

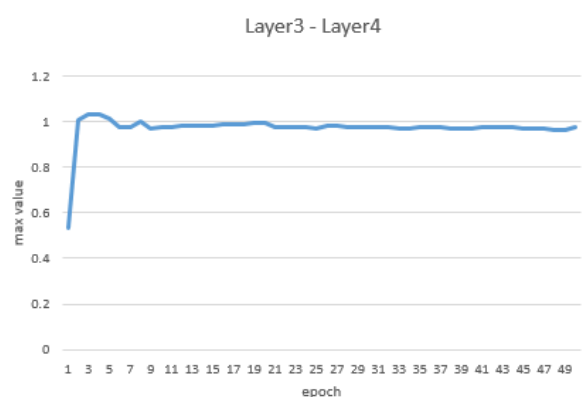
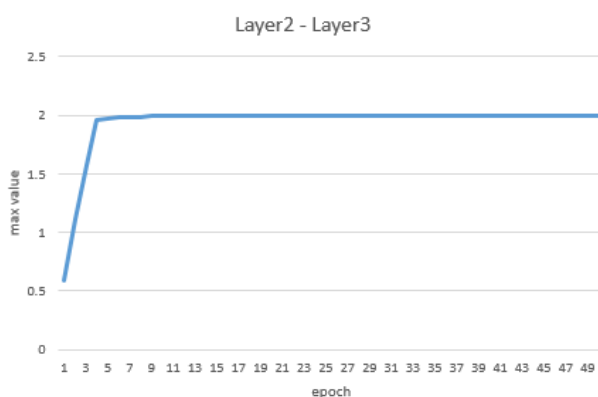
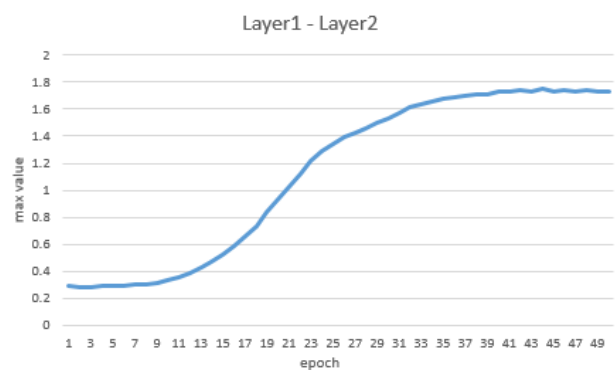
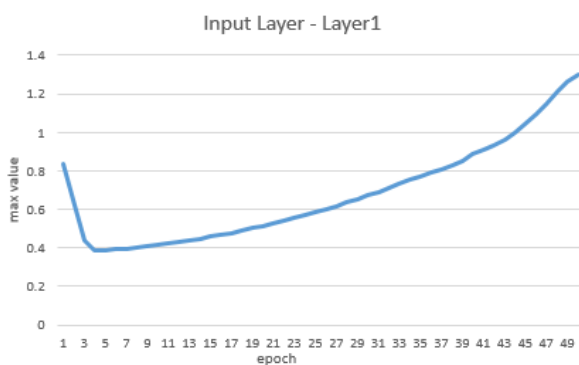
# Neural Network Hw2 Report

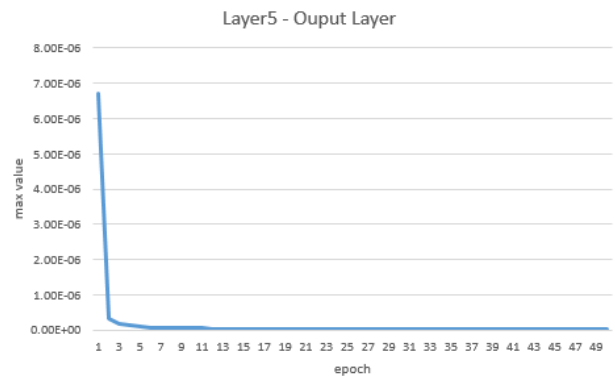
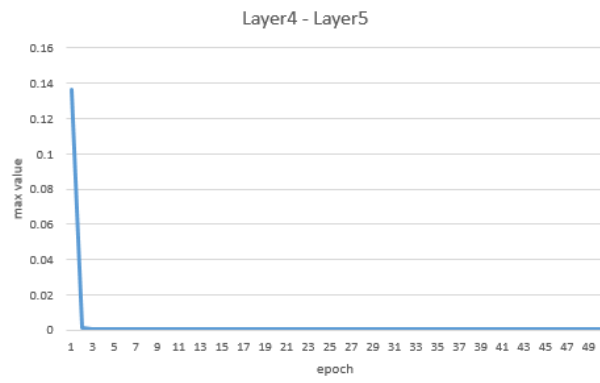
姓名: 徐有慶 學號: r05922162

