

```
Last login: Sun Apr 12 17:33:10 on ttys000
Run-Mac:~ mac$ cd ~/.ssh
Run-Mac:~ mac$ ssh -i "Runzhe.pem" ubuntu@ec2-35-170-52-91.compute-1.amazonaws.com
The authenticity of host 'ec2-35-170-52-91.compute-1.amazonaws.com (35.170.52.91)' can't be established.
ECDSA key fingerprint is SHA256:01AEirU6Y+tMQWu2ow+Qs6f0TX2vkzr1yA8FyyC5+g8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-35-170-52-91.compute-1.amazonaws.com,35.170.52.91' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1060-aws x86_64)
```

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

System information as of Sun Apr 12 22:40:17 UTC 2020

```
System load:  1.05          Processes:      228
Usage of /:   28.1% of 30.96GB Users logged in: 0
Memory usage: 1%           IP address for ens5: 172.31.7.151
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
```

```
90 packages can be updated.
39 updates are security updates.
```

```
Last login: Fri Apr 3 19:45:17 2020 from 107.13.161.147
export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
ubuntu@ip-172-31-7-151:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
18:42, 04/12; num of cores:16
median_u_0_u_D_tuning
```

```
Basic setting:[rep_times, sd_0, sd_D, sd_u_0, w_0, w_A, u_0_u_D, t_func] = [16, None, None, 20, 0.5, 1.5, 10, None]
```

```
Traceback (most recent call last):
  File "EC2.py", line 73, in <module>
    print("[thre_range, sd_R_range, day_range, penalty_range]: ", [thre_range, sd_R_range, day_range, penalty_range])
NameError: name 'penalty_range' is not defined
ubuntu@ip-172-31-7-151:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
18:51, 04/12; num of cores:16
median_u_0_u_D_tuning
```

```
Basic setting:[rep_times, sd_0, sd_D, sd_u_0, w_0, w_A, u_0_u_D, t_func] = [16, None, None, 20, 0.5, 1.5, 10, None]
```

```
[thre_range, sd_R_range, day_range, penalty_range]: [[100, 105, 110, 115], [0, 15, 30], [7], [[0.01, 0.001, 0.0001], [0.01, 0.001, 0.0001]]]
```

```
-----
[pattern_seed, day, sd_R] = [2, 7, 0]
```

```
max(u_0) = 145.8
0_threshold = 100
number of reward locations: 9
0_threshold = 105
number of reward locations: 7
0_threshold = 110
number of reward locations: 6
0_threshold = 115
number of reward locations: 3
target 1 in 4 DONE!
target 2 in 4 DONE!
target 3 in 4 DONE!
target 4 in 4 DONE!
```

```
-----
Value of Behaviour policy:52.865
0_threshold = 100
MC for this TARGET:[58.154, 0.081]
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-1.29, -2.66, -1.1]][[-1.18, -58.15, -5.29]]
std:[[0.49, 0.6, 0.41]][[0.33, 0.0, 0.23]]
MSE:[[1.38, 2.73, 1.17]][[1.23, 58.15, 5.29]]
MSE(-DR):[[0.0, 1.35, -0.21]][[-0.15, 56.77, 3.91]]
=====
0_threshold = 105
MC for this TARGET:[57.708, 0.073]
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
```

```
bias:[[-3.42, -4.71, -3.07]][[-3.87, -57.71, -4.84]]
std:[[0.51, 0.62, 0.42]][[0.31, 0.0, 0.23]]
MSE:[[3.46, 4.75, 3.1]][[3.88, 57.71, 4.85]]
MSE(-DR):[[0.0, 1.29, -0.36]][[0.42, 54.25, 1.39]]
```

```
***
```

```
=====
```

```
O_threshold = 110
```

```
MC for this TARGET:[56.697, 0.063]
```

```
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
```

```
bias:[[-2.51, -3.46, -2.93]][[-4.92, -56.7, -3.83]]
```

```
std:[[0.47, 0.53, 0.42]][[0.32, 0.0, 0.23]]
```

```
MSE:[[2.55, 3.5, 2.96]][[4.93, 56.7, 3.84]]
```

```
MSE(-DR):[[0.0, 0.95, 0.41]][[2.38, 54.15, 1.29]]
```

```
***
```

```
=====
```

```
O_threshold = 115
```

```
MC for this TARGET:[58.647, 0.054]
```

```
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
```

```
bias:[[-6.01, -6.36, -7.57]][[-12.64, -58.65, -5.78]]
```

```
std:[[0.51, 0.35, 0.48]][[0.34, 0.0, 0.23]]
```

```
MSE:[[6.03, 6.37, 7.59]][[12.64, 58.65, 5.78]]
```

```
MSE(-DR):[[0.0, 0.34, 1.56]][[6.61, 52.62, -0.25]]
```

```
***
```

```
=====
```

```
[[ 1.38  2.73  1.17  1.23 58.15  5.29]
 [ 3.46  4.75  3.1   3.88 57.71  4.85]
 [ 2.55  3.5   2.96  4.93 56.7   3.84]
 [ 6.03  6.37  7.59 12.64 58.65  5.78]]
```

```
time spent until now: 46.9 mins
```

```
19:38, 04/12
```

```
-----
[pattern_seed, day, sd_R] = [2, 7, 15]
```

```
max(u_0) = 145.8
```

```
O_threshold = 100
```

```
number of reward locations: 9
```

```
O_threshold = 105
```

```
number of reward locations: 7
```

```
O_threshold = 110
```

```
number of reward locations: 6
```

```
O_threshold = 115
```

```
number of reward locations: 3
```