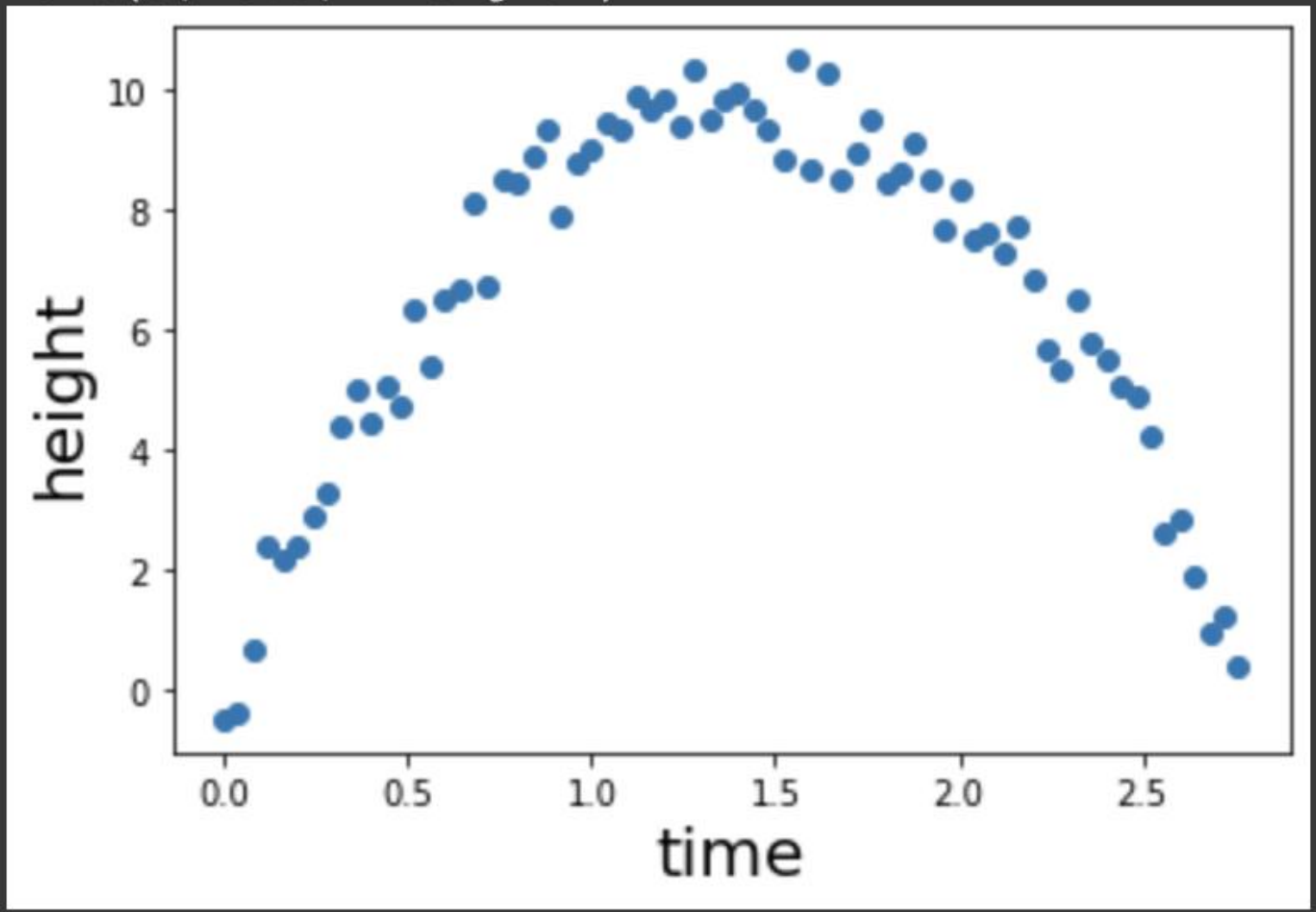
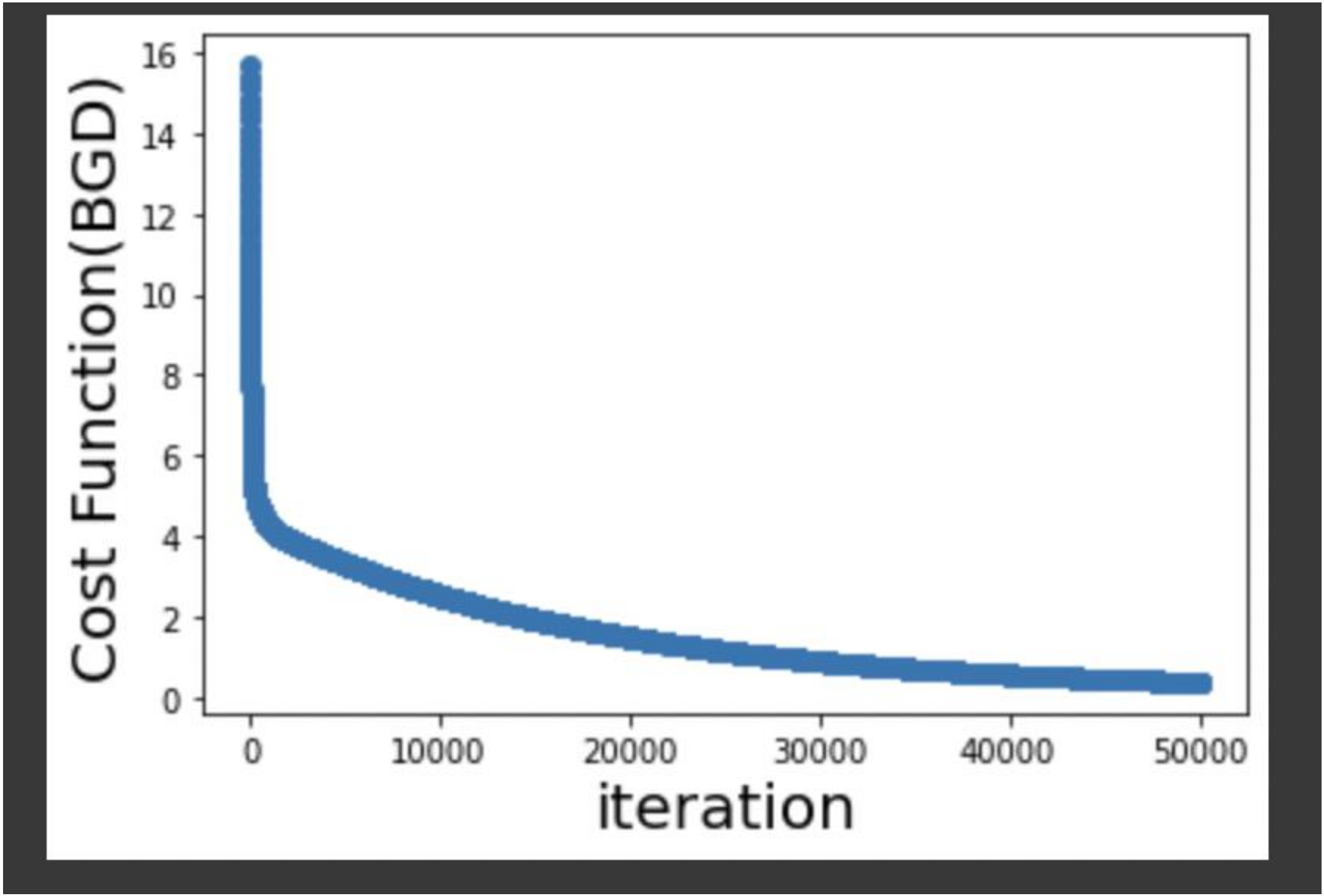
