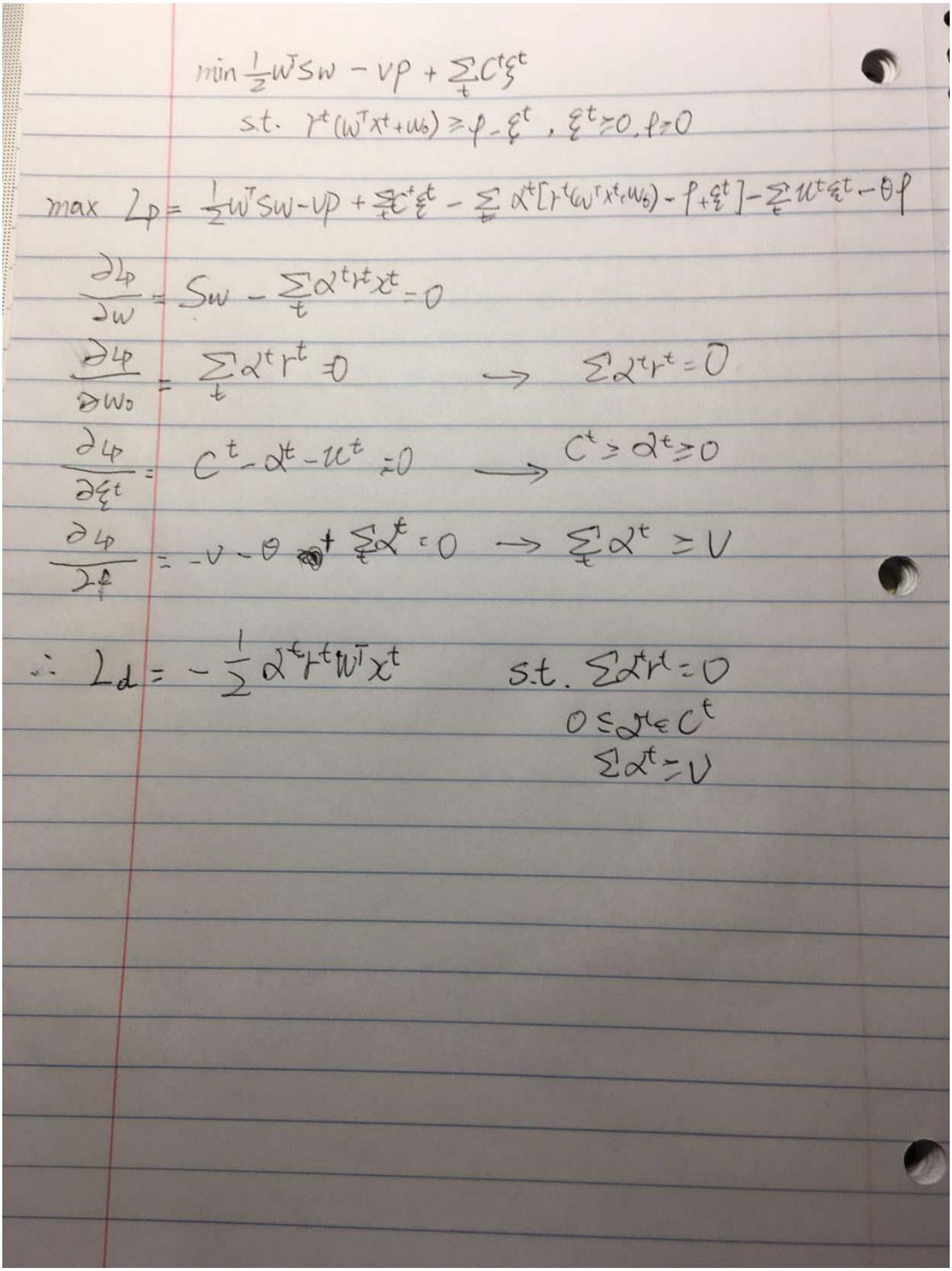
Zhiyue Qiu

problem1.



