```
Last login: Mon Apr  6 18:03:53 on ttys000
Run-Mac:~ mac$ ssh -i "Runzhe_Song_0110.pem" ubuntu@ec2-3-226-243-168.compute-1.amazonaws.com
Warning: Identity file Runzhe_Song_0110.pem not accessible: No such file or directory.
^[[A^C
Run-Mac:~ mac$ cd ~/.ssh
Run-Mac:.ssh mac$ ssh -i "Runzhe_Song_0110.pem" ubuntu@ec2-34-229-65-78.compute-1.amazonaws.com
ssh: connect to host ec2-34-229-65-78.compute-1.amazonaws.com port 22: Connection refused
Run-Mac:.ssh mac$ ssh -i "Runzhe_Song_0110.pem" ubuntu@ec2-34-229-65-78.compute-1.amazonaws.com
Warning: Permanently added the ED25519 host key for IP address '34.229.65.78' 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 Mon Apr  6 22:56:00 UTC 2020

  System load:  1.18               Processes:           229
  Usage of /:   57.0% of 15.45GB   Users logged in:     0
  Memory usage: 1%                 IP address for ens5: 172.31.67.47
  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-172-31-67-47:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
18:57, 04/06; num of cores:16

final sd_R trend for[0, 10, 20]

Basic setting:[T, rep_times, sd_O, sd_D, sd_R, sd_u_O, w_O, w_A, [M_in_R, mean_reversion, pois0, u_O_u_D], sd_R_range, t_func] = [None,
16, None, None, None, 30, 1, 1, [True, False, True, 10], [0, 10, 20], None]


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

max(u_O) =  168.1
O_threshold = 80
number of reward locations:  21
O_threshold = 90
number of reward locations:  21
O_threshold = 100
number of reward locations:  18
O_threshold = 110
number of reward locations:  15
O_threshold = 120
number of reward locations:  10
O_threshold = 130
number of reward locations:  6
target 1 in 6 DONE!
target 2 in 6 DONE!
target 3 in 6 DONE!
target 4 in 6 DONE!
target 5 in 6 DONE!
target 6 in 6 DONE!

--------------------------------------
Value of Behaviour policy:75.133
O_threshold = 80
MC for this TARGET:[83.81, 0.071]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[0.6, 0.49, 0.39]][[3.77, -83.81, -8.68]]
std:[[0.73, 0.73, 0.45]][[0.26, 0.0, 0.16]]
MSE:[[0.94, 0.88, 0.6]][[3.78, 83.81, 8.68]]
MSE(-DR):[[0.0, -0.06, -0.34]][[2.84, 82.87, 7.74]]
**
==============
O_threshold = 90
MC for this TARGET:[83.81, 0.071]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[0.6, 0.49, 0.39]][[3.77, -83.81, -8.68]]
std:[[0.74, 0.73, 0.47]][[0.27, 0.0, 0.16]]
```

```
MSE:[[0.95, 0.88, 0.61]][[3.78, 83.81, 8.68]]
MSE(-DR):[[0.0, -0.07, -0.34]][[2.83, 82.86, 7.73]]
**
==============
O_threshold = 100
MC for this TARGET:[88.056, 0.07]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-1.65, -1.84, -3.21]][[0.34, -88.06, -12.92]]
std:[[0.33, 0.34, 0.26]][[0.26, 0.0, 0.16]]
MSE:[[1.68, 1.87, 3.22]][[0.43, 88.06, 12.92]]
MSE(-DR):[[0.0, 0.19, 1.54]][[-1.25, 86.38, 11.24]]
==============
O_threshold = 110
MC for this TARGET:[88.985, 0.069]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-2.66, -2.89, -4.39]][[-1.91, -88.98, -13.85]]
std:[[0.4, 0.4, 0.27]][[0.3, 0.0, 0.16]]
MSE:[[2.69, 2.92, 4.4]][[1.93, 88.98, 13.85]]
MSE(-DR):[[0.0, 0.23, 1.71]][[-0.76, 86.29, 11.16]]
==============
O_threshold = 120
MC for this TARGET:[84.342, 0.074]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-3.46, -3.59, -4.11]][[-3.83, -84.34, -9.21]]
std:[[0.42, 0.42, 0.29]][[0.32, 0.0, 0.16]]
MSE:[[3.49, 3.61, 4.12]][[3.84, 84.34, 9.21]]
MSE(-DR):[[0.0, 0.12, 0.63]][[0.35, 80.85, 5.72]]
***
==============
O_threshold = 130
MC for this TARGET:[86.906, 0.068]
   [DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]
bias:[[-9.67, -9.69, -9.12]][[-11.01, -86.91, -11.77]]
std:[[0.59, 0.61, 0.29]][[0.3, 0.0, 0.16]]
MSE:[[9.69, 9.71, 9.12]][[11.01, 86.91, 11.77]]
MSE(-DR):[[0.0, 0.02, -0.57]][[1.32, 77.22, 2.08]]
**
==============
[[ 0.94  0.88  0.6   3.78 83.81  8.68]
 [ 0.95  0.88  0.61  3.78 83.81  8.68]
 [ 1.68  1.87  3.22  0.43 88.06 12.92]
 [ 2.69  2.92  4.4   1.93 88.98 13.85]
 [ 3.49  3.61  4.12  3.84 84.34  9.21]
 [ 9.69  9.71  9.12 11.01 86.91 11.77]]


time spent until now: 59.4 mins


--------------------------------------
[pattern_seed, day, sd_R] = [0, 7, 10]

max(u_O) =  168.1
O_threshold = 80
number of reward locations:  21
O_threshold = 90
number of reward locations:  21
O_threshold = 100
number of reward locations:  18
O_threshold = 110
number of reward locations:  15
O_threshold = 120
number of reward locations:  10
O_threshold = 130
number of reward locations:  6
^CProcess Process-24:
Process Process-28:
Process Process-22:
Process Process-18:
Traceback (most recent call last):
  File "EC2.py", line 87, in <module>
Process Process-32:
Process Process-25:
Process Process-20:
Process Process-29:
Process Process-27:
    with_MF = with_MF,
  File "/home/ubuntu/simu_funs.py", line 62, in simu
Process Process-23:
    value_reps = parmap(once, range(OPE_rep_times), n_cores)
  File "/home/ubuntu/_uti_basic.py", line 80, in parmap
    [q_in.put((None, None)) for _ in range(nprocs)]
  File "/home/ubuntu/_uti_basic.py", line 80, in <listcomp>
    [q_in.put((None, None)) for _ in range(nprocs)]
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/queues.py", line 82, in put
Process Process-30:
Process Process-17:
Traceback (most recent call last):
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
```