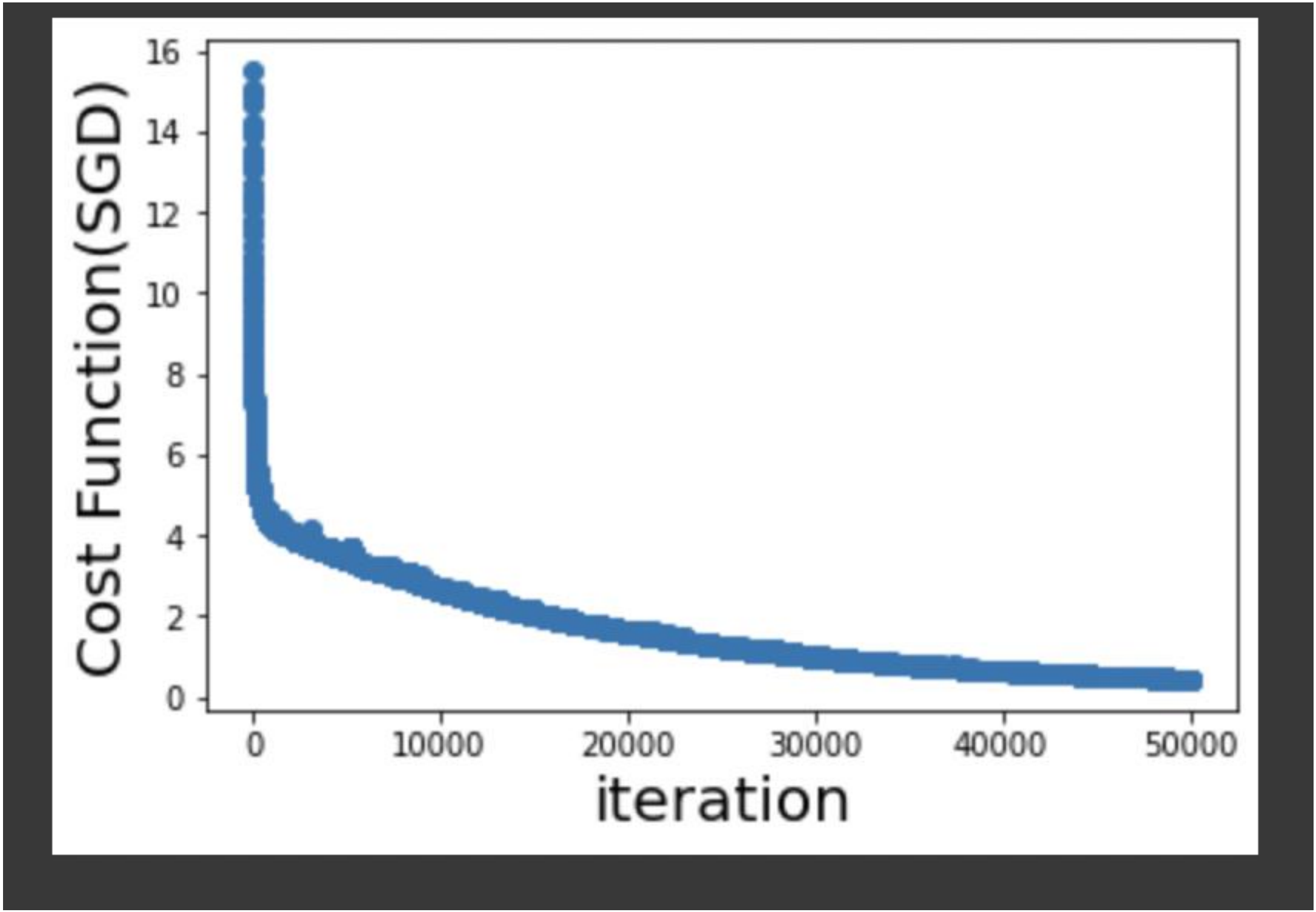
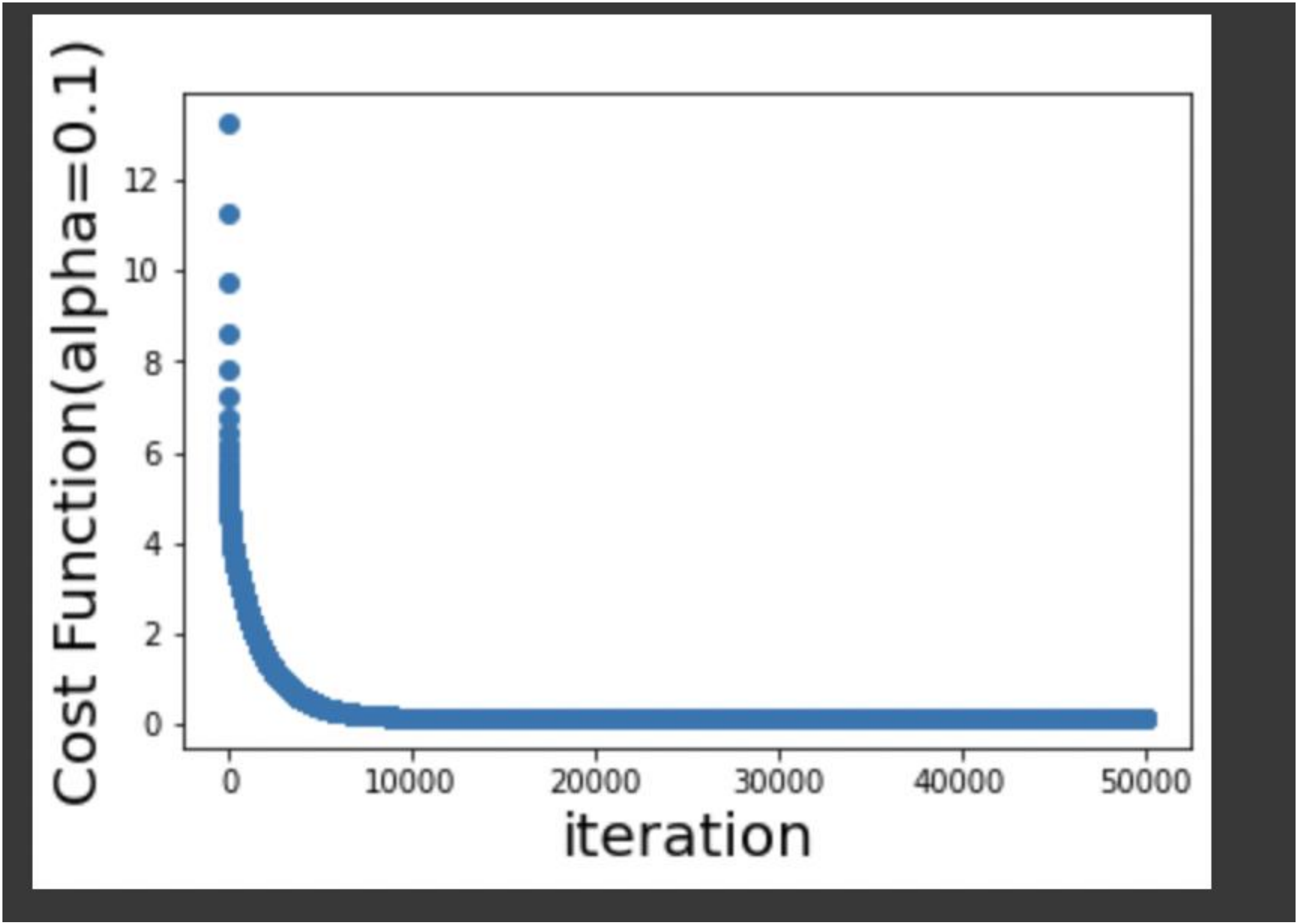
```
plt.figure()
plt.plot(x,y,'o', label="true")
plt.xlabel("time", fontsize= 20)
plt.ylabel("height", fontsize= 20)
```

