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(pid=4081) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:550: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4081) np_resource = np.dtype(["resource", np.ubyte, 1]))
(pid=4082) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/tensorflow/python/compat/v2_compat.py:61:
disable_resource_variables (from tensorflow.python.ops.variable_scope) is
deprecated and will be removed in a future version.
(pid=4082) Instructions for updating:
(pid=4082) non-resource variables are not supported in the long term
(pid=4080) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:541: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
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(pid=4080) _np_qint8 = np.dtype(["qint8", np.int8, 1]))
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(pid=4080) non-resource variables are not supported in the long term
2019-09-22 11:19:45,097 INFO actors.py:101 -- Got 4 colocated actors of 4
2019-09-22 11:19:45,124 WARNING worker.py:352 -- WARNING: Falling back to
serializing objects of type <class 'numpy.dtype'> by using pickle. This may be
inefficient.
2019-09-22 11:19:45,134 WARNING worker.py:352 -- WARNING: Falling back to
serializing objects of type <class 'numpy.random.mtrand.RandomState'> by using

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pickle. This may be inefficient.

2019-09-22 11:19:46,623 INFO tf_run_builder.py:92 -- Executing TF run without tracing. To dump TF timeline traces to disk, set the TF_TIMELINE_DIR environment variable.

(pid=4175) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/tensorflow/python/framework/dtypes.py:516: FutureWarning: Passing (type, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,)) / '(1,)type'.

(pid=4175) _np_qint8 = np.dtype([("qint8", np.int8, 1)])

(pid=4175) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/tensorflow/python/framework/dtypes.py:517: FutureWarning: Passing (type, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,)) / '(1,)type'.

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(pid=4175) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/tensorflow/python/framework/dtypes.py:518: FutureWarning: Passing (type, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,)) / '(1,)type'.

(pid=4175) _np_qint16 = np.dtype([("qint16", np.int16, 1)])

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(pid=4175) _np_qint32 = np.dtype([("qint32", np.int32, 1)])

(pid=4175) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/tensorflow/python/framework/dtypes.py:525: FutureWarning: Passing (type, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,)) / '(1,)type'.

(pid=4175) np_resource = np.dtype([("resource", np.ubyte, 1)])

Episode 0 of 20

(pid=4179) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/tensorflow/python/framework/dtypes.py:516: FutureWarning: Passing (type, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,)) / '(1,)type'.

