Chapter 5
Conclusion

A generic elliptic radial basis function (GERBF) is introduced to speed up the learning process. The parameter adjustment of this function is performed by gradient descent learning rule. The classification generalization of each GERBF is enhanced by applying Bootstrap technique to estimate the mean and size of the GERBF. However, in some cases, the generalization may not be improved due to the natural distribution of the input data.

The advantages of our algorithm are the decreasing of the learning time by using GERBF and increasing the potential of generalization by using Bootstrap Method. On the other hand, the disadvantages of our algorithm are the difficulty to initialize the parameters for achieving, which give us the smallest number of hidden nodes. The increasing of the percent of the correct classification rate depends on the natural distribution of the input data.

From the experimental results, the generalization technique to testset 1, 2, 3, and 4 have different improvements of the correct classification rates. Each improvement depends on the space between different classes of data. Testset 1, 2, and 4 can be improved because of there are some spaces for enlarging the hidden size after the learning process. But the correct classification rate of the testset 3 is not improved because of the actual spaces between classes are smaller than the estimated spaces obtained from Bootstrap technique.

Further more, the possible future works may be (1) parallelizing on the learning process for decreasing the learning time by distributing the training data vectors to each node, (2) parallelizing on the Bootstrap by distributing each bootstrap sample set to each node for calculating the local statistic parameters (3) finding an appropriate method to estimate the initial parameters.