* **1.Single Layer Adaline:**
* Number of Epochs : 99
* Final Root Mean Square Value : 0.0099
* Plots:

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* MATLAB Code

clc;clearvars;close all;

infile = 'Perceptron\_Adaline.xlsx';

no\_of\_targets = 1;

datatable = readtable(infile);

headers = datatable.Properties.VariableNames; headers(:,end)=[];

inputs = datatable.Variables; clear datatable;

targets = inputs(:,end-no\_of\_targets+1:end);

inputs(:,end-no\_of\_targets+1:end)=[];

[no\_of\_instances,no\_of\_features] = size(inputs);

inputs\_normalized = (inputs-mean(inputs))./std(inputs);

inputs\_normalized = [ones(no\_of\_instances,1),inputs\_normalized];

learning\_rate = 10^-2;

max\_epoch = 10000;

termination\_threshold = 10^-6;

weights = zeros(no\_of\_features+1,no\_of\_targets);

rms = zeros(max\_epoch,1);

for epoch = 1:max\_epoch

Y\_predicted = inputs\_normalized\*weights;

errors = targets-Y\_predicted;

gradient = transpose(inputs\_normalized)\*errors;

delta\_w = learning\_rate\*gradient;

improvement = norm(delta\_w)/norm(weights);

weights = weights+delta\_w;

rms(epoch) = sqrt(transpose(errors)\*errors);

if improvement<10^-6; break;end

end

epoch,rms(epoch)

rms(epoch+1:end)=[];

plot(1:length(rms),rms);figure;

scatter(Y\_predicted,targets);figure;

bar(1:no\_of\_instances,errors);