```
%=========================================================================
%GENERATES A SIMPLE DATASET
%=========================================================================
N = 150;

dataset1 = rand(300,N)*5;
dataset1(:,N+1) = 1;

dataset2 = rand(300,N)*5 + 5;
dataset2(:,N+1) = 2;

dataset4 = rand(300,N)*5 + 10;
dataset4(:,N+1) = 4;

observations = [dataset1;dataset2;dataset4];

num_items = size(observations,1);

scramble = randperm(num_items);

observations = observations(scramble,:); %permutes the dataset


%=========================================================================
%ADJUSTMENTS FOR UCI DATASETS
%=========================================================================

%Adjustments for the Wine database to: (1) adjust the scale of the last column (it's
too large for the rest of the data); and
%(2) swap the first and last columns after that, to put the labels in the last
column.

clear temp

temp = observations(:,1);

observations(:,14) = observations(:,14)/100;

observations(:,1) = [];

observations(:,14) = temp;

%-------------------------------------------------------------------
%Adjustments to the Parkinson's database to move the labels to the last column
%and delete non-data entries from the first row and first column

observations(1,:) = [ ];
observations(:,1) = [ ];
```

```
clear temp

temp = observations(:,17);

observations(:, 17) = [ ];

observations(:,23) = temp;

%=====================================================================
%LOADS CSV DATASET
%=====================================================================

observations = [ ];

filename = "C:/Users/erdosfan/Desktop/Image_Research/External Training
Sets/ionosphere-data.txt";

%Note that for the ionosphere dataset, you'll need to do a manual replacement of the
g's and b's with some kind of numerical category label.
%This can be done easily in a text editor using find / replace.

%loads the file
observations = csvread(filename);

%MAKE ANY ADJUSTMENTS NEEDED (SEE ABOVE)----------------------------

%=====================================================================
%RUN THE ALGORITHM
%=====================================================================
threshold = .93; %threshold accuracy above which learning stops

N = size(observations,2) - 1; %dimensions of dataset

tic;
[output_matrix dataset accuracy_vector] = Ayin_RTE(observations, threshold, N);
toc

%measures accuracy
num_predictions = size(output_matrix,1);

num_learning_iterations = size(dataset,1) %number of training iterations
learning_ratio = num_learning_iterations/num_predictions %percentage of training
iterations to total iterations

overall_accuracy = sum(output_matrix(:,N+1) == observations(:,N+1))/num_predictions

start_val = 1;
```

```
end_val = num_predictions;

figure, plot(start_val:end_val,accuracy_vector(start_val:end_val))
```