XOR-CLASSIFICATION:

The Ex-OR gate can be viewed as a classifier to which four possible inputs are applied, and two possible outputs are obtained. When the inputs are identical, the output shows class 1, and when the inputs are dissimilar, the output shows another class.

The XOR classification using rbf algorithm is done to check which form model of rbf is best suited for higher accuracy and speed. The data used for XOR training is:

.9,.9,0.1

.1,.15,0.1

.9,.015,.9

.1,.9,.9

For the above data rbf model 6(which contains both sided weights and centre and sigma update) is the best model for both speed and accuracy.

SYSTEM IDENTIFICATION:

The system consists of linear and nonlinear parts.

Linear part: 0.304z+0.903z-1+0.304z-2

Non-linear part: tan(a(k))

(where a(k) is the output of the linear channel)

The input applied is a zero mean random input, and the output of the nonlinear system is mixed with additive white Gaussian noise (AWGN) with SNR of 30 db.

The same input set is applied to all RBF model. The error between the system output and the model is used to train the weights until convergence. After the training phase, the responses of the models and the known system are compared through which the simulation study and results are obtained.

CHANNEL EQUILISATION:

In this modelling, zero mean random input is applied to a nonlinear digital channel(consisting of linear and non-linear parts) followed by AWGN of SNR 30 db. The output so obtained is distorted due to transmission through the channel plus additive noise.

The order of the channel is at least two times the order of the nonlinear channel, so there are 6 inputs for the RBF models. The output of the model is compared with the delayed version of the transmitted random input.

Linear part: 0.304z+0.903z-1+0.304z-2

Non-linear part: a(k)+0.2a2(k)-0.1a3(k)

(where a(k) is the output of the linear channel)