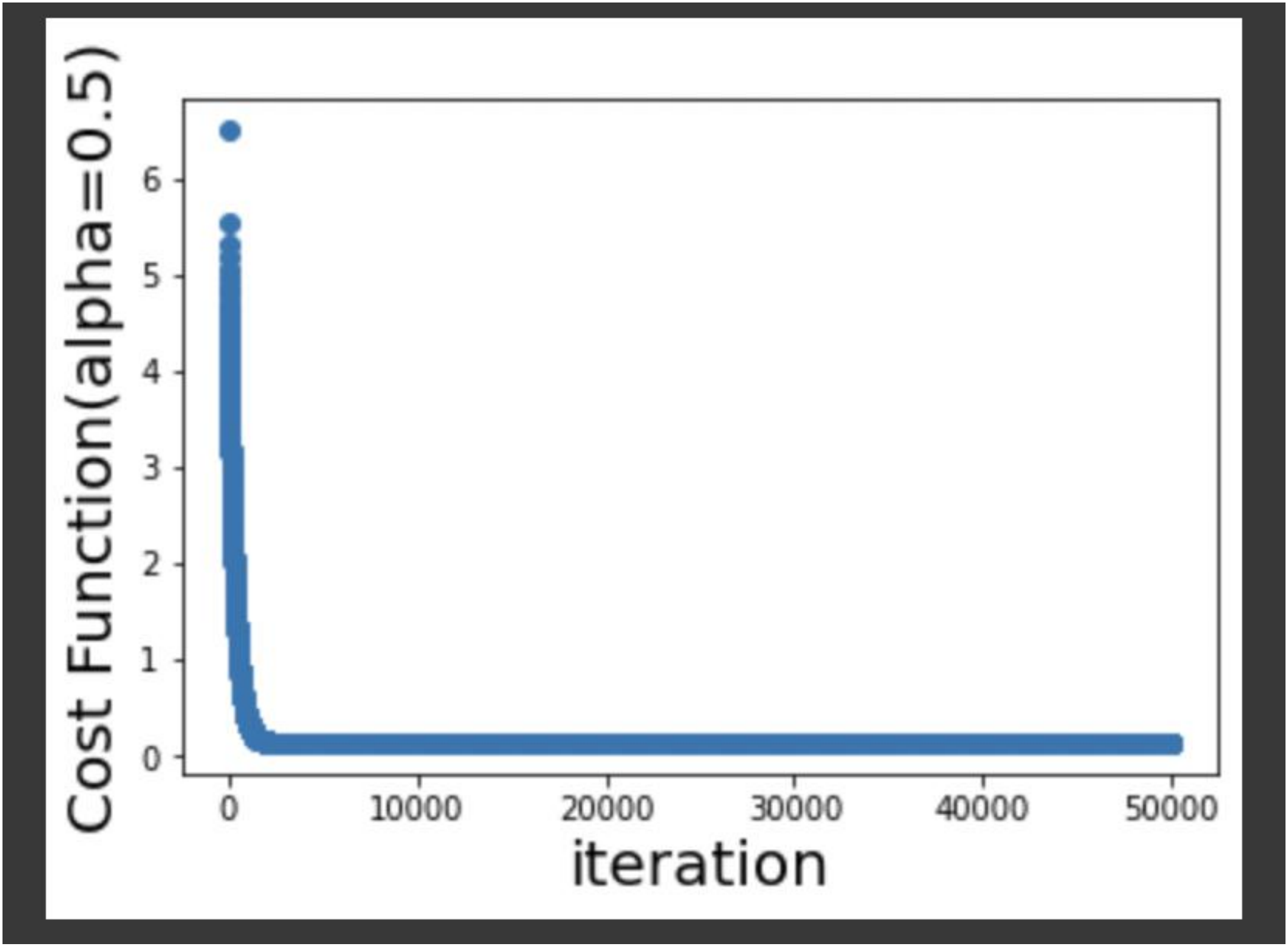
```
Text(0, 0.5, 'height')
```

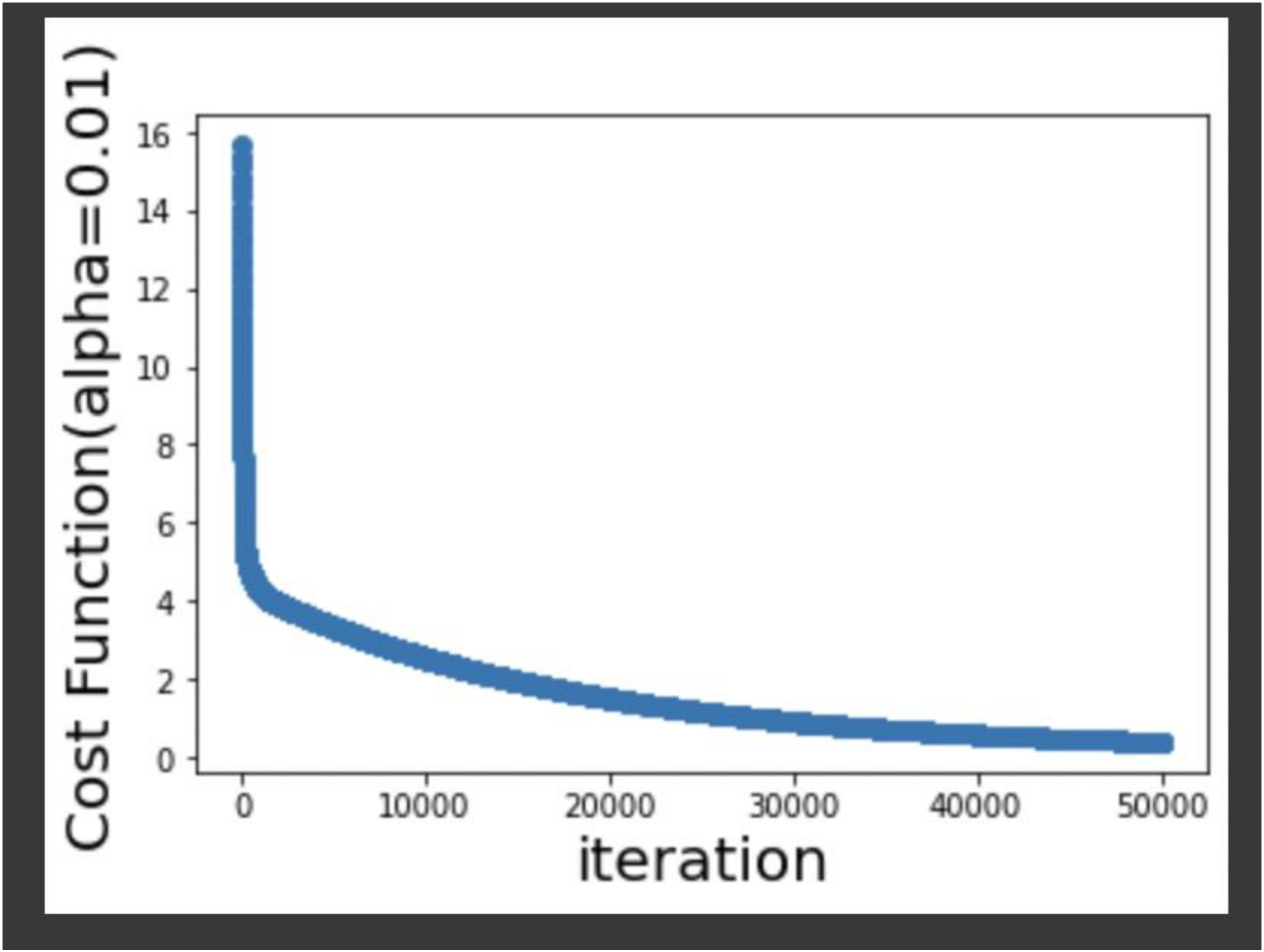


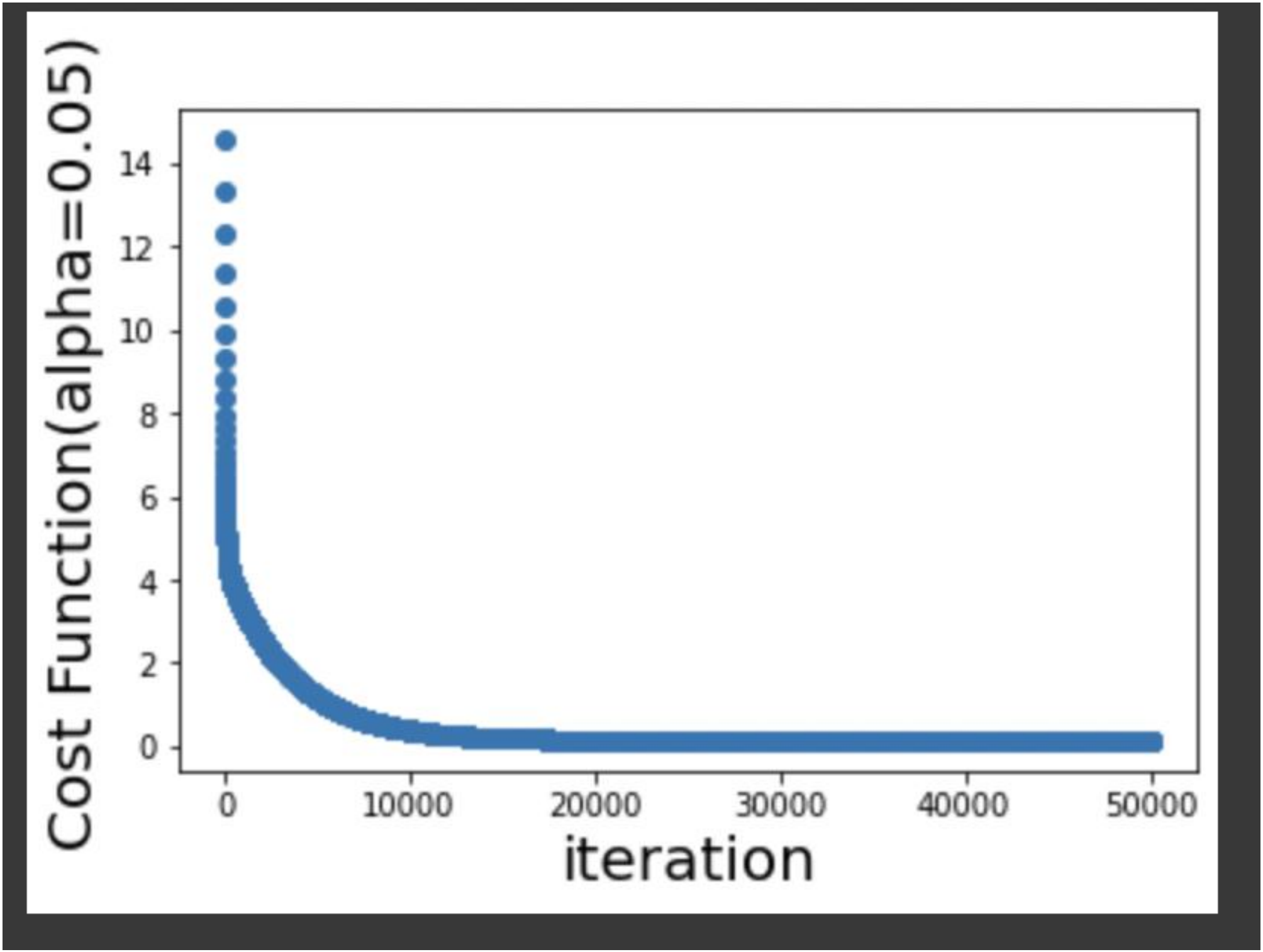

Cost Function(BGD)
16
14
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
iteration


Cost Function(SGD)
16
14
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
iteration

