Assignment 1
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Exercise1:

a)

The optimal value for **K=5** cross validations is:
P1=4, P2=1

b)

K=5

Parameter values for **P1 = 4** (Error = 0.3572):

0.0025	-0.0043	-0.0008
0.9198	-0.0010	-0.0002
-0.0029	0.0014	0.9997
-0.0007	0.4680	0.0008
-0.0010	0.0006	0.0002
0.0014	-0.0025	0.0014
0.0025	-0.0010	-0.0001
0.0001	0.0000	-0.0000
-0.0003	-0.0017	-0.0006
0.0001	-0.0007	-0.0000
0.0000	-0.0000	-0.0000
-0.0043	0.0035	0.0001
-0.0000	0.0000	-0.0000

Parameter values for **P2 = 1** (Error = 0.3572):

```
-0.0025   -0.0037    0.0008
 0.9231   -0.0006   -0.0003
-0.0040   -0.0044    0.9987
-0.0001    0.4435    0.0003
```

In K=2

Parameter values for **P1 = 5** (Error = 0.3576):

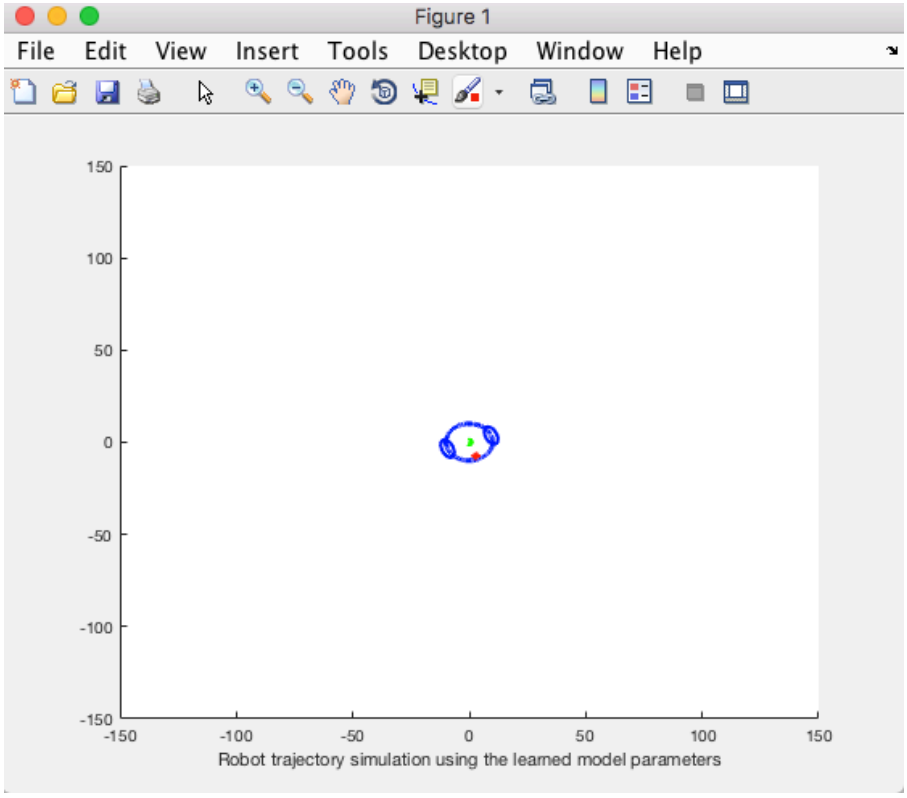
```
 0.0022   -0.0027   -0.0008
 0.9217   -0.0014    0.0001
 0.0066   -0.0115    0.9988
-0.0016    0.4730    0.0008
-0.0010    0.0002    0.0002
 0.0025   -0.0083    0.0014
 0.0023    0.0001   -0.0001
-0.0000    0.0000   -0.0000
-0.0130    0.0164    0.0005
 0.0001   -0.0010   -0.0000
 0.0000   -0.0000   -0.0000
-0.0045    0.0043    0.0001
-0.0000   -0.0000   -0.0000
 0.0000   -0.0000    0.0000
 0.0026   -0.0038   -0.0002
-0.0000    0.0000   -0.0000
```

