

CSCI 5521: Pattern Recognition

Spring 2005, Prof. Schrater

Extra Credit:

12/13/05

Due: 12/22/05

For extra course credit. Each problem worth a maximum of 50% of one homework. The problems are open-ended – better answers will get more credit.

Submit directly to Prof. Schrater via email.

Problem 1: Implement a Radial basis function network with Gaussian nodes. Any midlayer training will be accepted, EM algorithm will get most points. Train and test the network on some part of the digit images from HW3. Show how to interpret the node outputs as probabilities.

Problem 2: Implement AdaBoost.1 using stumps. Train and test the network on some part of the digit images from HW3.

Problem 3: Try to adapt Boosting use Fisher Linear discriminants as the base classifier. Again, train and test the network on some part of the digit images from HW3.

Problem 4: Implement Kernel PCA using a Gaussian kernel. Apply to the digit images. Explain the pre-image problem. (You will have to do some background reading on KPCA).

Problem 5: Open – you propose a Pattern Recognition problem and solve it. If I like it, I will give you credit.