

NOTE: Both *iris-slwc.txt* and *iris-PC.txt* were retrieved from <http://www.cs.rpi.edu/~zaki/www-new/uploads/Dmcourse/Assign3/> and reshaped to be comma-delimited with 1/-1 as the class labels.

Each support vector is listed with the item number, x values, y classes, and respective alphas.

1) Iris-SLWC with linear kernel

```
[yx5@pegasus hw5]$ ./assign5.py -i inputs/iris-slwc.txt -k linear | tee out/iris-slwc_linear.out
```

```
25      x:[ 4.9  2.5]   y:1      a:9.17846165748
55      x:[ 5.4  3.4]   y:-1     a:2.26408152452
66      x:[ 5.4  3. ]    y:1      a:10.0
107     x:[ 4.9  3. ]    y:-1     a:10.0
109     x:[ 4.5  2.3]   y:-1     a:10.0
122     x:[ 5.   3. ]    y:-1     a:10.0
138     x:[ 6.   3.4]   y:1      a:10.0
```

Iterations: 3473

Number of Support Vectors: 7

Weight vector (w): [2.74842189 -3.75172304]

Bias (b): -3.08561986704

2) Iris-SLWC with quadratic kernel

```
[yx5@pegasus hw5]$ ./assign5.py -i inputs/iris-slwc.txt -k quad | tee out/iris-slwc_quad.out
```

```
25      x:[ 4.9  2.5]   y:1      a:5.13769977739
74      x:[ 5.5  3.5]   y:-1     a:0.195297587238
109     x:[ 4.5  2.3]   y:-1     a:5.7346121391
```

Iterations: 9551

Number of Support Vectors: 3

Weight vector (w): [-1.70516245 -1.02890003]

Bias (b): -0.792209948943

3) Iris-PC with quadratic kernel

```
[yx5@pegasus hw5]$ ./assign5.py -i inputs/iris-PC.txt -k quad | tee out/iris-PC_quad.out
```

```
13      x:[-0.81286779 -0.370679 ]   y:-1      a:2.00019335526
27      x:[-1.55739627  0.26739258]   y:-1      a:10.0
28      x:[ 0.5110862  -1.26249195]   y:-1      a:1.93752795521
29      x:[-1.11624072 -0.08421401]   y:-1      a:10.0
30      x:[-0.94236171 -0.54182226]   y:-1      a:10.0
35      x:[-1.33104142  0.24466952]   y:-1      a:9.0604539672
41      x:[-1.29646885 -0.32756152]   y:-1      a:10.0
43      x:[-1.37873698 -0.42120514]   y:-1      a:10.0
59      x:[-1.29066965 -0.11642525]   y:1       a:10.0
68      x:[-0.51938325 -1.19135169]   y:1       a:6.71456224266
105     x:[-1.25762518 -0.179137 ]    y:1       a:10.0
111     x:[-1.38766825 -0.20403099]   y:1       a:10.0
117     x:[-1.66193495  0.2420384 ]    y:1       a:10.0
128     x:[-1.4431026  -0.14380129]   y:1       a:3.03704383493
146     x:[-1.16885347 -0.1645025 ]   y:1       a:10.0
```

Iterations: 666

Number of Support Vectors: 15

Weight vector (w): [0.06982186 -0.61187959]

Bias (b): -3.24656920008