

```
Last login: Fri Apr 3 08:40:32 on ttys001
Run-Mac:~ mac$ cd ~/.ssh
Run-Mac:~ ssh mac$ ssh -i "Runzhe_Song_0110.pem" ubuntu@ec2-3-231-220-101.compute-1.amazonaws.com
The authenticity of host 'ec2-3-231-220-101.compute-1.amazonaws.com (3.231.220.101)' can't be established.
ECDSA key fingerprint is SHA256:uSLKG0tZe0QyvJS9twzsYUfY25HGeUW+RMYoAz/GiG4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-3-231-220-101.compute-1.amazonaws.com,3.231.220.101' (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 Fri Apr 3 12:50:02 UTC 2020

```
System load: 0.9          Processes:            382
Usage of /:  56.9% of 15.45GB Users logged in:      0
Memory usage: 0%          IP address for ens5: 172.31.66.227
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-172-31-66-227:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
^CTraceback (most recent call last):
  File "EC2.py", line 2, in <module>
    from _utility import *
  File "/home/ubuntu/_utility.py", line 6, in <module>
    from _uti_basic import *
  File "/home/ubuntu/_uti_basic.py", line 24, in <module>
    from sklearn import preprocessing as pre
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/sklearn/preprocessing/__init__.py", line 6, in <module>
    from _function_transformer import FunctionTransformer
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/sklearn/preprocessing/_function_transformer.py", line 5, in <module>
    from ..utils.testing import assert_allclose_dense_sparse
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/sklearn/utils/testing.py", line 54, in <module>
    from nose.tools import raises as _nose_raises
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/nose/__init__.py", line 1, in <module>
    from nose.core import collector, main, run, run_exit, runmodule
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/nose/core.py", line 11, in <module>
    from nose.config import Config, all_config_files
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/nose/config.py", line 9, in <module>
    from nose.plugins.manager import NoPlugins
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/nose/plugins/__init__.py", line 185, in <module>
    from nose.plugins.manager import *
  File "/home/ubuntu/anaconda3/lib/python3.7/site-packages/nose/plugins/manager.py", line 418, in <module>
    import pkg_resources
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 3253, in <module>
    @_call_aside
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 3237, in _call_aside
    f(*args, **kwargs)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 3266, in _initialize_master_working_set
    working_set = WorkingSet._build_master()
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 575, in _build_master
    ws = cls()
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 568, in __init__
    self.add_entry(entry)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 624, in add_entry
    for dist in find_distributions(entry, True):
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 2066, in find_on_path
    for dist in factory(fullpath):
  File "/home/ubuntu/.local/lib/python3.7/site-packages/pkg_resources/__init__.py", line 2128, in distributions_from_metadata
    if len(os.listdir(path)) == 0:
KeyboardInterrupt
ubuntu@ip-172-31-66-227:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
08:51, 04/03; num of cores:36
```

```
try T trend with sd_R = 20
```

```
Basic setting:[T, rep_times, 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, 36, 10, 10,
20, 0.3, 0.5, 1, [True, False, True, False, 10]]
```

```
-----  
[pattern_seed, day, sd_R] = [2, 8, 20]
```

```
max(u_0) = 197.9  
0_threshold = 75  
number of reward locations: 19  
0_threshold = 85  
number of reward locations: 14  
0_threshold = 95  
number of reward locations: 11  
0_threshold = 105  
number of reward locations: 7  
0_threshold = 115  
number of reward locations: 6  
1 -th region DONE with time cost 0.0 mins  
6 -th region DONE with time cost 5.0 mins  
11 -th region DONE with time cost 9.0 mins  
16 -th region DONE with time cost 13.0 mins  
21 -th region DONE with time cost 17.0 mins  
1 -th region DONE with time cost 0.0 mins  
6 -th region DONE with time cost 4.0 mins  
11 -th region DONE with time cost 8.0 mins  
16 -th region DONE with time cost 12.0 mins  
21 -th region DONE with time cost 17.0 mins  
1 -th region DONE with time cost 0.0 mins  
6 -th region DONE with time cost 4.0 mins  
11 -th region DONE with time cost 8.0 mins  
16 -th region DONE with time cost 12.0 mins  
21 -th region DONE with time cost 16.0 mins  
1 -th region DONE with time cost 0.0 mins  
6 -th region DONE with time cost 4.0 mins  
11 -th region DONE with time cost 8.0 mins  
16 -th region DONE with time cost 12.0 mins  
21 -th region DONE with time cost 16.0 mins  
1 -th region DONE with time cost 0.0 mins  
6 -th region DONE with time cost 4.0 mins  
11 -th region DONE with time cost 8.0 mins  
16 -th region DONE with time cost 12.0 mins  
21 -th region DONE with time cost 16.0 mins
```

