CHAPTER V

CONCLUSION

A simpler radial basis function based on a generic elliptic basis function is proposed in order to speed up the learning process. This new basis function does not require any matrix inversion. The fault immunization of a neuron can be easily realized on the mathematical level by considering this immunization problem as an optimization problem of finding the best location of the center vector. The experiments performed on the sets of two dimensional data vectors show that the immunization degree of each neuron is increased from 2% to 26%.

From the experimental results, it is obvious that test set 2 has better result than test sets 3 and 4 due to more increased immunization degree. The increase of immunization degree depends on the perturbing area, which is the maximum area for the hidden unit to adjust its position whereas the members of each class remain the same. In the test set 2, there is is larger perturbing area for the hidden unit, therefore it could adjust the position of center freely without interference to another class. In test set 3, the perturbing area is strictly limited, so it resulted in least percentage of increased immunization degree compared to others. In test set 4, an increased immunization degree is higher than test set 3 due to its larger perturbing area.

Finally, it could be concluded that an increased immunization degree correlates to

perturbing area of another class. The further study can be considered in the following issues.

1. Besides the adjustment of center vector, the further study of the adjustment of width and rotation of each hidden unit should be done as well.

2. It is possible to use other optimization techniques such as genetic algorithm to find the position of a center vector.

3. The parallel computing could be applied for solving this problem.