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deprecated and will be removed in a future version.
(pid=4179) Instructions for updating:
(pid=4179) non-resource variables are not supported in the long term
(pid=4175) 2019-09-22 11:19:48,283 INFO rollout_worker.py:319 -- Creating policy
evaluation worker 1 on CPU (please ignore any CUDA init errors)
(pid=4175) 2019-09-22 11:19:48.299460: I tensorflow/core/platform/
cpu_feature_guard.cc:142] Your CPU supports instructions that this TensorFlow
binary was not compiled to use: AVX2
(pid=4175) 2019-09-22 11:19:48.305540: I tensorflow/core/platform/profile_utils/
cpu_utils.cc:94] CPU Frequency: 3593250000 Hz
(pid=4175) 2019-09-22 11:19:48.305822: I tensorflow/compiler/xla/service/
service.cc:168] XLA service 0x55745272bc80 executing computations on platform
Host. Devices:
(pid=4175) 2019-09-22 11:19:48.305838: I tensorflow/compiler/xla/service/
service.cc:175] StreamExecutor device (0): <undefined>, <undefined>
(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/ray/rllib/agents/dqn/distributional_q_model.py:85: dense
(from tensorflow.python.layers.core) is deprecated and will be removed in a future
version.
(pid=4175) Instructions for updating:
(pid=4175) Use keras.layers.dense instead.
(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/tensorflow/python/ops/init_ops.py:1251: calling
VarianceScaling.__init__ (from tensorflow.python.ops.init_ops) with dtype is
deprecated and will be removed in a future version.
(pid=4175) Instructions for updating:
(pid=4175) Call initializer instance with the dtype argument instead of passing it
to the constructor
(pid=4179) 2019-09-22 11:19:48,608 INFO rollout_worker.py:319 -- Creating policy
evaluation worker 2 on CPU (please ignore any CUDA init errors)
(pid=4179) 2019-09-22 11:19:48.624457: I tensorflow/core/platform/
cpu_feature_guard.cc:142] Your CPU supports instructions that this TensorFlow
binary was not compiled to use: AVX2
(pid=4179) 2019-09-22 11:19:48.637969: I tensorflow/core/platform/profile_utils/
cpu_utils.cc:94] CPU Frequency: 3593250000 Hz
(pid=4179) 2019-09-22 11:19:48.638211: I tensorflow/compiler/xla/service/
service.cc:168] XLA service 0x56476c408a30 executing computations on platform
Host. Devices:
(pid=4179) 2019-09-22 11:19:48.638231: I tensorflow/compiler/xla/service/
service.cc:175] StreamExecutor device (0): <undefined>, <undefined>
(pid=4179) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
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(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/tensorflow/python/util/decorator_utils.py:145:
GraphKeys.VARIABLES (from tensorflow.python.framework.ops) is deprecated and will
be removed in a future version.
(pid=4175) Instructions for updating:
(pid=4175) Use `tf.GraphKeys.GLOBAL_VARIABLES` instead.
(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/ray/rllib/agents/dqn/dqn_policy.py:124:
add_dispatch_support.<locals>.wrapper (from tensorflow.python.ops.array_ops) is
deprecated and will be removed in a future version.
(pid=4175) Instructions for updating:
(pid=4175) Use tf.where in 2.0, which has the same broadcast rule as np.where
(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/ray/rllib/agents/dqn/dqn_policy.py:126: multinomial (from
tensorflow.python.ops.random_ops) is deprecated and will be removed in a future
version.
(pid=4175) Instructions for updating:
(pid=4175) Use `tf.random.categorical` instead.
(pid=4179) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
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(pid=4175) 2019-09-22 11:19:49.721397: W tensorflow/compiler/jit/
mark_for_compilation_pass.cc:1412] (One-time warning): Not using XLA:CPU for
cluster because envvar TF_XLA_FLAGS=--tf_xla_cpu_global_jit was not set. If you
want XLA:CPU, either set that envvar, or use experimental_jit_scope to enable
XLA:CPU. To confirm that XLA is active, pass --vmodule=xla_compilation_cache=1
(as a proper command-line flag, not via TF_XLA_FLAGS) or set the envvar
XLA_FLAGS=--xla_hlo_profile.
(pid=4175) 2019-09-22 11:19:49.738 INFO dynamic_tf_policy.py:324 -- Initializing
loss function with dummy input:
(pid=4175)
(pid=4175) { 'actions': <tf.Tensor 'agent_0/actions:0' shape=(?,) dtype=int64>,
(pid=4175)   'dones': <tf.Tensor 'agent_0/dones:0' shape=(?,) dtype=bool>,
(pid=4175)   'new_obs': <tf.Tensor 'agent_0/new_obs:0' shape=(?, 2)