Parameter values for **P1 = 3** (Error = 0.0794):

```
 0.0001   -0.0045   -0.0006
 0.9196   -0.0010   -0.0002
-0.0011    0.0011    0.9997
 0.0038    0.4670    0.0008
 0.0007   -0.0001    0.0001
 0.0058    0.0046    0.0018
-0.0026   -0.0000   -0.0001
 0.0001    0.0000   -0.0000
-0.0017   -0.0014   -0.0006
-0.0001   -0.0006   -0.0000
```

c)

(0, 0.05)



(1, 0)

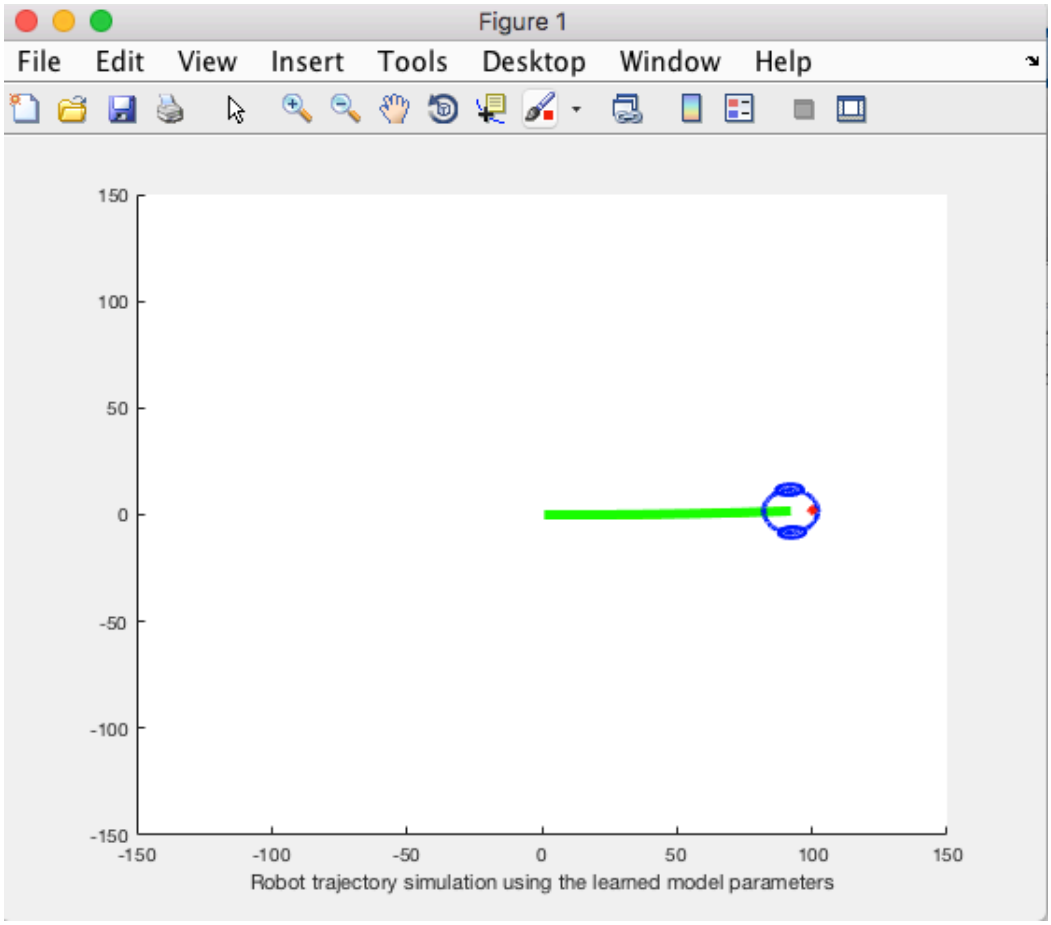


Figure 1
File Edit View Insert Tools Desktop Window Help
150
100
50
0
-50
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-150
-150 -100 -50 0 50 100 150
Robot trajectory simulation using the learned model parameters

(1, 0.05)