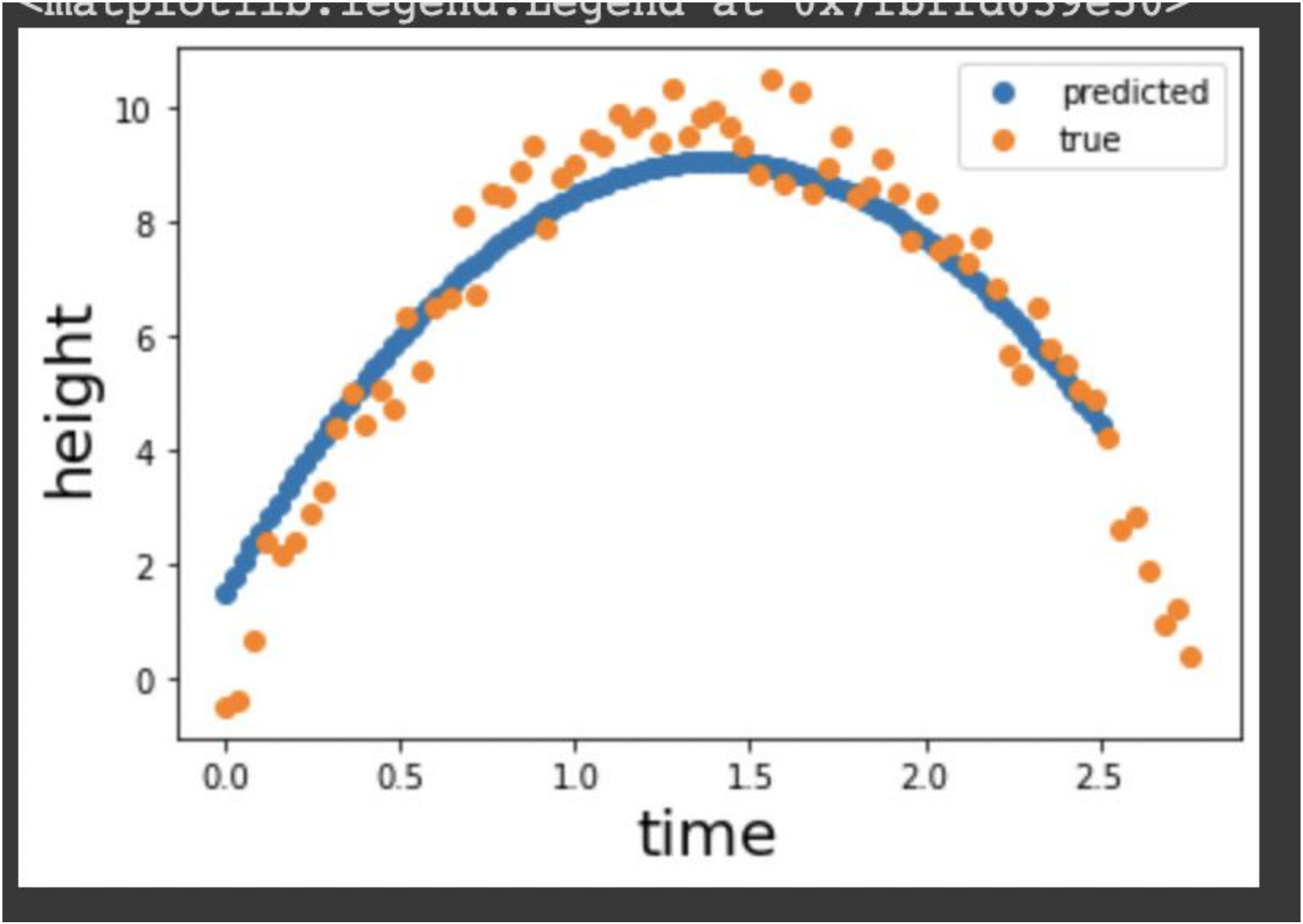

Cost Function(alpha=0.1)
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
iteration

