

Radial Basis Function Neural Networks

The following exercise can be used to model an RBF network

```
%Radial Basis Function Network
clear;close all;

%Generate training data (input and target)
p = [0:0.25:4];
t = sin(p*pi);

%Define and train RBF Network
net = newrb(p,t);
plot(p,t,'*r');hold;

%Generate test data
p1 = [0:0.1:4];

%Test network
y = sim(net,p1);

plot(p1,y,'ob');
legend('Training','Test');
xlabel('input, p');
ylabel('target, t');
```

Part 1

Revise demo.m in Week 6 lab with RBF network, to demonstrate the capability of RBF network to model the XOR logic gate.

Part 2

Demonstrate the capability of an RBF to approximate the function

$$f(t) = \sin(t) \cdot \exp(-t/20); 0 < t < 50$$

Implement K-means clustering algorithm for determining the centers. (Hint: you need to write the Matlab code for this part using formulae of RBF network from lecture notes, instead of directly using newrb and sim functions.)