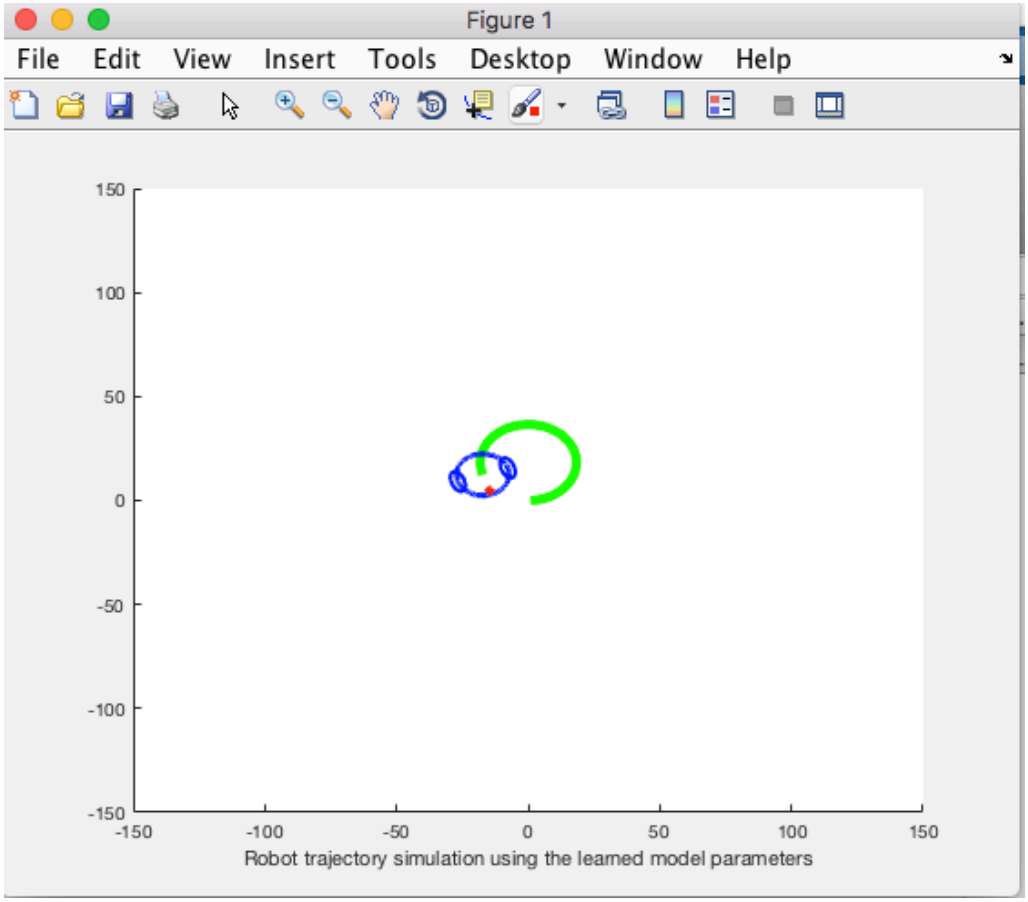
Figure 1
File Edit View Insert Tools Desktop Window Help
150
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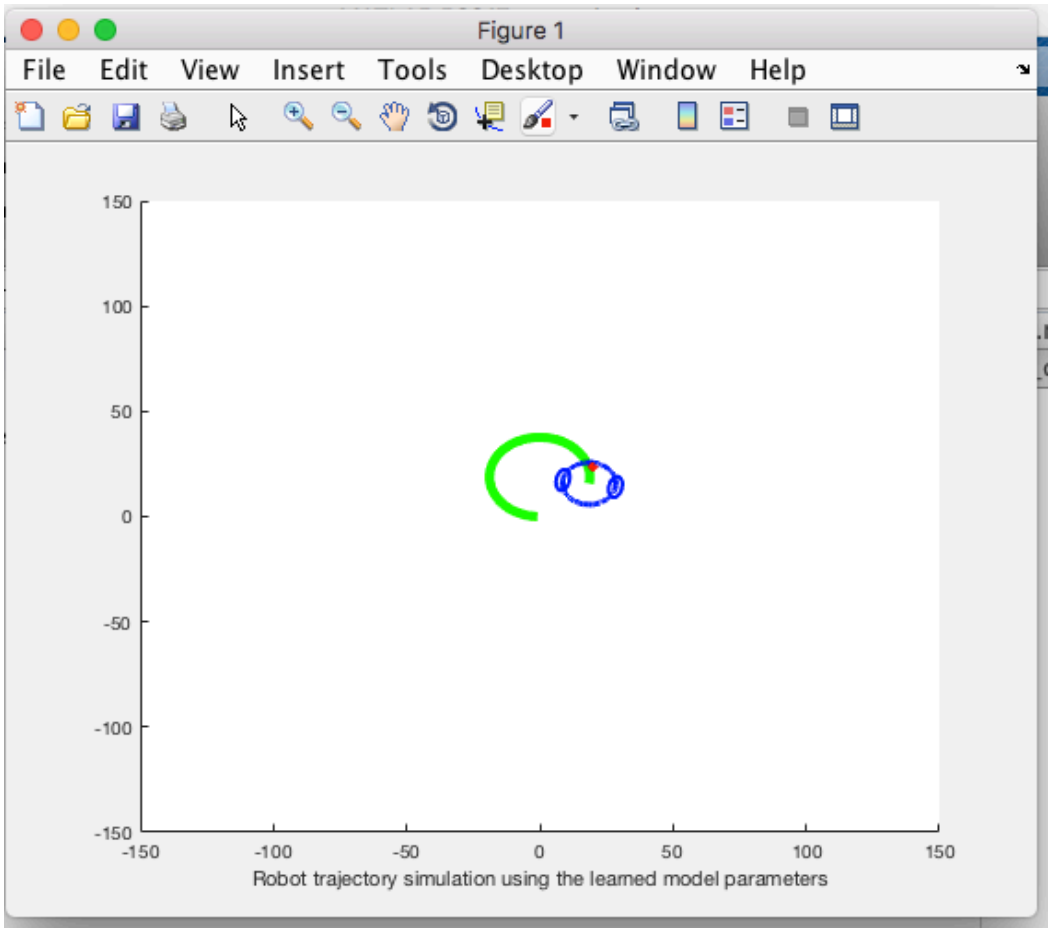
-150 -100 -50 0 50 100 150
Robot trajectory simulation using the learned model parameters

