or softmax activation and cross entropy loss.

Make sure you know how to initialise the weights and biases.
Don't forget to choose the learning rate.
Make sure you can train the network on the chosen dataset.