```
####################### START MLE Training on Labled Set ######################
####################### END Train Parameters on Labled Set ####################

######################  Maximum Liklihood Estimates ###########################
######################  EM Estimates EPSILON= 1.0 ##############################
[LEMDA, PHI]: [0.93000000000000005, 0.59999999999999998]
mu0: array([-0.99437209, -1.11730233])
mu1: array([ 1.04922807,  0.98085965])
sigma0:
matrix([[ 0.30811884,  0.28553768],
        [ 0.28553768,  0.81346635]])
sigma1:
matrix([[ 0.77827888,  0.19683566],
        [ 0.19683566,  0.24996938]])
################################################################################
################################################################################
####################### Prediction on Unlabeled Set ############################
####################### Precint Preference Table ###############
```

Precint ID	P(Yi=1/Xi)	> 0.5
1	5.60366645891e-18	[False]
2	6.2031046024e-19	[False]
3	0.999999999993	[True]
4	4.34419898048e-14	[False]
5	1.0	[True]
6	5.34552604506e-13	[False]
7	2.29545378852e-16	[False]
8	3.98029152894e-17	[False]
9	2.00682163441e-17	[False]
10	6.94086294021e-19	[False]
11	0.999999999973	[True]
12	0.999999998485	[True]
13	1.0	[True]
14	1.61069042107e-15	[False]
15	1.30887773713e-10	[False]
16	0.999999999996	[True]
17	1.0	[True]
18	2.4318533552e-17	[False]
19	1.80363773081e-18	[False]
20	1.7510108321e-16	[False]
21	1.0	[True]
22	6.31115083302e-20	[False]
23	4.74794916388e-11	[False]
24	0.999999999982	[True]
25	1.23444731815e-14	[False]
26	0.999999999619	[True]
27	1.0	[True]
28	1.0	[True]
29	6.74091564912e-19	[False]
30	0.999999999999	[True]
31	1.13886031747e-21	[False]
32	2.08641888471e-17	[False]
33	4.28717114022e-16	[False]
34	0.999999999992	[True]
35	2.73912039203e-15	[False]
36	0.999999999999	[True]
37	2.59266231402e-17	[False]
38	1.0	[True]
39	1.0	[True]
40	1.06476329399e-13	[False]
41	1.0	[True]
42	2.14768178866e-13	[False]
43	9.28305982104e-18	[False]
44	1.0	[True]
45	1.20784095405e-14	[False]
46	0.999999999448	[True]
47	2.00507470188e-11	[False]
48	1.0	[True]
49	3.7739524431e-11	[False]
50	0.99993853638	[True]

```
################################################################################
```

```
######################## START EM Training on UNabled Set ######################
#######################  EM Estimates EPSILON= 1 ####################
[LEMDA, PHI]: [0.9301469242696434, 0.60233145200175731]
mu0: array([-1.04936988, -1.03332657])
mu1: array([ 0.98451987,  0.99519058])
sigma0:
matrix([[ 0.35681027,  0.3036751 ],
        [ 0.3036751 ,  0.74589374]])
sigma1:
matrix([[ 0.72176171,  0.14500171],
        [ 0.14500171,  0.30932743]])
################################################################################
######################## END   EM Training on UNabled Set ######################

######################## Precint Preference Table ##################
--------------+--------------------+----------+------------------
Precint ID    |P(Yi=1/Xi)          |> 0.5
--------------+--------------------+----------+------------------
1             |5.06074182779e-18   |[False]
2             |2.64612036147e-19   |[False]
3             |0.99999999999       |[ True]
4             |8.00971463296e-14   |[False]
5             |1.0                 |[ True]
6             |5.05116397725e-13   |[False]
7             |1.51114611496e-16   |[False]
8             |7.90400905718e-17   |[False]
9             |3.25933738811e-17   |[False]
10            |1.10662061533e-18   |[False]
11            |0.999999999981      |[ True]
12            |0.999999999422      |[ True]
13            |1.0                 |[ True]
14            |1.8805163937e-15    |[False]
15            |9.74343975335e-11   |[False]
16            |0.999999999997      |[ True]
17            |1.0                 |[ True]
18            |2.75527774148e-17   |[False]
19            |4.99771861314e-19   |[False]
20            |1.06410152267e-16   |[False]
21            |1.0                 |[ True]
22            |7.79750263758e-20   |[False]
23            |4.19323093329e-11   |[False]
24            |0.999999999987      |[ True]
25            |1.23322656607e-14   |[False]
26            |0.999999999664      |[ True]
27            |1.0                 |[ True]
28            |1.0                 |[ True]
29            |7.8222308292e-19    |[False]
30            |1.0                 |[ True]
31            |1.11659752926e-21   |[False]
32            |5.26732050637e-17   |[False]
33            |7.64907107391e-16   |[False]
34            |0.999999999996      |[ True]
35            |1.56129611226e-15   |[False]
36            |0.999999999999      |[ True]
37            |2.06320202536e-17   |[False]
38            |1.0                 |[ True]
39            |1.0                 |[ True]
40            |1.70065464022e-13   |[False]
41            |1.0                 |[ True]
42            |2.46205001567e-14   |[False]
43            |1.25035335584e-17   |[False]
44            |1.0                 |[ True]
45            |5.93980614135e-15   |[False]
46            |0.999999999702      |[ True]
47            |3.73641328647e-11   |[False]
48            |1.0                 |[ True]
49            |2.74623230594e-11   |[False]
50            |0.999974967461      |[ True]
--------------+--------------------+----------+------------------
######################## START EM Training on UNabled Set ######################
#######################  EM Estimates EPSILON= 0.9 ####################
[LEMDA, PHI]: [0.84551467692988858, 0.61713733140527405]
```

```
mu0: array([-1.03763798, -1.01232206])
mu1: array([ 0.99718406,  1.00113952])
sigma0:
matrix([[ 0.36550125,  0.3169334 ],
        [ 0.3169334 ,  0.7697211 ]])
sigma1:
matrix([[ 0.71042452,  0.13857439],
        [ 0.13857439,  0.30586894]])
################################################################################
######################### END   EM Training on UNabled Set ######################
######################### START EM Training on UNabled Set ######################
#######################  EM Estimates EPSILON= 0.6 ######################
[LEMDA, PHI]: [0.46619239439875265, 0.37079430212561043]
mu0: array([-0.94020197, -0.84649839])
mu1: array([ 1.09065465,  1.03334011])
sigma0:
matrix([[ 0.44580754,  0.43668029],
        [ 0.43668029,  0.97325207]])
sigma1:
matrix([[ 0.6358926 ,  0.1067887 ],
        [ 0.1067887 ,  0.28873258]])
################################################################################
######################### END   EM Training on UNabled Set ######################
```