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dtype=float32>,
(pid=4175) 'obs': <tf.Tensor 'agent_0/observation:0' shape=(?, 2)
dtype=float32>,
(pid=4175) 'q_values': <tf.Tensor 'agent_0/q_values:0' shape=(?, 15)
dtype=float32>,
(pid=4175) 'rewards': <tf.Tensor 'agent_0/rewards:0' shape=(?,) dtype=float32>,
(pid=4175) 'weights': <tf.Tensor 'agent_0/weights:0' shape=(?,) dtype=float32>}
(pid=4175)
(pid=4179) 2019-09-22 11:19:49.881109: W tensorflow/compiler/jit/
mark_for_compilation_pass.cc:1412] (One-time warning): Not using XLA:CPU for
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(pid=4179) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/ray/rllib/agents/dqn/dqn_policy.py:64: to_float (from
tensorflow.python.ops.math_ops) is deprecated and will be removed in a future
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(pid=4179) Use `tf.cast` instead.
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python3.6/site-packages/ray/rllib/agents/dqn/dqn_policy.py:83:
softmax_cross_entropy_with_logits (from tensorflow.python.ops.nn_ops) is
deprecated and will be removed in a future version.
(pid=4179) Instructions for updating:
(pid=4179)
(pid=4179) Future major versions of TensorFlow will allow gradients to flow
(pid=4179) into the labels input on backprop by default.
(pid=4179)
(pid=4179) See `tf.nn.softmax_cross_entropy_with_logits_v2`.
(pid=4179)
(pid=4175) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/ray/rllib/agents/dqn/dqn_policy.py:83:
softmax_cross_entropy_with_logits (from tensorflow.python.ops.nn_ops) is
deprecated and will be removed in a future version.
(pid=4175) Instructions for updating:
(pid=4175)
(pid=4175) Future major versions of TensorFlow will allow gradients to flow
(pid=4175) into the labels input on backprop by default.
(pid=4175)
(pid=4175) See `tf.nn.softmax_cross_entropy_with_logits_v2`.
(pid=4175)
(pid=4175) 2019-09-22 11:19:53.928 INFO rollout_worker.py:451 -- Generating sample
batch of size 256
(pid=4175) 2019-09-22 11:19:53.930 INFO sampler.py:304 -- Raw obs from env: { 0: {
'agent_0': np.ndarray((2,), dtype=int64, min=13.0, max=13.0, mean=13.0),
(pid=4175) 'agent_1': np.ndarray((2,), dtype=int64, min=13.0, max=13.0,
mean=13.0)},
(pid=4175) 1: { 'agent_0': np.ndarray((2,), dtype=int64, min=6.0, max=6.0,
mean=6.0),
(pid=4175) 'agent_1': np.ndarray((2,), dtype=int64, min=6.0, max=6.0,
mean=6.0)},

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(pid=4175) 2: { 'agent_0': np.ndarray((2,), dtype=int64, min=5.0, max=5.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=5.0, max=5.0,
(pid=4175)          mean=5.0)},
(pid=4175) 3: { 'agent_0': np.ndarray((2,), dtype=int64, min=9.0, max=9.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=9.0, max=9.0,
(pid=4175)          mean=9.0)},
(pid=4175) 4: { 'agent_0': np.ndarray((2,), dtype=int64, min=14.0, max=14.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=14.0, max=14.0,
(pid=4175)          mean=14.0)},
(pid=4175) 5: { 'agent_0': np.ndarray((2,), dtype=int64, min=12.0, max=12.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=12.0, max=12.0,
(pid=4175)          mean=12.0)},
(pid=4175) 6: { 'agent_0': np.ndarray((2,), dtype=int64, min=3.0, max=3.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=3.0, max=3.0,
(pid=4175)          mean=3.0)},
(pid=4175) 7: { 'agent_0': np.ndarray((2,), dtype=int64, min=9.0, max=9.0,
(pid=4175)          'agent_1': np.ndarray((2,), dtype=int64, min=9.0, max=9.0,
(pid=4175)          mean=9.0)}}
(pid=4175) 2019-09-22 11:19:53,930 INFO sampler.py:305 -- Info return from env: {
0: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 1: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 2: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 3: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 4: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 5: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 6: {'agent_0': {}, 'agent_1': {}},
(pid=4175) 7: {'agent_0': {}, 'agent_1': {}}}
(pid=4175) 2019-09-22 11:19:53,931 INFO sampler.py:403 -- Preprocessed obs:
np.ndarray((2,), dtype=int64, min=13.0, max=13.0, mean=13.0)
(pid=4175) 2019-09-22 11:19:53,931 INFO sampler.py:407 -- Filtered obs:
np.ndarray((2,), dtype=float64, min=0.0, max=0.0, mean=0.0)
(pid=4175) 2019-09-22 11:19:53,939 INFO sampler.py:521 -- Inputs to
compute_actions():
(pid=4175)
(pid=4175) { 'agent_0': [ { 'data': { 'agent_id': 'agent_0',
(pid=4175)                               'env_id': 0,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                               'type': 'PolicyEvalData'},
(pid=4175)                               { 'data': { 'agent_id': 'agent_0',
(pid=4175)                               'env_id': 1,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=-0.707, max=-0.707, mean=-0.707),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},

