CSCI567 2013 Homework Assignment 4

Programming Report

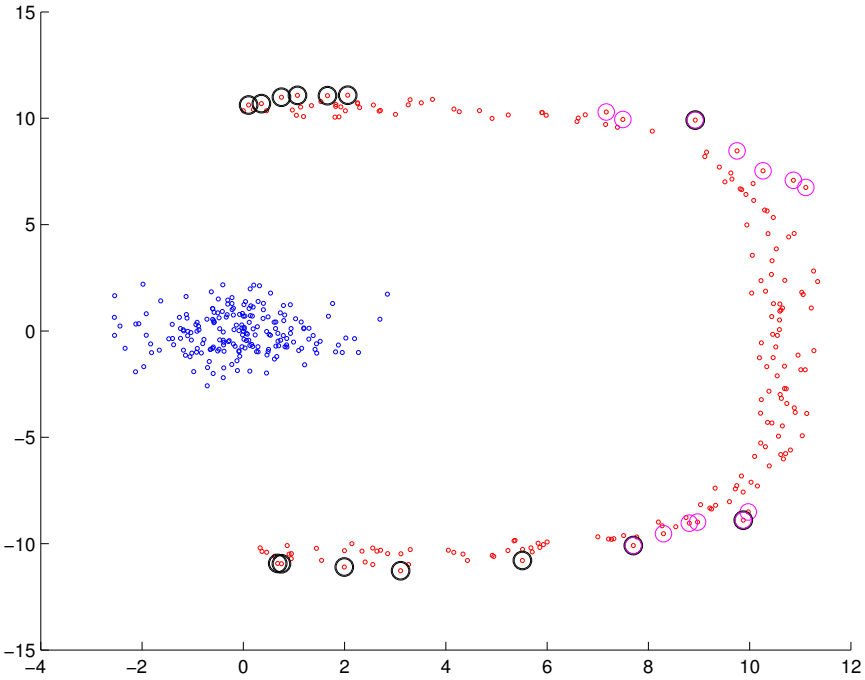
Student Name	Last 4 digits of USC ID
Jia Li	0854
Udit Agrawal	5165
Yin-Ray Rick Huang	6794
Arpit Bansal	0979

1 Anomaly Detection

1.1 Experiment Result

	Chosen C	Number of Support Vectors	r^2	false accept rate(%)	false reject rate(%)
d=1, j=1	0.0430	13	5.57	0	6.54
d=1, j=2	0.0414	13	122.14	52.49	1
d=2, j=1	0.0410	13	26.91	0	6.54
d=2, j=2	0.0412	13	12833	2.11	6.67
d=3, j=1	0.0450	12	265.03	0	5.66
d=3, j=2	0.0389	14	2.426e+06	51.95	1

1.2 Experiment Result



1.3 Analysis

From the plot, we can seen that for the d=2, the support vector (magenta circle) will all on the right side, which is far from the class 1. However, when d=1, the support vector(the black circle) are on the top and bot, which are close to the class 1. So the quadratic kernel will can better reject the class 1, only accept class 2's points. But the linear on cannot do this.