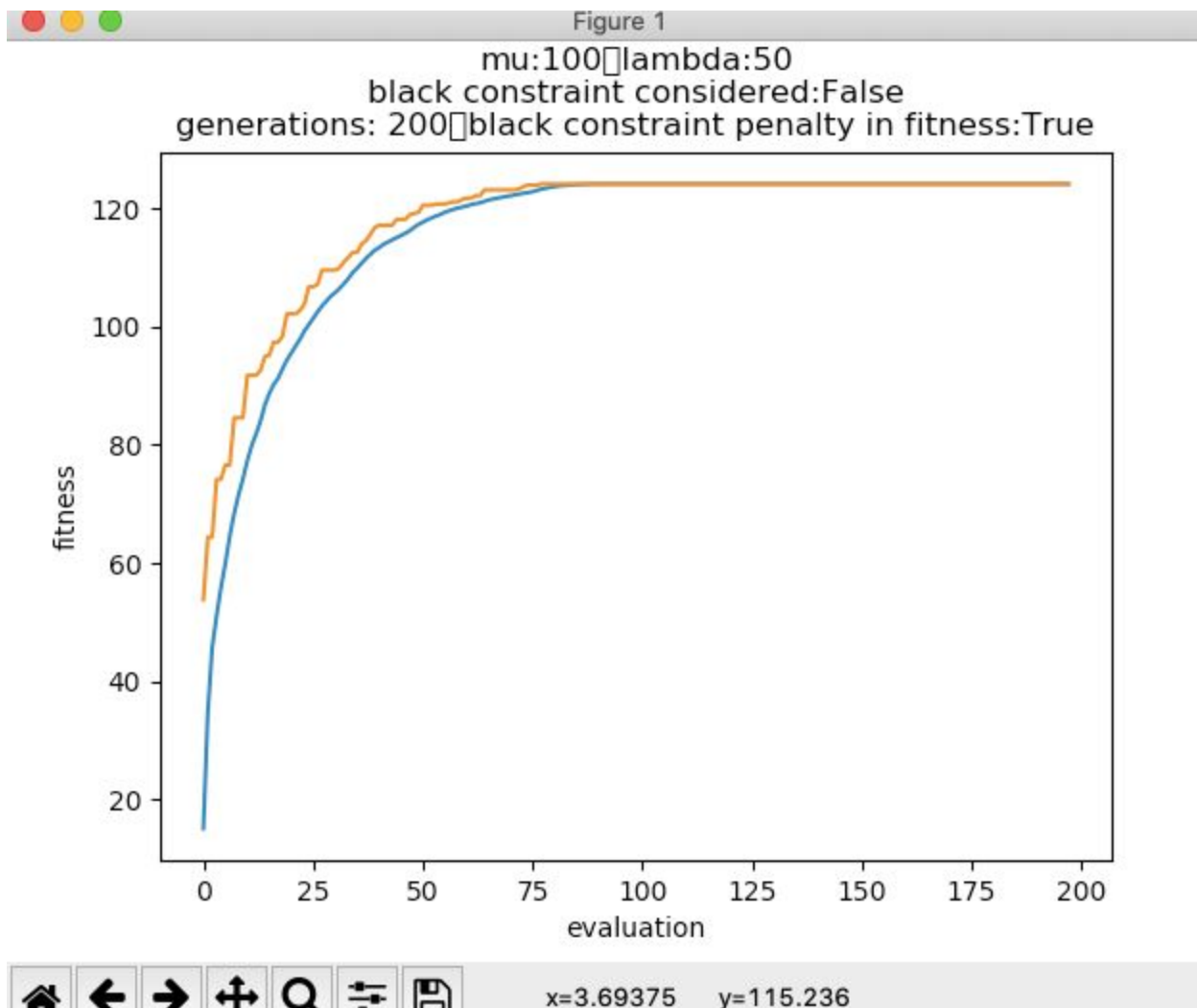In comparing the penalized version of the EA, with the constraint satisfaction, the penalized version performed remarkably better. The one tailed t-test result here was 0, meaning that it is impossible that the penalized version has the same mean as the normal constraint satisfaction.

123.6	95
124	81
125.4	93
123.2	38
124.6	28
124.8	34
124.8	60
123.4	46
124.2	15
125.2	10
123.6	30
121.8	95
125.4	28
124.4	30
123.6	102
124	57
124.2	76
123.4	106
125.2	97
125	24
124.4	3
123.6	63
124	19
125.4	27
123.2	107
122.2	7
123.6	96
0	

Figure 1

mu:100 lambda:50
black constraint considered:False
generations: 200 black constraint penalty in fitness:True

x=3.69375   y=115.236

In one of my experiments, I have compared the best fitnesses of two cases in which the mutation probability was set to 0.1 and 0.5. By doing the t-test, it seemed that there were not significant difference between the means.

I	J
81	101
93	54
38	107
28	49
34	28
60	8
46	95
15	56
10	61
30	13
95	78
28	103
30	106
102	7
57	86
76	49
106	55
97	106
24	61
3	5
63	66
19	57
27	81
107	64
7	0
96	94
0.6037835093	

```
Number of Runs:        30
Black Cells Constraint  True
Mutation Probability:    0.5
Number of Generations in each run:  200
Evaluations:      10000
Random seed:       5
Log file path+name:       logs/d1_a
Solution file path+name:     solutions/d1.txt
```