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(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 2,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=-0.688, max=-0.688, mean=-0.688),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,
(pid=4175)                 'rnn_state': []},
(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 3,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=0.209, max=0.209, mean=0.209),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,
(pid=4175)                 'rnn_state': []},
(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 4,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=1.139, max=1.139, mean=1.139),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,
(pid=4175)                 'rnn_state': []},
(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 5,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=0.576, max=0.576, mean=0.576),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,
(pid=4175)                 'rnn_state': []},
(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 6,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=-1.363, max=-1.363, mean=-1.363),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,
(pid=4175)                 'rnn_state': []},
(pid=4175)             'type': 'PolicyEvalData'},
(pid=4175)             { 'data': { 'agent_id': 'agent_0',
(pid=4175)                 'env_id': 7,
(pid=4175)                 'info': {},
(pid=4175)                 'obs': np.ndarray((2,), dtype=float64,
min=0.031, max=0.031, mean=0.031),
(pid=4175)                 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                 'prev_reward': 0.0,

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(pid=4175)                                     'rnn_state': [],
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175) 'agent_1': [ { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 0,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175)                                     { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 1,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=-0.707, max=-0.707, mean=-0.707),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175)                                     { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 2,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=-0.688, max=-0.688, mean=-0.688),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175)                                     { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 3,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=0.209, max=0.209, mean=0.209),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175)                                     { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 4,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=1.139, max=1.139, mean=1.139),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175)                               'prev_reward': 0.0,
(pid=4175)                               'rnn_state': []},
(pid=4175)                                     'type': 'PolicyEvalData']],
(pid=4175)                                     { 'data': { 'agent_id': 'agent_1',
(pid=4175)                               'env_id': 5,
(pid=4175)                               'info': {},
(pid=4175)                               'obs': np.ndarray((2,), dtype=float64,
min=0.576, max=0.576, mean=0.576),
(pid=4175)                               'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),

```