```
-----  
Value of Behaviour policy:60.721
```

```
0_threshold = 75  
MC for this TARGET:[70.814, 0.175]  
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]  
bias:[[1.85, 1.59, 0.73]][[3.75, -21478.26, -10.09]]  
std:[[0.94, 0.91, 0.62]][[0.45, 103709.45, 0.26]]  
MSE:[[2.08, 1.83, 0.96]][[3.78, 105910.18, 10.09]]  
MSE(-DR):[[0.0, -0.25, -1.12]][[1.7, 105908.1, 8.01]]  
***
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```
0_threshold = 85  
MC for this TARGET:[71.054, 0.182]  
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]  
bias:[[0.31, 0.04, -1.14]][[0.21, -39793.01, -10.33]]  
std:[[0.83, 0.83, 0.56]][[0.49, 161240.6, 0.26]]  
MSE:[[0.89, 0.83, 1.27]][[0.53, 166078.34, 10.33]]  
MSE(-DR):[[0.0, -0.06, 0.38]][[-0.36, 166077.45, 9.44]]  
=====
```

```
0_threshold = 95  
MC for this TARGET:[69.106, 0.186]  
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]  
bias:[[-1.21, -1.37, -1.77]][[-1.59, -24351.77, -8.38]]  
std:[[0.78, 0.74, 0.48]][[0.44, 170977.55, 0.26]]  
MSE:[[1.44, 1.56, 1.83]][[1.65, 172703.01, 8.38]]  
MSE(-DR):[[0.0, 0.12, 0.39]][[0.21, 172701.57, 6.94]]  
***
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```
0_threshold = 105  
MC for this TARGET:[71.375, 0.19]  
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]  
bias:[[-6.38, -6.46, -6.83]][[-7.92, -7575.89, -10.65]]  
std:[[0.96, 0.95, 0.59]][[0.41, 54094.42, 0.26]]  
MSE:[[6.45, 6.53, 6.86]][[7.93, 54622.34, 10.65]]  
MSE(-DR):[[0.0, 0.08, 0.41]][[1.48, 54615.89, 4.2]]  
***
```

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```
0_threshold = 115  
MC for this TARGET:[70.456, 0.187]  
[DR/QV/IS]; [DR_NO_MARL, DR_NO_MF, V_behav]  
bias:[[-6.41, -6.5, -6.82]][[-8.7, -17998.71, -9.73]]  
std:[[1.02, 1.02, 0.7]][[0.41, 84361.87, 0.26]]  
MSE:[[6.49, 6.58, 6.86]][[8.71, 86260.53, 9.73]]  
MSE(-DR):[[0.0, 0.09, 0.37]][[2.22, 86254.04, 3.24]]  
***
```

