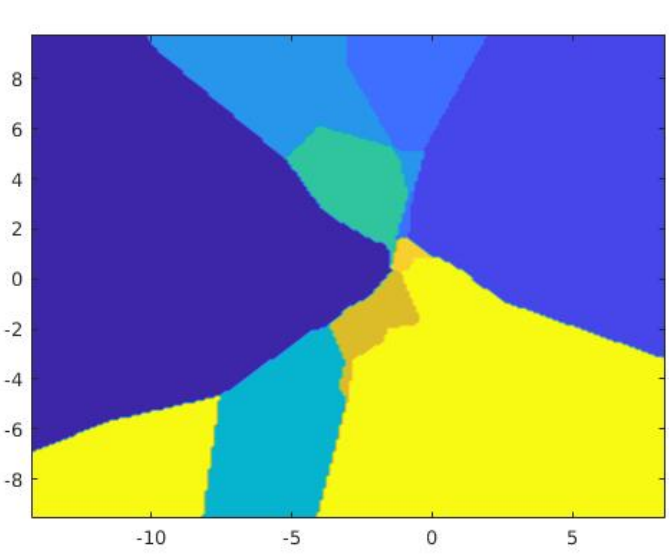
Task 2.1 S1891130

T/s(total)	N	k	Nerrs	acc
12.24	4008	1	129	0.9678
		3	131	0.9673
		5	128	0.9681
		10	130	0.9676
		20	145	0.9638

Task2.2



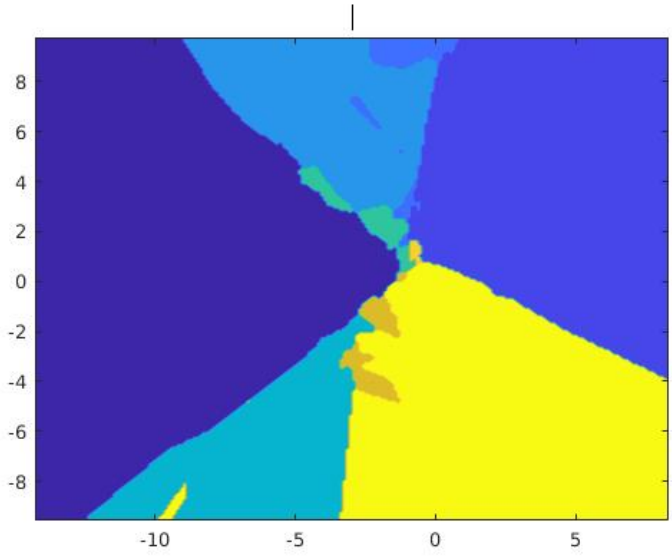
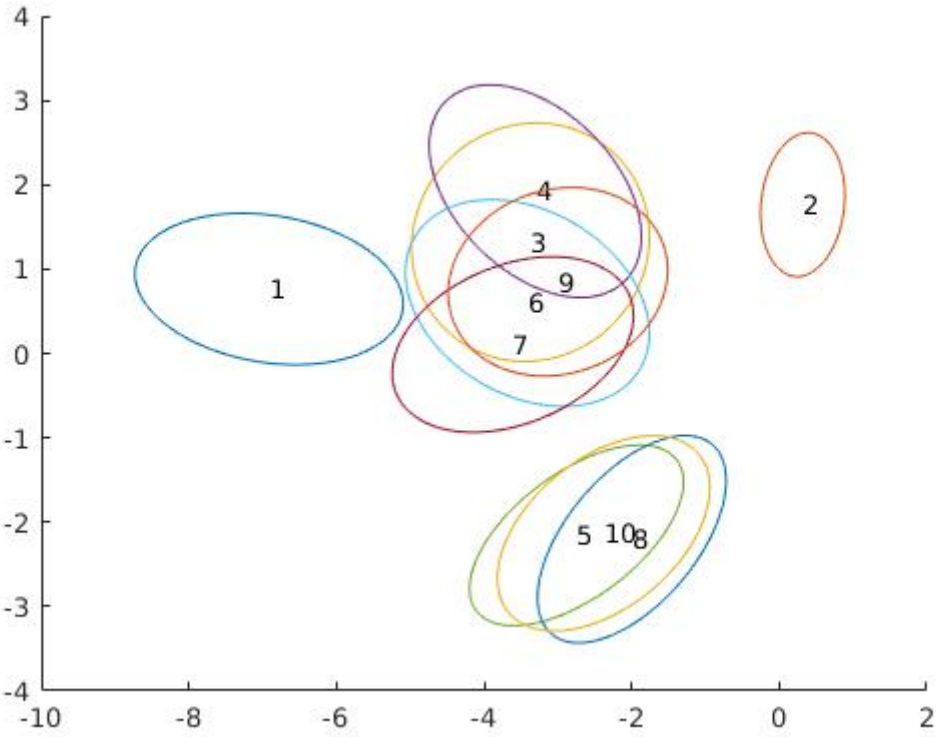


