Source code: `testlearn.m`

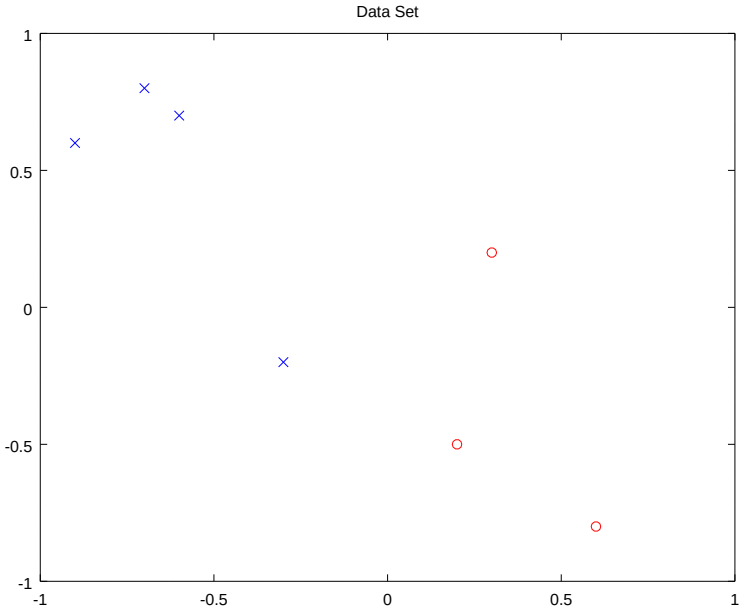
```
1  D =
       [-0.7,0.8,1;-0.9,0.6,1;-0.3,-0.2,1;-0.6,0.7,1;0.6,-0.8,-1;0.2,-0.5,-1;0.3,0.2,-
2  figure();
3  hold on;
4  plot(D((D(:,3)==1),1),D((D(:,3)==1),2),'xb');
5  plot(D((D(:,3)==-1),1),D((D(:,3)==-1),2),'or');
6  title('Data Set');
7  hold off;
8  w = [0,0];
9  b = 0;
10 e = 1;
11 h = figure;
12 title('Weight movement');
13 while(e ~= 0)
14   e = 0;
15   for i = 1:size(D)
16     xi = b + D(i,1:2)*w';
17     if xi > 0
18       y = 1;
19      else
20       y = -1;
21      end
22      if y ~= D(i,3)
23         e = 1;
24         w_old = w;
25         if y == 1
26           w = w-D(i,1:2);
27           b = b-1;
28         else
29           w = w+D(i,1:2);
30           b = b+1;
31         end
32         figure(h);
33         hold on;
34         quiver(w_old(1),w_old(2),(w(1)-w_old(1)),(w(2)-w_old(2)))
               ;
35         plot(w(1),w(2),'or');
36         hold off;
37         figure;
38         hold on;
39         plot(D((D(:,3)==1),1),D((D(:,3)==1),2),'xb');
40         plot(D((D(:,3)==-1),1),D((D(:,3)==-1),2),'or');
41         plot([-5,5],(w(1)/-w(2)).*[-5,5]  + (b/-w(2)));
42         title('Separation line');
43         hold off;
```

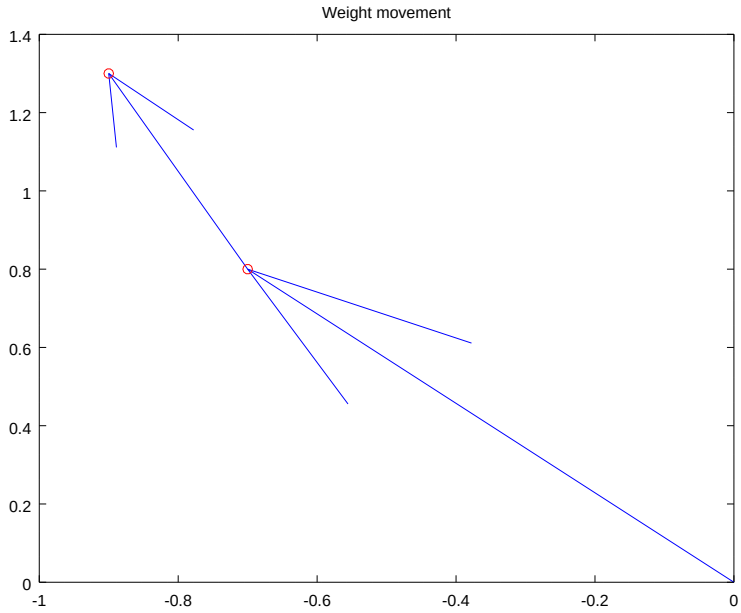
```
44        end
45      end
46  end
```