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```

```
[2.0800e+00 1.8300e+00 9.6000e-01 3.7800e+00 1.0591e+05 1.0090e+01]  
[8.9000e-01 8.3000e-01 1.2700e+00 5.3000e-01 1.6608e+05 1.0330e+01]  
[1.4400e+00 1.5600e+00 1.8300e+00 1.6500e+00 1.7270e+05 8.3800e+00]
```

```
[6.4500e+00 6.5300e+00 6.8600e+00 7.9300e+00 5.4622e+04 1.0650e+01]
[6.4900e+00 6.5800e+00 6.8600e+00 8.7100e+00 8.6261e+04 9.7300e+00]]
```

time spent until now: 101.5 mins

```
-----
[pattern_seed, day, sd_R] = [2, 14, 20]
```

```
max(u_0) = 197.9
0_threshold = 75
number of reward locations: 19
0_threshold = 85
number of reward locations: 14
0_threshold = 95
number of reward locations: 11
0_threshold = 105
number of reward locations: 7
0_threshold = 115
number of reward locations: 6
1 -th region DONE with time cost 1.0 mins
6 -th region DONE with time cost 9.0 mins
^CProcess Process-70:
Process Process-51:
Process Process-65:
Process Process-58:
Process Process-59:
Process Process-48:
Process Process-55:
Process Process-41:
Process Process-56:
Traceback (most recent call last):
Process Process-39:
  File "EC2.py", line 77, in <module>
Process Process-52:
Process Process-71:
Process Process-67:
Process Process-43:
Process Process-69:
Process Process-60:
Process Process-49:
  dim_S_plus_Ts = 3 + 3, epsilon = 1e-6, # Fixed
  File "/home/ubuntu/simu_funs.py", line 60, in simu
Process Process-53:
Process Process-68:
  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)]
Process Process-64:
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/queues.py", line 82, in put
Process Process-37:
Process Process-45:
Process Process-72:
Process Process-61:
Process Process-54:
Process Process-47:
Process Process-38:
Process Process-46:
Process Process-44:
Process Process-62:
Process Process-40:
Process Process-63:
Exception ignored in: <function ScopedTFGraph.__del__ at 0x7fe13ac6bb70>
Traceback (most recent call last):
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/framework/c_api_util.py", line 48, in __del__
    def __del__(self):
KeyboardInterrupt
Process Process-66:
  if not self._sem.acquire(block, timeout):
KeyboardInterrupt
ubuntu@ip-172-31-66-227:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
10:44, 04/03; num of cores:36
```

```
try T trend with sd_R = 20
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```
Traceback (most recent call last):
  File "EC2.py", line 23, in <module>
    sd_D = sd_0 = sd_0D
NameError: name 'sd_0D' is not defined
ubuntu@ip-172-31-66-227:~$ export openblas_num_threads=1; export OMP_NUM_THREADS=1; python EC2.py
11:00, 04/03; num of cores:36
```

```
try T trend with sd_R = 20
```

```
Basic setting:[T, rep_times, 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, 9, 0, 0, 20,
0.3, 0.5, 1, [True, False, True, False, 10]]
```

```
-----  
[pattern_seed, day, sd_R] = [2, 6, 20]
```

```
max(u_0) = 197.9  
0_threshold = 75  
number of reward locations: 19  
0_threshold = 85  
number of reward locations: 14  
0_threshold = 95  
number of reward locations: 11  
0_threshold = 105  
number of reward locations: 7  
0_threshold = 115  
number of reward locations: 6  
^CException ignored in: <function TF_Output.<lambda> at 0x7f479e307d08>  
Process Process-194:  
Process Process-202:  
Process Process-199:  
Process Process-182:  
Process Process-190:  
Process Process-187:  
Process Process-205:  
Process Process-204:  
Traceback (most recent call last):  
Process Process-197:  
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/pywrap_tensorflow_internal.py", line 1417, in <lambda>  
Process Process-193:  
Process Process-196:  
Process Process-189:  
Process Process-186:  
Traceback (most recent call last):  
  File "EC2.py", line 79, in <module>  
    print_flag_target = False  
  File "/home/ubuntu/simu_funs.py", line 62, in simu  
    value_reps = rep_seeds(once, OPE_rep_times)  
  File "/home/ubuntu/_uti_basic.py", line 124, in rep_seeds  
Process Process-201:  
Process Process-203:  
  return list(map(fun, range(rep_times)))  
  File "/home/ubuntu/simu_funs.py", line 58, in once  
    inner_parallel = inner_parallel)  
  File "/home/ubuntu/simu_funs.py", line 206, in simu_once  
    inner_parallel = inner_parallel)  
  File "/home/ubuntu/main.py", line 133, in V_DR  
Process Process-185:  
  r = arr(parmap(getOneRegionValue, range(N)))  
  File "/home/ubuntu/_uti_basic.py", line 80, in parmap  
Process Process-184:  
  [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  
    __del__ = lambda self: None  
KeyboardInterrupt:  
  if not self._sem.acquire(block, timeout):  
KeyboardInterrupt  
Traceback (most recent call last):  
Traceback (most recent call last):  
Traceback (most recent call last):  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap  
    self.run()  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap  
    self.run()  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run  
    self._target(*self._args, **self._kwargs)  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run  
    self._target(*self._args, **self._kwargs)  
  File "/home/ubuntu/_uti_basic.py", line 67, in fun  
    q_out.put((i, f(x)))  
  File "/home/ubuntu/_uti_basic.py", line 67, in fun  
    q_out.put((i, f(x)))  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap  
    self.run()  
  File "/home/ubuntu/main.py", line 84, in getOneRegionValue  
    spatial = False)  
  File "/home/ubuntu/main.py", line 84, in getOneRegionValue  
    spatial = False)  
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run  
    self._target(*self._args, **self._kwargs)  
  File "/home/ubuntu/main.py", line 239, in getWeight  
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)  
  File "/home/ubuntu/main.py", line 239, in getWeight  
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)  
Process Process-183:  
  File "/home/ubuntu/_uti_basic.py", line 67, in fun  
    q_out.put((i, f(x)))  
  File "/home/ubuntu/weight.py", line 301, in train
```

