
```

clear all
clc
close all
p=[1 3 1;1 3 2; 1 4 1; 1 1 5;1 3 4; 1 2 5];
t=[1 1 1 0 0 0];
theta=[0 0 0];
iterations=5;
for j=1:iterations;
for i=1:5
    y =myperceptron(i,theta,p);
    e=t(1,i)-y;
    theta=theta+e*p(i,:);
    z(i)=e;
end
if z(1:5)==0;
    disp('the weight vector values are')
    disp(theta);

else
    j=j+1;
end

end
u1=[1 1 4];u2=[1 4 2];
v1=theta*u1';
v2=theta*u2';
y1=hardlim(v1);
y2=hardlim(v2);
disp('weight vector is')
disp(theta(1,2))
disp(theta(1,3))
disp('the bias value is')
disp(theta(1,1))
disp('classes for u1 and u2 are')
disp(y1)
disp(y2)

the weight vector values are
    1     5    -5

the weight vector values are
    1     5    -5

weight vector is
    5

    -5

the bias value is
    1

classes for u1 and u2 are

```

0

1

problem 3

```
clc
clear all
close all
clear theta
load('halfmoon.mat')
load('halfmoonTest.mat')
figure
pos = find(hmdata(:,3)); neg = find(hmdata(:,3) == 0);
plot(hmdata(pos,1),hmdata(pos,2),'k.')
hold on
plot(hmdata(neg,1),hmdata(neg,2),'r.')
title('Halfmoon data Plot')
t=hmdata(:,3);
n=length(hmdata);
p=[ones(n,1),hmdata(:,1:2)];
theta=[0 0 0];
z=1;
% iterations=5;
%v=p(i,:)*theta';
% v=x(i,:)*theta'
for k=1:5
for i=1:2000
    y=hardlim(p(i,:)*theta');
    e=t(i,1)-y;
    theta=theta+e*p(i,:);
    z(i)=e;
end
if z(1:2000)==0 ;
    disp(theta);
else
    k=k+1;
end
end

n=length(hmtest);
t=hmtest(:,3);
p=[ones(n,1),hmtest(:,1:2)];
plot(hmtest(:,1),hmtest(:,2),'y.')
legend('class 0','class 1','test')
error=ones(n,1);
miss=ones(n,1);
for j=1:n
    v=p(j,:)*theta';
    y=hardlim(v);
    error(j)=t(j)-y;
    miss(j)=abs(error(j));
```

```
end
disp('Number of points in the test set that are misclassified are')
sum(miss)
```

```
-23.0000    -0.1432   -38.8492
```

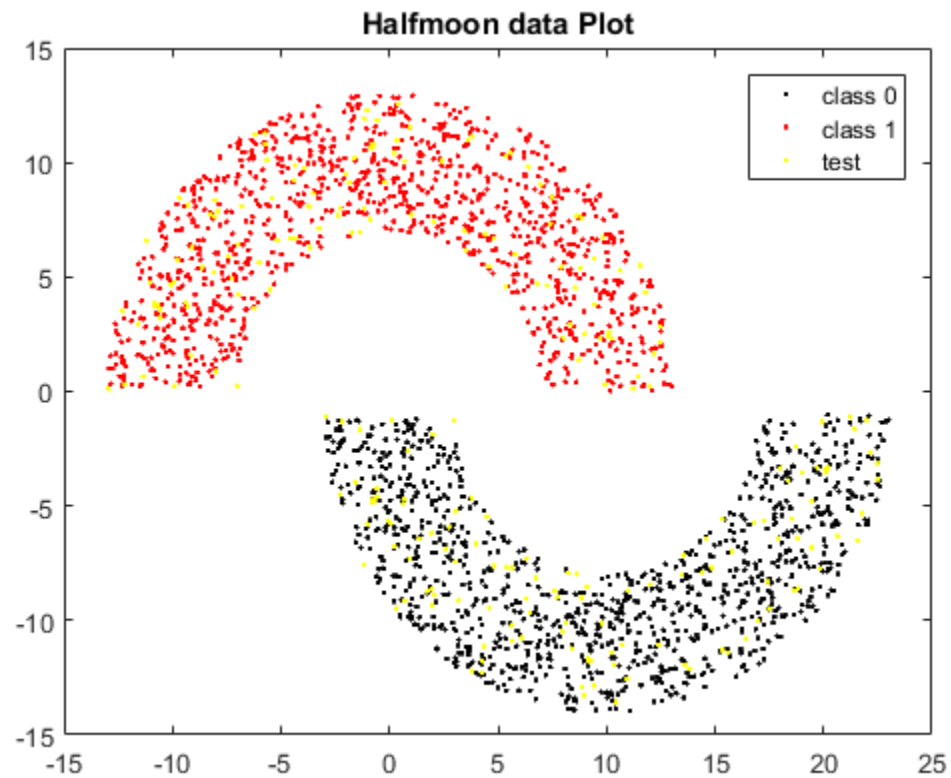
```
-23.0000    -0.1432   -38.8492
```

```
-23.0000    -0.1432   -38.8492
```

Number of points in the test set that are misclassified are

ans =

0



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