FIT5186 Intelligent Systems

Week 3 Tutorial

Consider the following data points with their classification:

CLASS 1: (5,1), (7,3), (3,2), (5,4)
CLASS 2: (0,0), (-1,-3), (-2,3), (-3,0)

a) Determine if the two classes are linearly separable

b) Design the dichotomiser, and train the network using a discrete single-layered Perceptron (dichotomiser.exe). Note that the desired outputs are either 1 or 0. Plot the decision boundary on a graph with the data points.

c) Design the 2-category classifier, and train the network using a discrete single-layered network of 2 Perceptrons (rclass classifier.exe). Note that the desired outputs are either 1 or 2. Plot the decision boundaries on a graph with the data points. Are there any "indecision regions"?

d) For both the classifiers used in parts b) and c), determine the classification of the following inputs of unknown class membership:

(2,0), (0,1), (0,5), (0.2, -0.2), (-1,5.5)

e) Try adding additional points to the training data set to see the effect these have on the decision boundaries.