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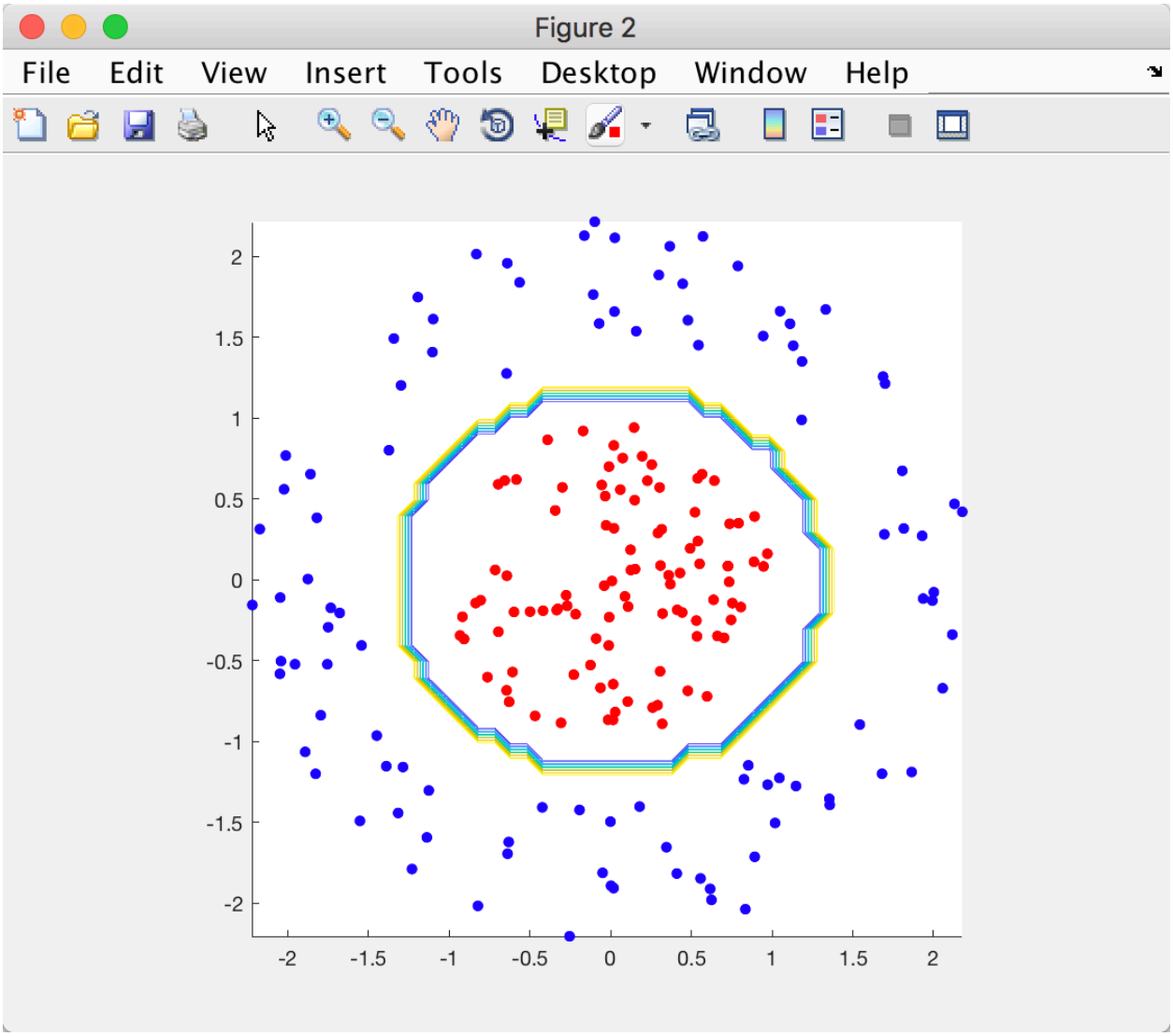
Problem2

a.