figure 2.2.1 k=1

figure2.2.2 k=3

The first 2000 samples of the training data is selected. In task2_1, we need to classify 4008 samples which can be done within the memory. This time, we have 200*200=40000 points to classify(nbins=200), which is 10 times larger than the test data in 2_1. So reasonably, we can reduce the training data to 1/10 – 1/20.

Task 2.3



Task2.4

Correlation table

1	2	3	4	5	6	7	8	9	10
-0.2009	0.1292	0.0478	-0.4283	0.5892	-0.2934	0.3283	0.5655	0.1234	0.4636

Total Corr = -9.219^10^{-16}

Task2.5

t =

45.0626s

N =

4008

Nerrs =

210

acc =

0.9476

Task2.6

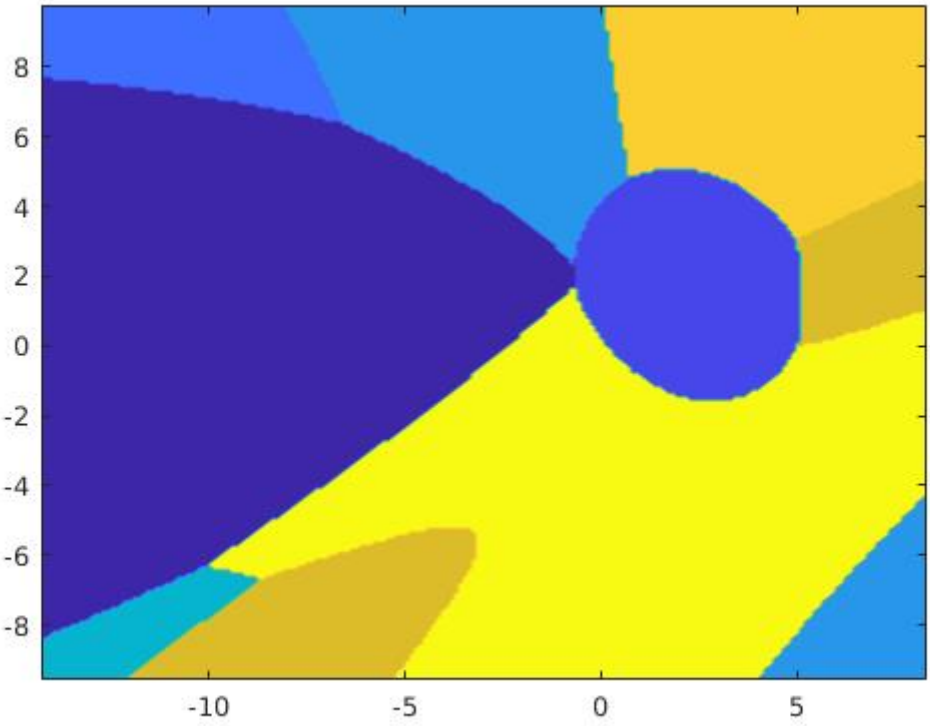


figure2.6.1 Cross-section image of decision regions with Gaussian classifiers

Task2.7

acc	0.9469	0.9461	0.9471	0.9474	0.9466	0.9479	0.9499
ratio	.9	.8	.7	.6	.5	.4	.3

Task2.8

For L=2

t =
52.2319

N =
42025

Nerrs =
282

acc =
0.9296

For L=5

t =
78.9859

N =
42025

Nerrs =
291

acc =
0.9274

For L=10

t =
112.7243

N =
42025

Nerrs =
399

```
acc =
    0.9004
```