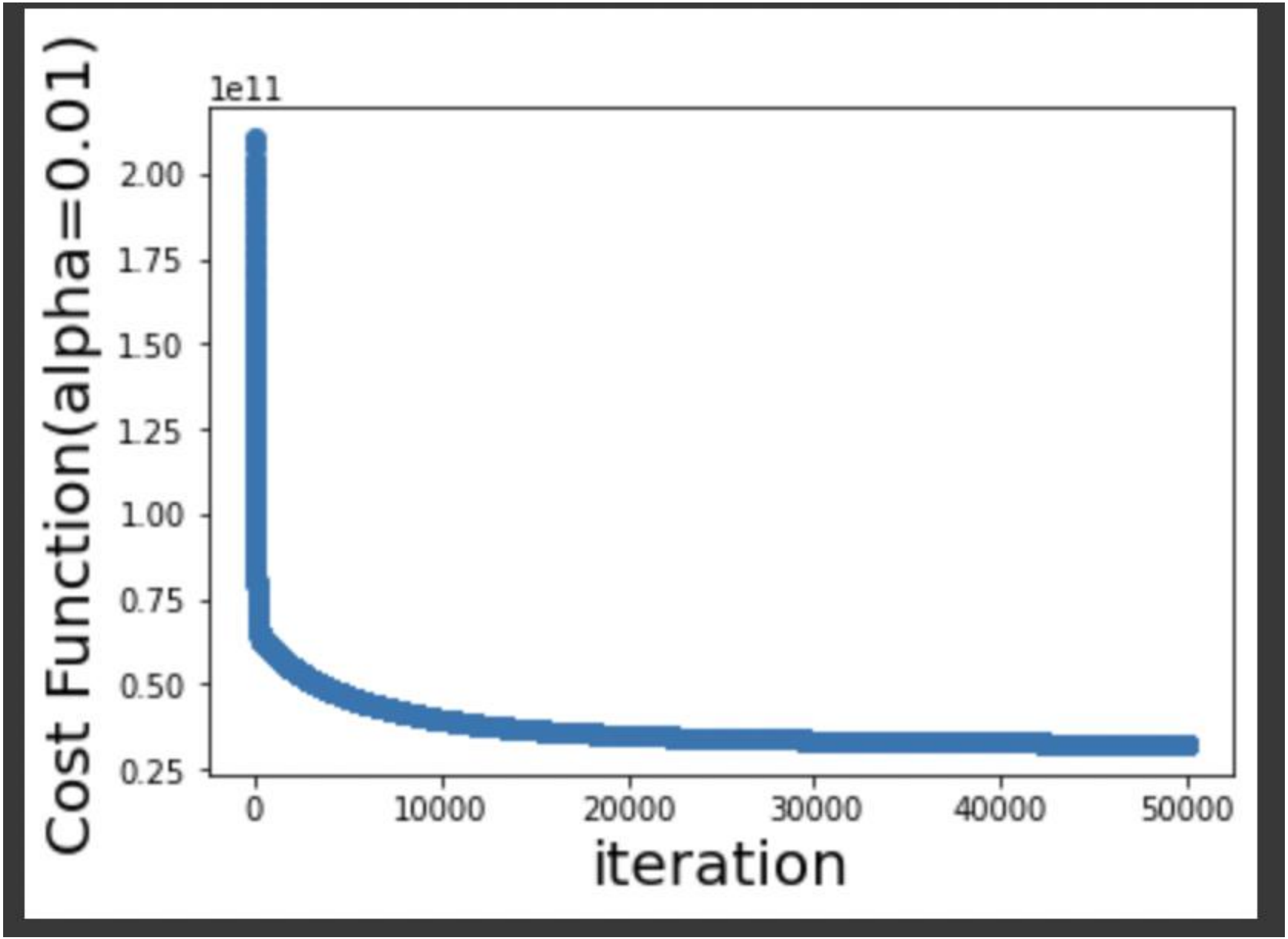

Cost Function(alpha=0.5)
0
1
2
3
4
5
6
0
10000
20000
30000
40000
50000
iteration

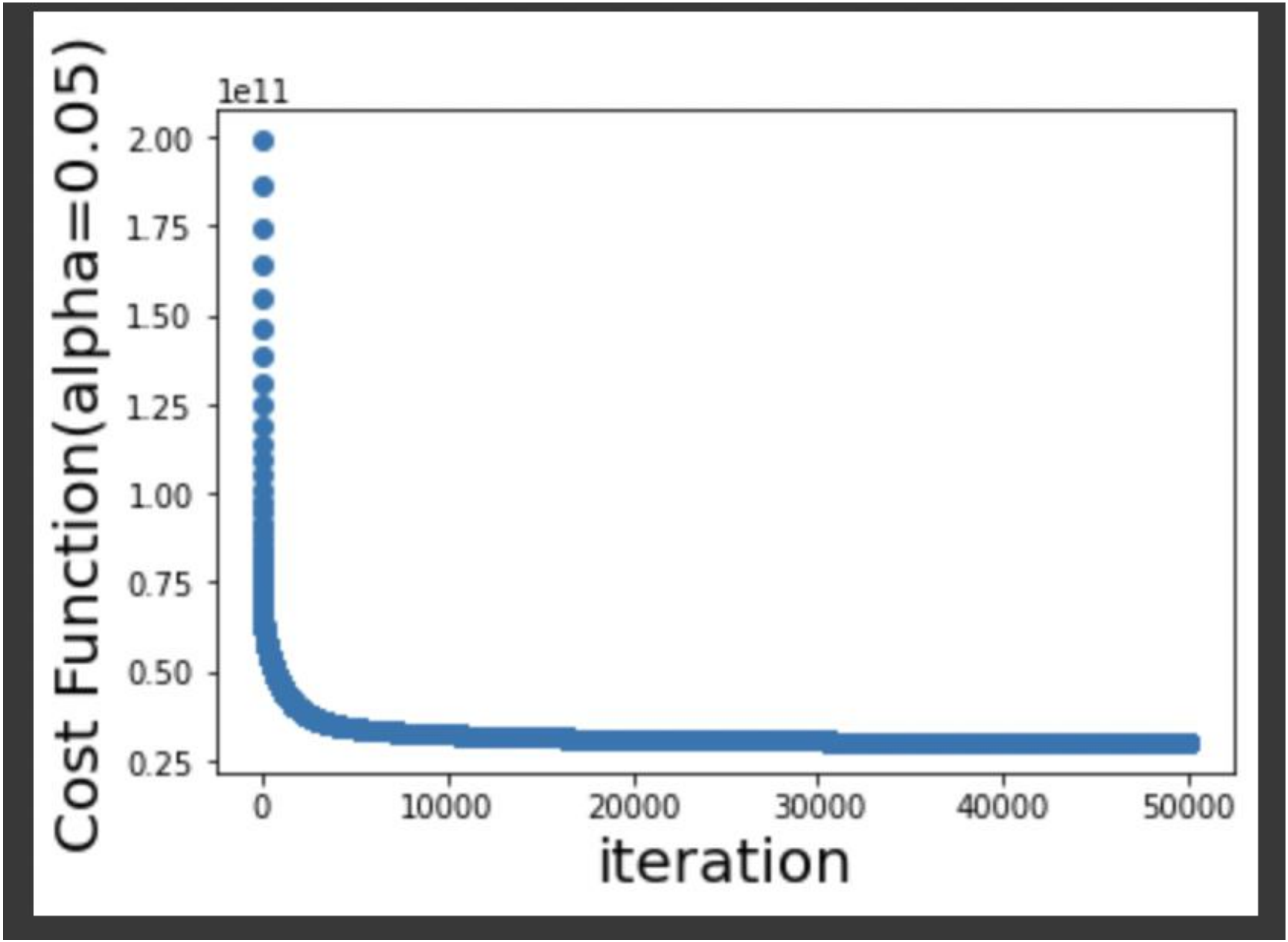

Cost Function(alpha=0.01)
16
14
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
iteration

