

```
Last login: Wed Apr  1 19:24:57 on ttys001
Run-Mac:~ mac$ cd ~/.ssh
Run-Mac:~.ssh mac$ ssh -i "Runzhe_Song_0110.pem" ubuntu@ec2-34-225-194-35.compute-1.amazonaws.com
```

```
The authenticity of host 'ec2-34-225-194-35.compute-1.amazonaws.com (34.225.194.35)' can't be established.
ECDSA key fingerprint is SHA256:VWKXaSGV1iogyc+3ehki/HDZJjpbOMzaBewVnPHD1Y.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-34-225-194-35.compute-1.amazonaws.com,34.225.194.35' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1063-aws x86_64)
```

```
* Documentation: https://help.ubuntu.com
* Management:   https://landscape.canonical.com
* Support:      https://ubuntu.com/advantage
```

System information as of Thu Apr 2 00:42:42 UTC 2020

```
System load:  0.0      Processes:      364
Usage of /:   56.9% of 15.45GB   Users logged in:  0
Memory usage: 0%      IP address for ens5: 172.31.64.18
Swap usage:   0%
```

```
* Kubernetes 1.18 GA is now available! See https://microk8s.io for docs or
install it with:
```

```
sudo snap install microk8s --channel=1.18 --classic
```

```
* Multipass 1.1 adds proxy support for developers behind enterprise
firewalls. Rapid prototyping for cloud operations just got easier.
```

```
https://multipass.run/
```

```
* Canonical Livepatch is available for installation.
- Reduce system reboots and improve kernel security. Activate at:
https://ubuntu.com/livepatch
```

```
53 packages can be updated.
0 updates are security updates.
```

```
Last login: Wed Apr  1 20:30:39 2020 from 107.13.161.147
ubuntu@ip-172-31-64-18:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
20:44, 04/01; num of cores:36
```

```
Basic setting:[T, sd_0, sd_D, sd_R, sd_u_0, w_0, w_A, [M_in_R, mean_reversion, pois0, simple, u_0_u_D]] = [None, 10, 10, 10, 0.3, 0.5, 1
, [True, False, True, False, 10]]
```

```
-----
[pattern_seed, day] = [2, 7]
```

```
max(u_0) = 197.9
0_threshold = 70
means of Order:
```

```
87.8 97.8 52.4 162.7 58.1
```

```
77.3 115.7 68.5 72.4 75.7
```

```
117.4 197.9 100.7 71.1 116.9
```

```
83.2 98.9 141.5 79.5 99.8
```

```
76.4 94.9 107.4 73.9 89.9
```

```
target policy:
```

```
1 1 0 1 0
```

```
1 1 0 1 1
```

```
1 1 1 1 1
```

```
1 1 1 1 1
```

```
1 1 1 1 1
```

```
number of reward locations: 22
```

```
0_threshold = 80
```

```
target policy:
```

```
1 1 0 1 0
```

```
0 1 0 0 0
```

```
1 1 1 0 1
```

```
1 1 1 0 1
```

```
0 1 1 0 1
```

```
number of reward locations: 15
Q_threshold = 90
target policy:
```

```
0 1 0 1 0
```

```
0 1 0 0 0
```

```
1 1 1 0 1
```

```
0 1 1 0 1
```

```
0 1 1 0 0
```

```
number of reward locations: 12
Q_threshold = 100
target policy:
```

```
0 0 0 1 0
```

```
0 1 0 0 0
```

```
1 1 1 0 1
```

```
0 0 1 0 0
```

```
0 0 1 0 0
```

```
number of reward locations: 8
Q_threshold = 110
target policy:
```

```
0 0 0 1 0
```

```
0 1 0 0 0
```

```
1 1 0 0 1
```

```
0 0 1 0 0
```

```
0 0 0 0 0
```

```
number of reward locations: 6