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    self.policy_ratio2: policy_ratio2
File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1158, in _run
    self._graph, fetches, feed_dict_tensor, feed_handles=feed_handles)
File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1127, in _run
    if isinstance(subfeed_val, int) and _convert_to_numpy_obj(
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 474, in __init__
    self._fetch_mapper = _FetchMapper.for_fetch(fetches)
File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 264, in for_fetch
    return _ListFetchMapper(fetch)
KeyboardInterrupt
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 373, in __init__
    self._mappers = [_FetchMapper.for_fetch(fetch) for fetch in fetches]
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1173, in _run
    feed_dict_tensor, options, run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 373, in <listcomp>
    self._mappers = [_FetchMapper.for_fetch(fetch) for fetch in fetches]
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1350, in _do_run
    run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 274, in for_fetch
    return _ElementFetchMapper(fetches, contraction_fn)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1356, in _do_call
    return fn(*args)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 302, in __init__
    self._unique_fetches.append(ops.get_default_graph().as_graph_element(
Traceback (most recent call last):
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1341, in _run_fn
    options, feed_dict, fetch_list, target_list, run_metadata)
KeyboardInterrupt
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1429, in _call_tf_sessionrun
    run_metadata)
KeyboardInterrupt
File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
    self.run()
File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run
    self._target(*self._args, **self._kwargs)
File "/home/ubuntu/_uti_basic.py", line 67, in fun
    q_out.put((i, f(x)))
File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1173, in _run
    feed_dict_tensor, options, run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1350, in _do_run
    run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1356, in _do_call
    return fn(*args)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1341, in _run_fn
    options, feed_dict, fetch_list, target_list, run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1429, in _call_tf_sessionrun
    run_metadata)
KeyboardInterrupt
Traceback (most recent call last):
File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
    self.run()
File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run
    self._target(*self._args, **self._kwargs)
File "/home/ubuntu/_uti_basic.py", line 67, in fun
    q_out.put((i, f(x)))
File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1173, in _run
    feed_dict_tensor, options, run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1350, in _do_run
    run_metadata)

```

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File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1356, in _do_call
    return fn(*args)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1341, in _run_fn
    options, feed_dict, fetch_list, target_list, run_metadata)
File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1429, in _call_tf_sessionrun
    run_metadata)
KeyboardInterrupt
Traceback (most recent call last):
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
    self.run()
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run
    self._target(*self._args, **self._kwargs)
  File "/home/ubuntu/_uti_basic.py", line 67, in fun
    q_out.put((i, f(x)))
  File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
  File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
  File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1173, in _run
    feed_dict_tensor, options, run_metadata)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1350, in _do_run
    run_metadata)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1356, in _do_call
    return fn(*args)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1339, in _run_fn
    self._extend_graph()
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1373, in _extend_graph
    with self._graph._session_run_lock(): # pylint: disable=protected-access
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/util/lock_util.py", line 124, in __enter__
    self._lock.acquire(self._group_id)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/util/lock_util.py", line 90, in acquire
    self._ready.acquire()
KeyboardInterrupt
Traceback (most recent call last):
Traceback (most recent call last):
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
    self.run()
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run
    self._target(*self._args, **self._kwargs)
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 297, in _bootstrap
    self.run()
  File "/home/ubuntu/_uti_basic.py", line 67, in fun
    q_out.put((i, f(x)))
  File "/home/ubuntu/anaconda3/lib/python3.7/multiprocessing/process.py", line 99, in run
    self._target(*self._args, **self._kwargs)
  File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
  File "/home/ubuntu/_uti_basic.py", line 67, in fun
    q_out.put((i, f(x)))
  File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
  File "/home/ubuntu/main.py", line 84, in getOneRegionValue
    spatial = False)
  File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
  File "/home/ubuntu/main.py", line 239, in getWeight
    epsilon = epsilon, spatial = spatial, mean_field = mean_field)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1173, in _run
    feed_dict_tensor, options, run_metadata)
  File "/home/ubuntu/weight.py", line 301, in train
    self.policy_ratio2: policy_ratio2
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1350, in _do_run
    run_metadata)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 950, in run
    run_metadata_ptr)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1356, in _do_call
    return fn(*args)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1158, in _run
    self._graph, fetches, feed_dict_tensor, feed_handles=feed_handles)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1341, in _run_fn
    options, feed_dict, fetch_list, target_list, run_metadata)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 474, in __init__
    self._fetch_mapper = _FetchMapper.for_fetch(fetches)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 1429, in _call_tf_sessionrun
    run_metadata)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 264, in for_fetch
    return _ListFetchMapper(fetch)
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 373, in __init__
    self._mappers = [_FetchMapper.for_fetch(fetch) for fetch in fetches]
KeyboardInterrupt
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 373, in <listcomp>
    self._mappers = [_FetchMapper.for_fetch(fetch) for fetch in fetches]
  File "/home/ubuntu/.local/lib/python3.7/site-packages/tensorflow/python/client/session.py", line 274, in for_fetch