(-1, -0.05)



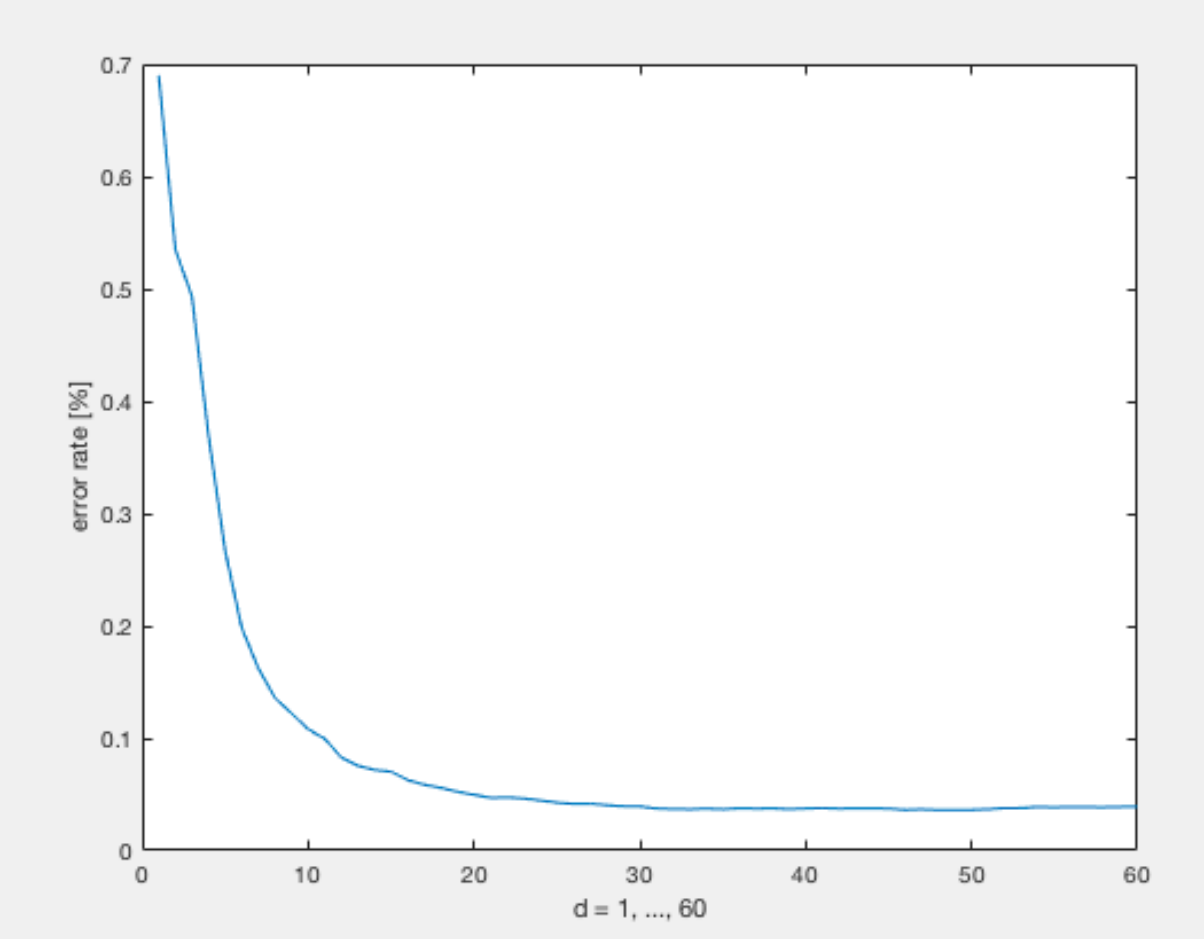
Exercise 2

a) the optimal d value is **48**

confusion matrix:

0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
0.00	0.97	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00
0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.02	0.00
0.00	0.00	0.01	0.96	0.00	0.00	0.00	0.00	0.02	0.00
0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.01
0.00	0.00	0.00	0.02	0.00	0.96	0.00	0.00	0.01	0.00
0.01	0.00	0.00	0.00	0.00	0.01	0.96	0.00	0.01	0.00
0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.93	0.01	0.02
0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.97	0.01
0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.94