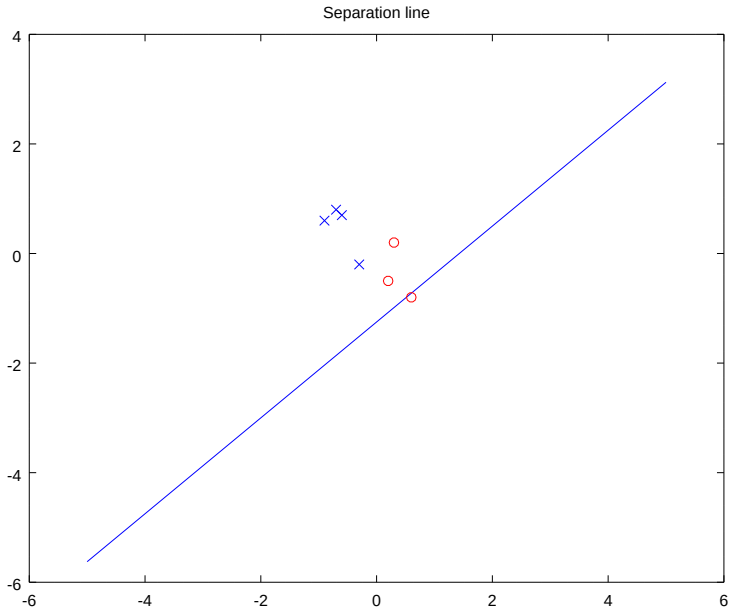
Execution results

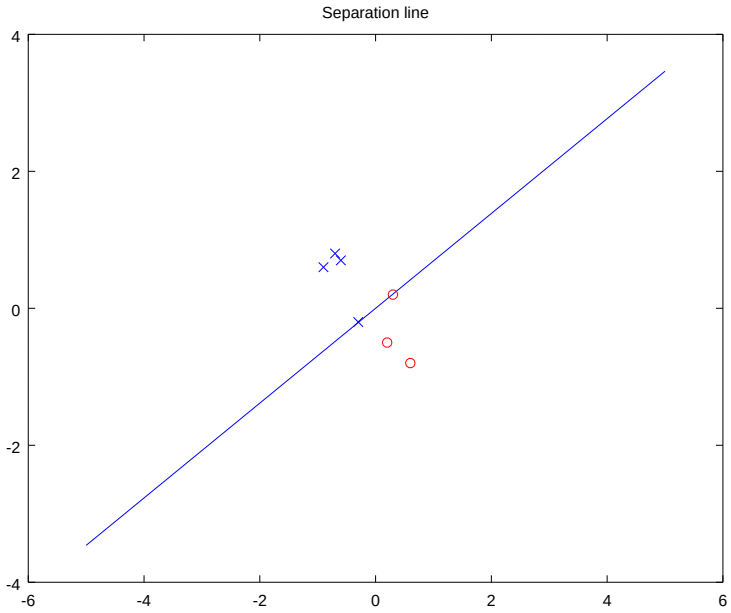
```
octave>testlearn
D =

   -0.70000    0.80000    1.00000
   -0.90000    0.60000    1.00000
   -0.30000   -0.20000    1.00000
   -0.60000    0.70000    1.00000
    0.60000   -0.80000   -1.00000
    0.20000   -0.50000   -1.00000
    0.30000    0.20000   -1.00000
```

Generated graphics




Weight movement
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-1
-0.8
-0.6
-0.4
-0.2
0


Separation line
4
2
0
-2
-4
-6
-6
-4
-2
0
2
4
6


Separation line
4
2
0
-2
-4
-6
-4
-2
0
2
4
6