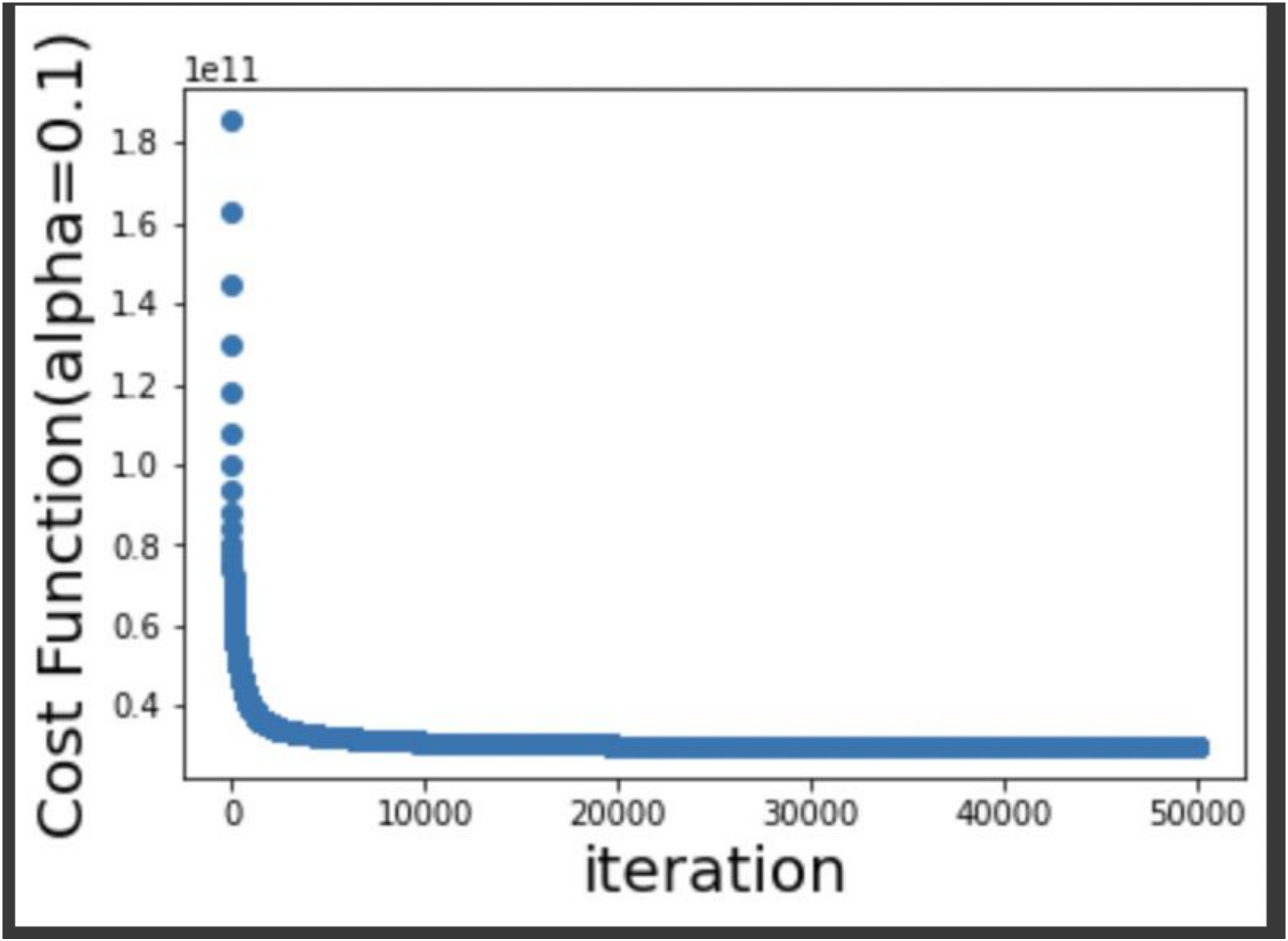

Cost Function(alpha=0.05)
14
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
iteration

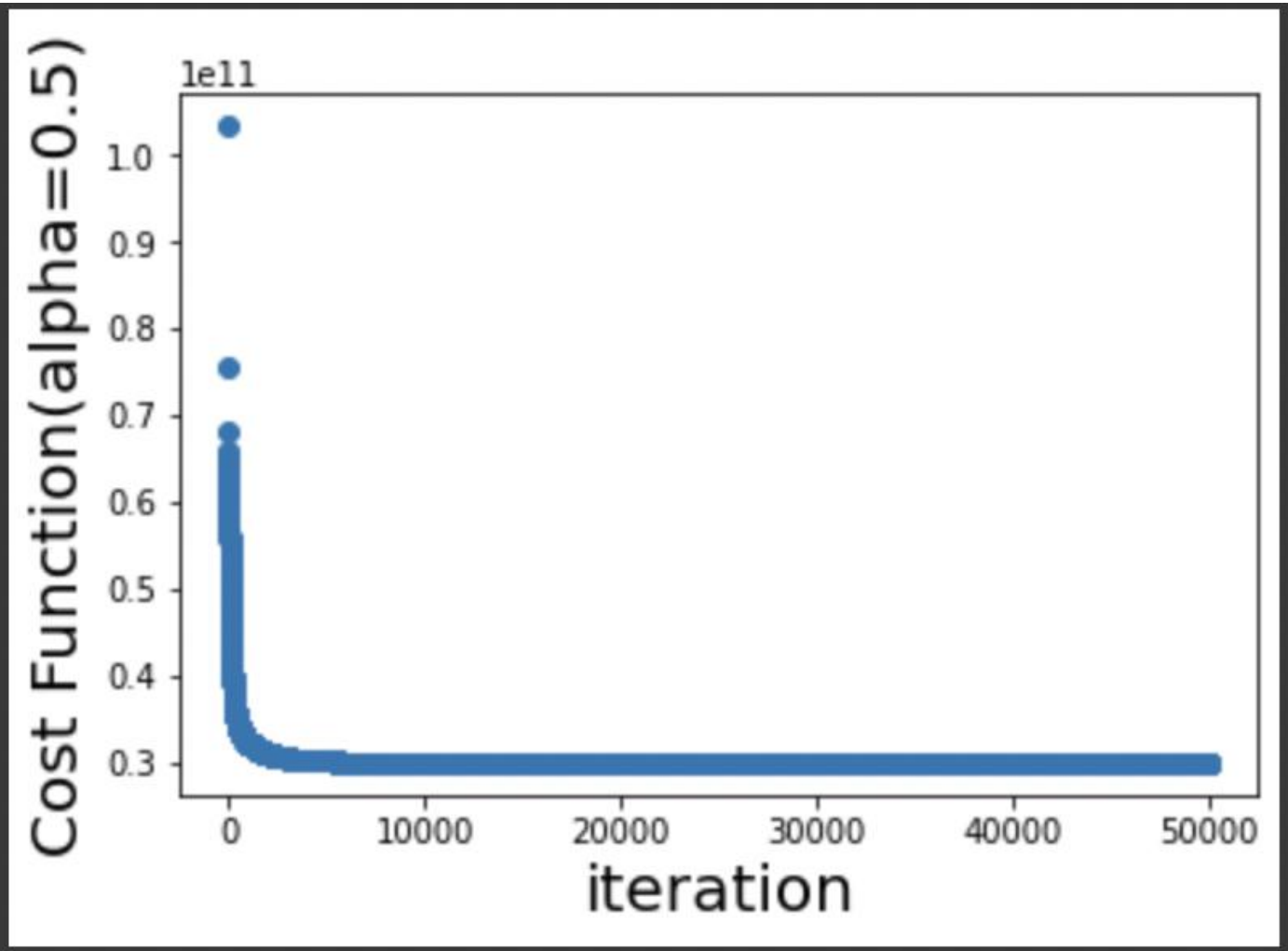
As we increase alpha the dip in the curve increases i.e. it reaches toward min faster.


predicted
true
height
time
0
2
4
6
8
10
0.0
0.5
1.0
1.5
2.0
2.5


Cost Function(alpha=0.01)
1e11
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0
10000
20000
30000
40000
50000
iteration


Cost Function(alpha=0.05)
1e11
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0
10000
20000
30000
40000
50000
iteration


Cost Function(alpha=0.1)
1e11
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0
10000
20000
30000
40000
50000
iteration



As we increase alpha the dip in the curve increases i.e. it reaches toward min faster.