This is my result, and the error rate is 0

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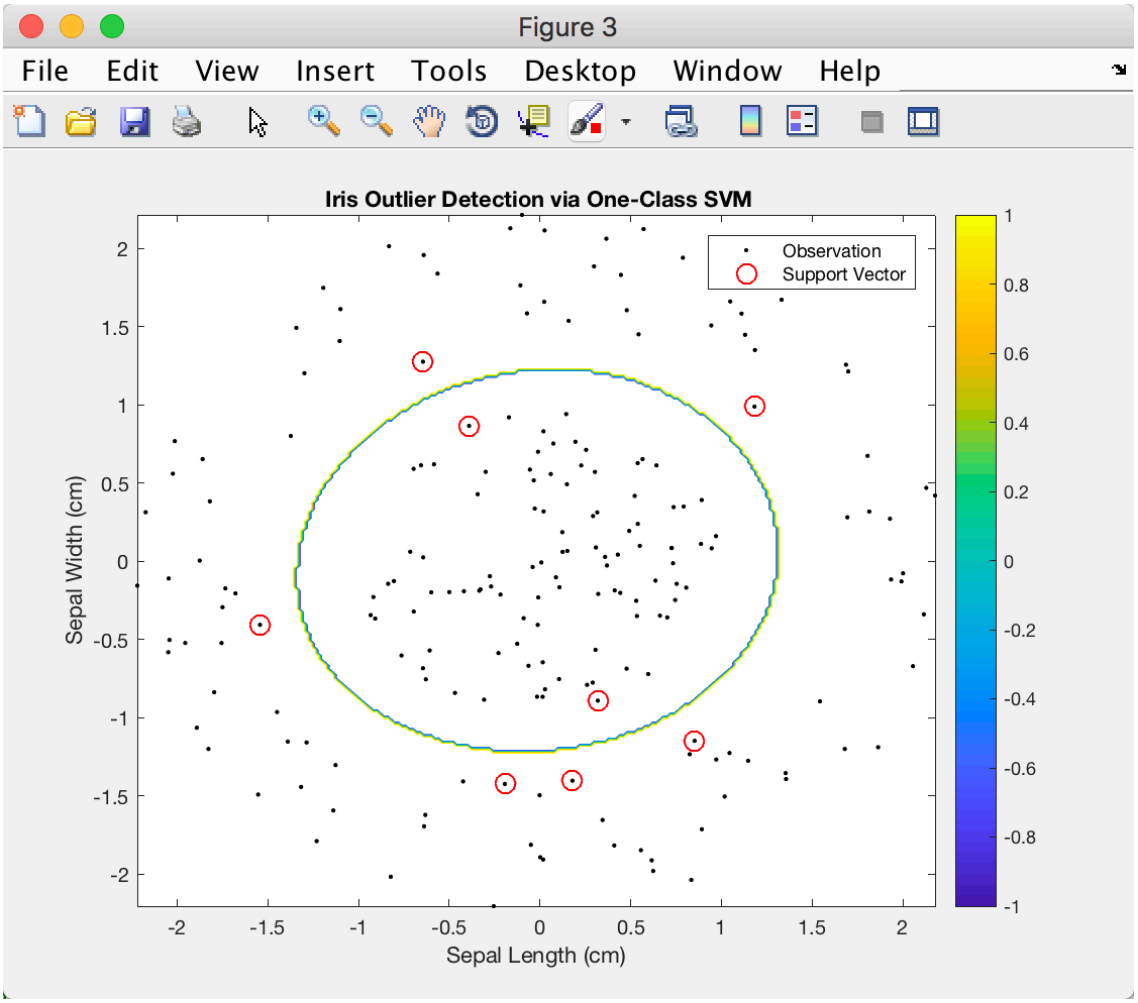
b.



Comparing to my kernel perceptron, they behaves similar,

“A box constraint is a parameter that controls the maximum penalty imposed on margin-violating observations, which helps to prevent overfitting (regularization).

If you increase the box constraint, then the SVM classifier assigns fewer support vectors. However, increasing the box constraint can lead to longer training times.”

That means the larger the value, less training error could be, but could be slower. And when I set the value very small, nearly all the vectors becomes support vector.

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c.

This is my result for 79 digits.

```
ans =

    'training error is 0.00473'


ans =

    'test error rate is 0.00355'
```

This is my result for 49 digits.

```
ans =

    'training error is 0.00946'


ans =

    'test error rate is 0.02817'
```