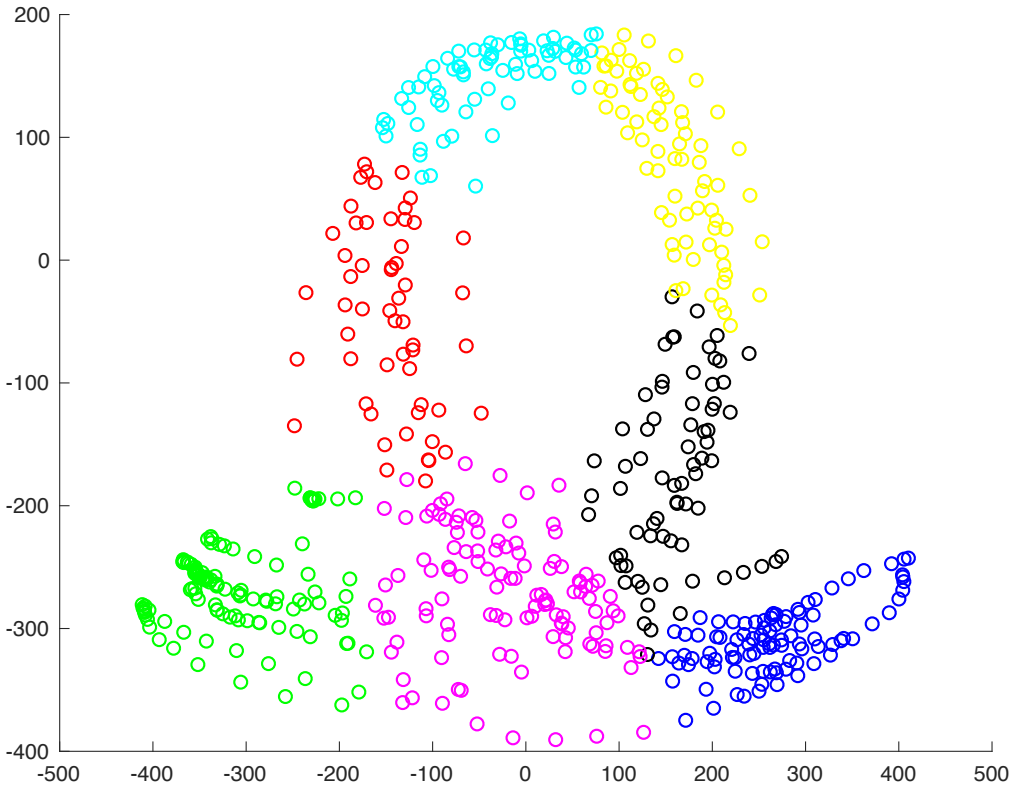
Classification error



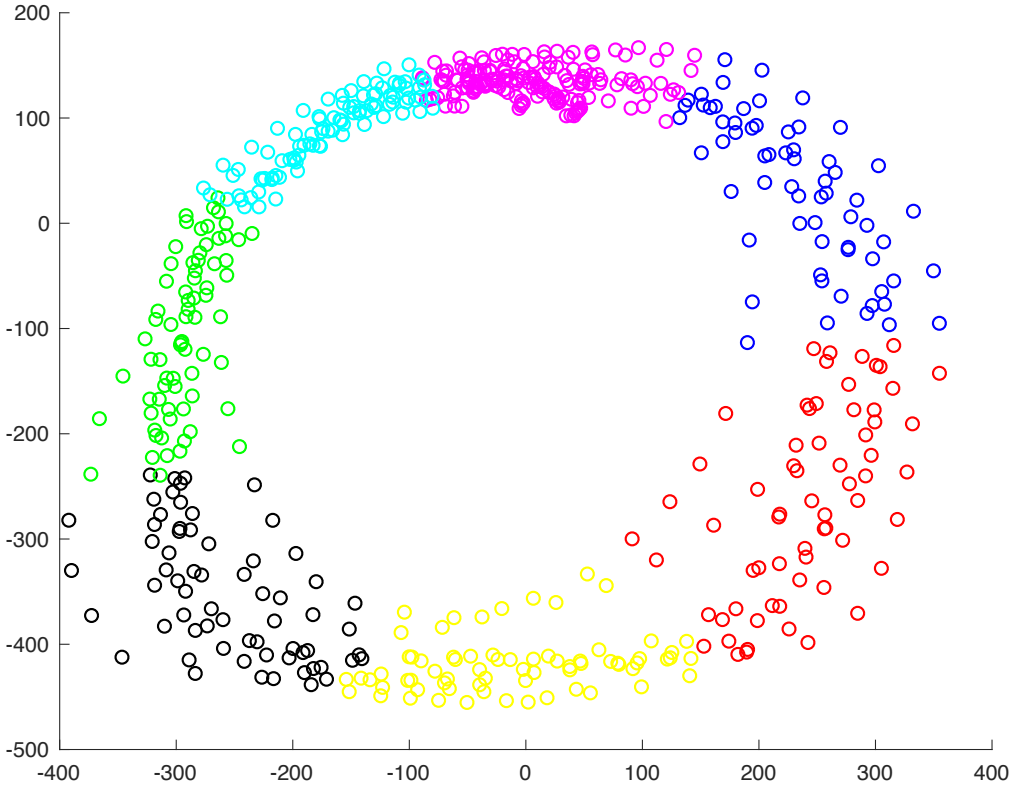
Exercise 3

a) K means

Gesture_l:



Gesture_o:


200
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-100
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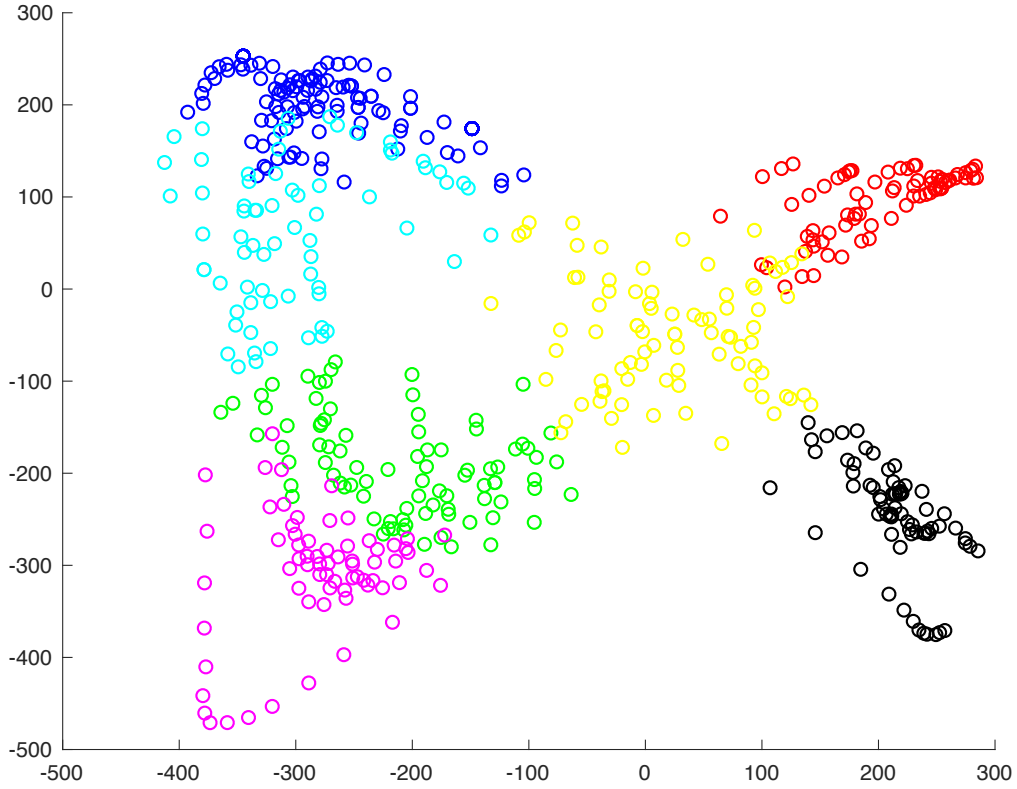