```



```
one target DONE!
one target DONE!
one target DONE!
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one target DONE!
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one target DONE!
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one target DONE!
one target DONE!
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one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
```

```
-----
Value of Behaviour policy:60.693
```

```
0_threshold = 75
```

```
MC for this TARGET:[70.841, 0.172]
```

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

```
bias:[[2.66, 2.42, 0.73]][[3.77, 216985.0, -10.15]]
```

```
std:[[1.42, 1.42, 0.61]][[0.41, 442536.28, 0.24]]
```

```
MSE:[[3.02, 2.81, 0.95]][[3.79, 492870.01, 10.15]]
```

```
MSE(-DR):[[0.0, -0.21, -2.07]][[0.77, 492866.99, 7.13]]
```

```
***
```

```
=====
```

```
0_threshold = 85
```

```
MC for this TARGET:[71.08, 0.168]
```

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

```
bias:[[0.55, 0.36, -1.19]][[0.2, 138217.9, -10.39]]
```

```
std:[[0.7, 0.73, 0.52]][[0.45, 321153.07, 0.24]]
```

```
MSE:[[0.89, 0.81, 1.3]][[0.49, 349633.35, 10.39]]
```

```
MSE(-DR):[[0.0, -0.08, 0.41]][[-0.4, 349632.46, 9.5]]
```

```
=====
```

```
0_threshold = 95
```

```
MC for this TARGET:[69.128, 0.17]
```

