# Lab7-Support Vector Machine

Total Marks: **8** + 2(individula assessment) =10

1. Please answer these questions which are related to SVM. Refer the lecture notes titled "Support Vector Machine" and "Perceptron" before start the assignment.

      1.1 In SVM what is the meaning of margin? Which are the equations of the two margin hyperplans H+ and H- ? (1 Mark)

      1.2 Consider the three linearly separable two-dimensional input vectors in the following figure. Find the linear SVM that optimally separates the classes by maximizing the margin. (1 Mark)
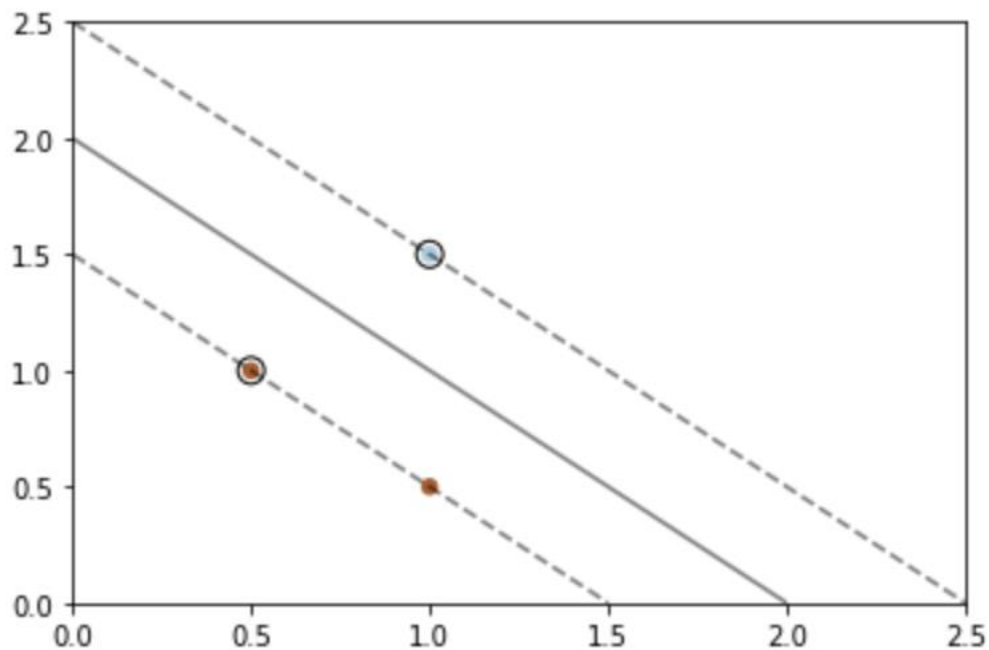
      1.3 What is a kernel function? (1 Mark)

2. Compare Neural Network and SVM in Classification of heart disease data set in Python language. You can use the sklearn Python library to implement both Neural Networks and SVM. For SVM, build the model by changing the different kernels such as Linear, Gaussian and Sigmoid and note down the model accuracy. Similarly, use Stochastic Gradient Descent and Adam Gradient Descent to build the multi-layer Neural Network and note down the model accuracy for each. Finally, tell us which model performs better and why?

(5 Marks)