Gesture_x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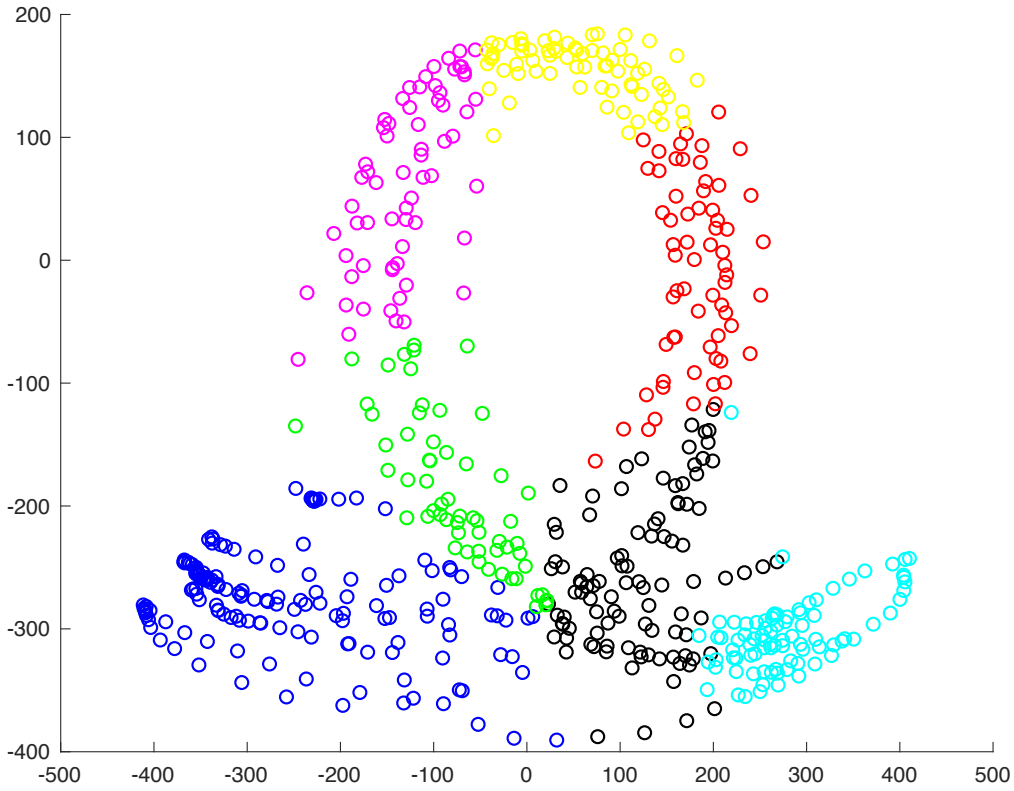
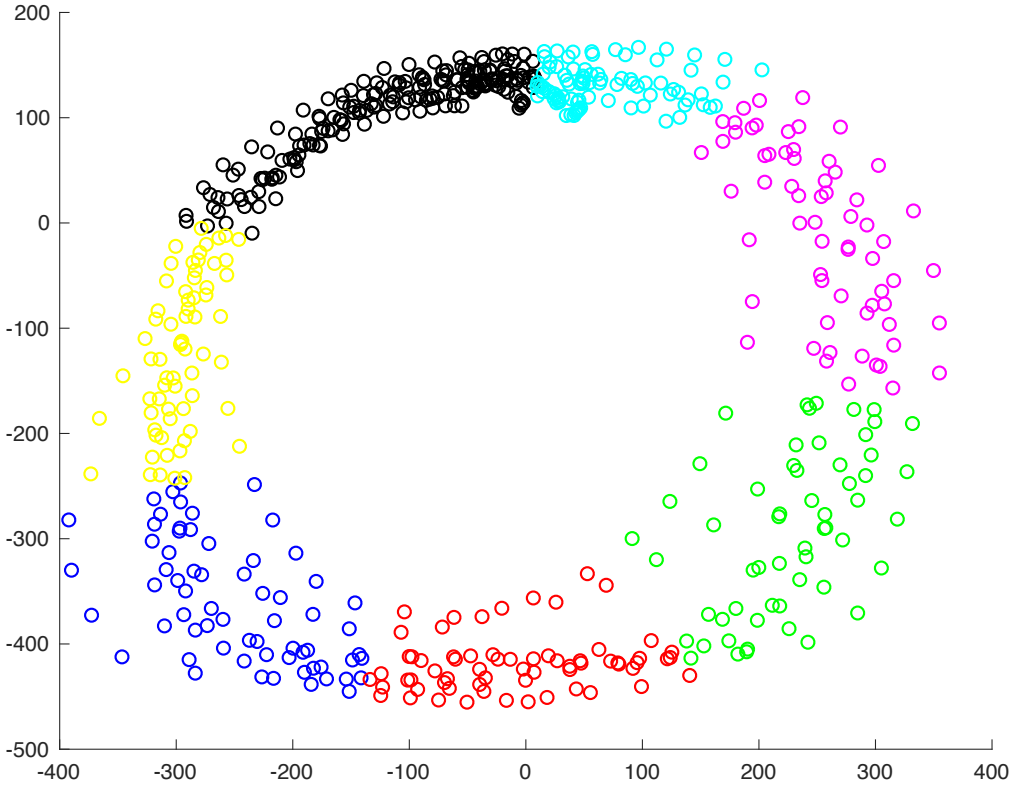
b)

