

This assignment asks you to look at radial basis function networks by first tackling the three data sets of Program 4 with `newrb` and `newrbe`, then with a semisupervised learning system using Laplacian RLS.

Part I.

Use `newrbe` to generate a classifier for each of the problems whose training sets are given in Program 3. Find three sigma values you would characterize as too large, too small, and just right for each data set. Explain how you found these values. You may use cross-validation if you want.

Part II.

Use `newrb` to generate a classifier for the same three problems. Find the minimum number of nodes that can be used to give an exact solution using five-fold cross-validation. How did you choose a sigma value? Is it the same as the sigma value chosen for `newrbe`?

Part III.

Use the method of Laplacian Regularized Least-Squares to solve a semi-supervised classification problem using the same three data sets. For data sets 1 and 3, choose two points at random to be labeled and use all the rest of the data unlabeled. For data sets 2, determine a reasonable number of points to be chosen at random to be able to classify all the data into the two classes given. Explain how you selected parameters for the method (sigma, epsilon, lambda-A, and lambda-I). Discuss your results.