

Indian Institute of Science

CCE: Neural Networks for Signal Processing - I

Instructor: Shayan Srinivasa Garani

Home Work #3, Spring 2017

Late submission policy: Points scored = Correct points scored $\times e^{-d}$, $d = \#$ days late

Assigned date: Mar. 18th 2017

Due date: Mar. 30th 2017 by end of the day.

PROBLEM 1: Solve problems 5.1, 5.8, 7.4, 7.5 from Haykin's book 3rd ed.. (40 pts.)

PROBLEM 2: Referring to problem 3 of HW#2, train the data samples using a radial basis function network. You must write your own software code for this from first principles. I want you experiment starting from a 2×2 grid which is just the XOR problem, and progressively build the idea for higher grid sizes. What can you comment on the complexity of the hidden nodes as a function of the size of the data points? (30 pts.)

PROBLEM 3: Referring to the UCI Machine Learning Repository, <https://archive.ics.uci.edu/ml/datasets/>, Connectionist Bench (Sonar, Mines vs. Rocks), train the data samples using a radial basis function network you have developed. Experiment and comment on the accuracy of the classification. (30 pts.)