Gesture_l



Gesture_o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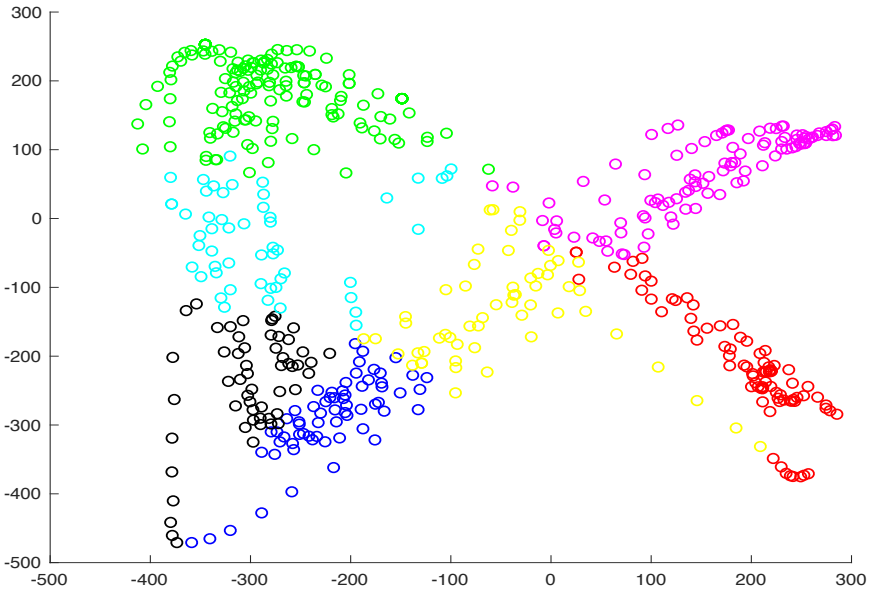
Gesture_x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