Rep 1 DONE; Rep 2 DONE; Rep 3 DONE; Rep 4 DONE; Rep 5 DONE; Rep 6 DONE; Rep 7 DONE; Rep 8 DONE; Rep 9 DONE; Rep 10 DONE; Rep 11 DONE; Rep 12 DONE; Rep 13 DONE; Rep 14 DONE; Rep 15 DONE; Rep 16 DONE; Rep 17 DONE; Rep 18 DONE; Rep 19 DONE; Rep 20 DONE; Rep 21 DONE; Rep 22 DONE; Rep 23 DONE; Rep 24 DONE; Rep 25 DONE; Rep 26 DONE; Rep 27 DONE; Rep 28 DONE; Rep 29 DONE; Rep 30 DONE; Rep 31 DONE; Rep 32 DONE; Rep 33 DONE; Rep 34 DONE; Rep 35 DONE; Rep 36 DONE; Rep 37 DONE; Rep 38 DONE; Rep 39 DONE; Rep 40 DONE; Rep 41 DONE; Rep 42 DONE; Rep 43 DONE; Rep 44 DONE; Rep 45 DONE; Rep 46 DONE; Rep 47 DONE; Rep 48 DONE; Rep 49 DONE; Rep 50 DONE; Rep 51 DONE; Rep 52 DONE; Rep 53 DONE; Rep 54 DONE; Rep 55 DONE; Rep 56 DONE; Rep 57 DONE; Rep 58 DONE; Rep 59 DONE; Rep 60 DONE; Rep 61 DONE; Rep 62 DONE; Rep 63 DONE; Rep 64 DONE; Rep 65 DONE; Rep 66 DONE; Rep 67 DONE; Rep 68 DONE; Rep 69 DONE; Rep 70 DONE; Rep 71 DONE; Rep 72 DONE; Rep 73 DONE; Rep 74 DONE; Rep 75 DONE; Rep 76 DONE; Rep 77 DONE; Rep 78 DONE; Rep 79 DONE; Rep 80 DONE; Rep 81 DONE; Rep 82 DONE; Rep 83 DONE; Rep 84 DONE; Rep 85 DONE; Rep 86 DONE; Rep 87 DONE; Rep 88 DONE; Rep 89 DONE; Rep 90 DONE; Rep 91 DONE; Rep 92 DONE; Rep 93 DONE; Rep 94 DONE; Rep 95 DONE; Rep 96 DONE; Rep 97 DONE; Rep 98 DONE; Rep 99 DONE; Rep 100 DONE;
```

```
-----
Value of Behaviour policy:60.784
Q_threshold = 70
MC for this TARGET:[69.323, 0.132]
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[2.23, 2.11, 1.41]][[5.09, -69.32, -8.54]]
std:[[0.79, 0.8, 0.45]][[0.34, 0.0, 0.23]]
MSE:[[2.37, 2.26, 1.48]][[5.1, 69.32, 8.54]]
MSE(-DR):[[0.0, -0.11, -0.89]][[2.73, 66.95, 6.17]]
***
=====
```

```
Q_threshold = 80
MC for this TARGET:[70.884, 0.141]
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[0.28, 0.13, -1.01]][[1.22, -70.88, -10.1]]
std:[[0.62, 0.63, 0.37]][[0.38, 0.0, 0.23]]
MSE:[[0.68, 0.64, 1.08]][[1.28, 70.88, 10.1]]
MSE(-DR):[[0.0, -0.04, 0.4]][[0.6, 70.2, 9.42]]
***
=====
```

```
Q_threshold = 90
MC for this TARGET:[69.371, 0.133]
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-0.14, -0.28, -1.06]][[-0.55, -69.37, -8.59]]
std:[[0.64, 0.65, 0.42]][[0.36, 0.0, 0.23]]
MSE:[[0.66, 0.71, 1.14]][[0.66, 69.37, 8.59]]
MSE(-DR):[[0.0, 0.05, 0.48]][[0.0, 68.71, 7.93]]
***
=====
```

```
0_threshold = 100
MC for this TARGET:[68.94, 0.132]
  [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-2.76, -2.87, -3.31]][[-4.81, -68.94, -8.16]]
std:[[0.66, 0.66, 0.39]][[0.34, 0.0, 0.23]]
MSE:[[2.84, 2.94, 3.33]][[4.82, 68.94, 8.16]]
MSE(-DR):[[0.0, 0.1, 0.49]][[1.98, 66.1, 5.32]]
***
=====
```

```
0_threshold = 110
MC for this TARGET:[70.484, 0.135]
  [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-6.46, -6.54, -6.74]][[-8.79, -70.48, -9.7]]
std:[[0.68, 0.68, 0.44]][[0.34, 0.0, 0.23]]
MSE:[[6.5, 6.58, 6.75]][[8.8, 70.48, 9.7]]
MSE(-DR):[[0.0, 0.08, 0.25]][[2.3, 63.98, 3.2]]
***
=====
```

```
[[ 2.37  2.26  1.48  5.1  69.32  8.54]
 [ 0.68  0.64  1.08  1.28  70.88 10.1 ]
 [ 0.66  0.71  1.14  0.66  69.37  8.59]
 [ 2.84  2.94  3.33  4.82  68.94  8.16]
 [ 6.5   6.58  6.75  8.8   70.48  9.7  ]]
```

time spent until now: 198.7 mins

ubuntu@ip-172-31-64-18:~\$