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

```
bias:[[-0.94, -1.1, -1.54]][[-1.53, 9596.15, -8.43]]
```

```
std:[[0.4, 0.39, 0.4]][[0.43, 544105.97, 0.24]]
```

```
MSE:[[1.02, 1.17, 1.59]][[1.59, 544190.58, 8.43]]
```

```
MSE(-DR):[[0.0, 0.15, 0.57]][[0.57, 544189.56, 7.41]]
```

```
***
```

```
=====
```

```
0_threshold = 105
```

```
MC for this TARGET:[71.383, 0.169]
```

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

```
bias:[[-6.51, -6.62, -6.69]][[-8.02, 32515.77, -10.69]]
```

```
std:[[1.0, 0.98, 0.49]][[0.27, 99564.94, 0.24]]
```

```
MSE:[[6.59, 6.69, 6.71]][[8.02, 104739.93, 10.69]]
```

```
MSE(-DR):[[0.0, 0.1, 0.12]][[1.43, 104733.34, 4.1]]
```

```
***
```

```
=====
```

```
0_threshold = 115
```

```
MC for this TARGET:[70.466, 0.169]
```

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

```
bias:[[-6.95, -7.05, -6.79]][[-8.82, 32355.29, -9.77]]
```

```
std:[[0.98, 0.92, 0.5]][[0.21, 121106.43, 0.24]]
```

```
MSE:[[7.02, 7.11, 6.81]][[8.82, 125354.03, 9.77]]
```

```
MSE(-DR):[[0.0, 0.09, -0.21]][[1.8, 125347.01, 2.75]]
```

```
**
```

```
=====
```

```
[1.6000e+00 1.4200e+00 9.1000e-01 3.7200e+00 9.6845e+04 1.0210e+01]
[9.1000e-01 1.0500e+00 1.5800e+00 5.4000e-01 6.7743e+04 1.0450e+01]
[1.6100e+00 1.7800e+00 1.7700e+00 1.7600e+00 7.0226e+04 8.5000e+00]
[6.6800e+00 6.7300e+00 6.9100e+00 8.0600e+00 6.6470e+04 1.0760e+01]
[6.4300e+00 6.5100e+00 6.8600e+00 8.8400e+00 5.1183e+04 9.8500e+00]]
```

```
[3.0200e+00 2.8100e+00 9.5000e-01 3.7900e+00 4.9287e+05 1.0150e+01]
[8.9000e-01 8.1000e-01 1.3000e+00 4.9000e-01 3.4963e+05 1.0390e+01]
[1.0200e+00 1.1700e+00 1.5900e+00 1.5900e+00 5.4419e+05 8.4300e+00]
[6.5900e+00 6.6900e+00 6.7100e+00 8.0200e+00 1.0474e+05 1.0690e+01]
[7.0200e+00 7.1100e+00 6.8100e+00 8.8200e+00 1.2535e+05 9.7700e+00]]
```

```
time spent until now: 62.7 mins
```

```
-----
[pattern_seed, day, sd_R] = [3, 6, 20]
```

```
max(u_0) = 170.1
```

```
0_threshold = 75
```

```
number of reward locations: 19
```

```
0_threshold = 85
```

```
number of reward locations: 17
```

```
0_threshold = 95
```

```
number of reward locations: 12
0_threshold = 105
number of reward locations: 8
0_threshold = 115
number of reward locations: 6
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
Rep 5 DONE with time cost 2.0 mins; one target DONE!
one target DONE!
one target DONE!
one target DONE!
one target DONE!
Connection to ec2-3-231-220-101.compute-1.amazonaws.com closed by remote host.
Connection to ec2-3-231-220-101.compute-1.amazonaws.com closed.
Run-Mac:.ssh mac$
```