## 1. Implement SOM perceptron for recognizing dataset to corresponding classes and briefly states your findings.

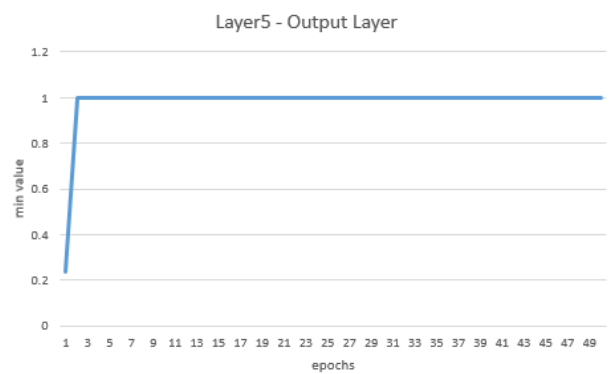
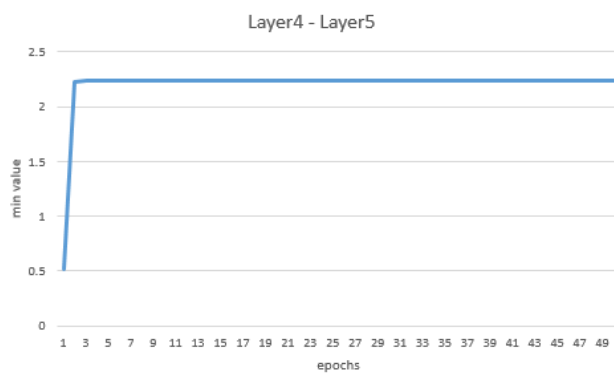
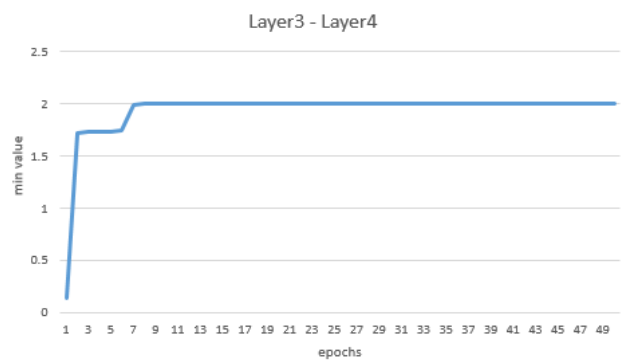
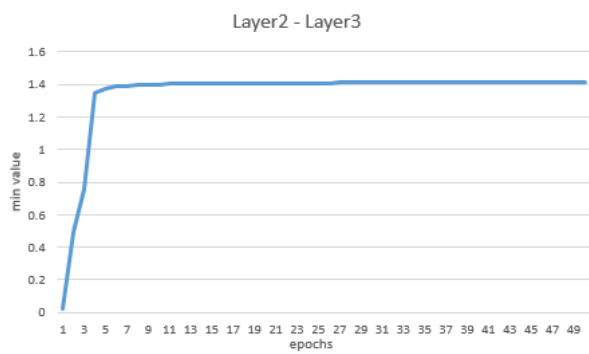
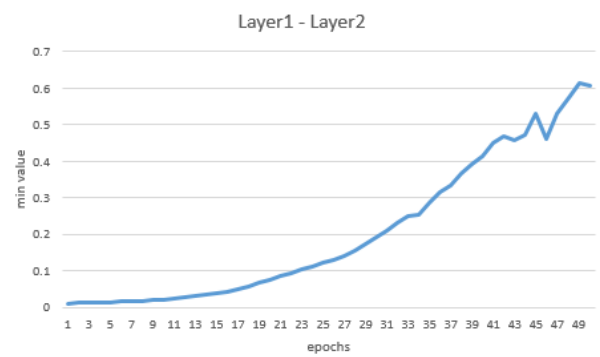
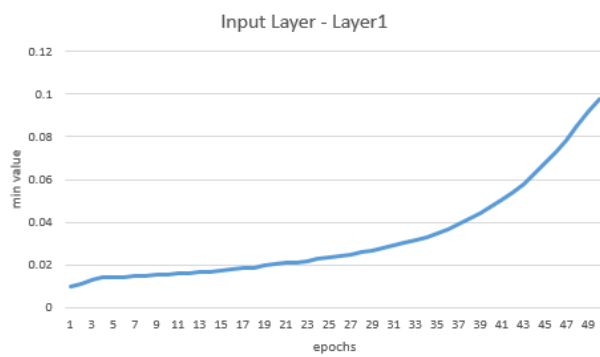
利用文件中提供的 pseudo code 實作出 SOM Algorithm。其中， $L = 6$ ,  $n_0 = 2$ ,  $n_1 = n_2 = n_3 = n_4 = n_5 = 5$ ,  $n_6 = 1$ ,  $\eta^{att} = 0.01$ ,  $\eta^{ep} = 10$ 。雖然此方法 training 完畢後在 training data 上可以得到較高的 accuracy rate，但比起一般的 backpropagation 去更新 weights，用此方法去更新 weights，所需的時間高出許多，在實際應用上似乎不常被拿來使用。

Longest distance curve: 每 100 epochs 記錄一次 Longest dist value，橫軸為 epoch 數，縱軸為 value。





Shortest distance curve:



2. For the first fraction of epochs(for example, first 500 epochs), replace the maximal selection by random selection from same and different classes, redo the SOM perceptron, and briefly states your findings.

前500 epochs若採用random selection的話，會造成後面4500 epochs無法成功的training，

最後出來的SOM效果會很差。

### 3. 執行方式

此次作業使用python 2.7撰寫，需額外安裝numpy package，執行python2.7 ./src/DNN.py即可