```

(pid=4175) 'prev_reward': 0.0,
(pid=4175) 'rnn_state': [],
(pid=4175) 'type': 'PolicyEvalData'},
(pid=4175) { 'data': { 'agent_id': 'agent_1',
(pid=4175) 'env_id': 6,
(pid=4175) 'info': {},
(pid=4175) 'obs': np.ndarray((2,), dtype=float64,
min=-1.363, max=-1.363, mean=-1.363),
(pid=4175) 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'prev_reward': 0.0,
(pid=4175) 'rnn_state': [],
(pid=4175) 'type': 'PolicyEvalData'},
(pid=4175) { 'data': { 'agent_id': 'agent_1',
(pid=4175) 'env_id': 7,
(pid=4175) 'info': {},
(pid=4175) 'obs': np.ndarray((2,), dtype=float64,
min=0.031, max=0.031, mean=0.031),
(pid=4175) 'prev_action': np.ndarray((), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'prev_reward': 0.0,
(pid=4175) 'rnn_state': [],
(pid=4175) 'type': 'PolicyEvalData'}}}
(pid=4175) 2019-09-22 11:19:53,939 INFO tf_run_builder.py:92 -- Executing TF run
without tracing. To dump TF timeline traces to disk, set the TF_TIMELINE_DIR
environment variable.
(pid=4175) 2019-09-22 11:19:54,041 INFO sampler.py:548 -- Outputs of
compute_actions():
(pid=4175)
(pid=4175) { 'agent_0': ( np.ndarray((8,), dtype=int64, min=0.0, max=14.0,
mean=5.625),
(pid=4175) [],
(pid=4175) { 'q_values': np.ndarray((8, 15), dtype=float32,
min=-1.351, max=1.677, mean=0.095)}),
(pid=4175) 'agent_1': ( np.ndarray((8,), dtype=int64, min=1.0, max=14.0,
mean=6.375),
(pid=4175) [],
(pid=4175) { 'q_values': np.ndarray((8, 15), dtype=float32,
min=-2.455, max=0.085, mean=-0.686)}))}
(pid=4175) 2019-09-22 11:19:54,345 INFO sample_batch_builder.py:161 -- Trajectory
fragment after postprocess_trajectory():
(pid=4175)
(pid=4175) { 'agent_0': { 'data': { 'actions': np.ndarray((32,), dtype=int64,
min=0.0, max=13.0, mean=6.0),
(pid=4175) 'agent_index': np.ndarray((32,), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'dones': np.ndarray((32,), dtype=bool,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'eps_id': np.ndarray((32,), dtype=int64,
min=1666866853.0, max=1666866853.0, mean=1666866853.0),
(pid=4175) 'infos': np.ndarray((32,), dtype=object,
head={'delta': -0.9530221499165227}),
(pid=4175) 'new_obs': np.ndarray((32, 2), dtype=float32,
min=-1.61, max=1.706, mean=-0.003),
(pid=4175) 'obs': np.ndarray((32, 2), dtype=float32,
min=-1.61, max=1.706, mean=-0.01),
(pid=4175) 'prev_actions': np.ndarray((32,), dtype=int64,

```

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min=0.0, max=13.0, mean=5.75),
(pid=4175) 'prev_rewards': np.ndarray((32,),
dtype=float32, min=0.0, max=0.42, mean=0.291),
(pid=4175) 'q_values': np.ndarray((32, 15),
dtype=float32, min=-1.965, max=1.856, mean=0.18),
(pid=4175) 'rewards': np.ndarray((32,), dtype=float32,
min=0.251, max=1.16, mean=0.857),
(pid=4175) 't': np.ndarray((32,), dtype=int64, min=0.0,
max=31.0, mean=15.5),
(pid=4175) 'unroll_id': np.ndarray((32,), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'weights': np.ndarray((32,), dtype=float32,
min=2.269, max=2.481, mean=2.373)},
(pid=4175) 'type': 'SampleBatch'},
(pid=4175) 'agent_1': { 'data': { 'actions': np.ndarray((32,), dtype=int64,
min=0.0, max=14.0, mean=7.688),
(pid=4175) 'agent_index': np.ndarray((32,), dtype=int64,
min=1.0, max=1.0, mean=1.0),
(pid=4175) 'dones': np.ndarray((32,), dtype=bool,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'eps_id': np.ndarray((32,), dtype=int64,
min=1666866853.0, max=1666866853.0, mean=1666866853.0),
(pid=4175) 'infos': np.ndarray((32,), dtype=object,
head={'delta': 1.2367213944864417}),
(pid=4175) 'new_obs': np.ndarray((32, 2), dtype=float32,
min=-1.61, max=1.706, mean=-0.003),
(pid=4175) 'obs': np.ndarray((32, 2), dtype=float32,
min=-1.61, max=1.706, mean=-0.01),
(pid=4175) 'prev_actions': np.ndarray((32,), dtype=int64,
min=0.0, max=14.0, mean=7.531),
(pid=4175) 'prev_rewards': np.ndarray((32,),
dtype=float32, min=0.0, max=0.385, mean=0.245),
(pid=4175) 'q_values': np.ndarray((32, 15),
dtype=float32, min=-2.347, max=0.535, mean=-0.703),
(pid=4175) 'rewards': np.ndarray((32,), dtype=float32,
min=0.332, max=1.084, mean=0.72),
(pid=4175) 't': np.ndarray((32,), dtype=int64, min=0.0,
max=31.0, mean=15.5),
(pid=4175) 'unroll_id': np.ndarray((32,), dtype=int64,
min=0.0, max=0.0, mean=0.0),
(pid=4175) 'weights': np.ndarray((32,), dtype=float32,
min=2.268, max=2.567, mean=2.413)},
(pid=4175) 'type': 'SampleBatch'}}
(pid=4175) 2019-09-22 11:19:54,387 INFO rollout_worker.py:485 -- Completed sample
batch:
(pid=4175)
(pid=4175) { 'count': 256,
(pid=4175) 'policy_batches': { 'agent_0': { 'data': { 'actions':
np.ndarray((256,), dtype=int64, min=0.0, max=14.0, mean=6.832),
(pid=4175) 'agent_index':
np.ndarray((256,), dtype=int64, min=0.0, max=0.0, mean=0.0),
(pid=4175) 'dones':
np.ndarray((256,), dtype=bool, min=0.0, max=0.0, mean=0.0),
(pid=4175) 'eps_id':
np.ndarray((256,), dtype=int64, min=195238648.0, max=1666866853.0,
mean=798985617.0),
(pid=4175) 'infos':
np.ndarray((256,), dtype=object, head={'delta': -0.9530221499165227}),

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(pid=4175)                                     'new_obs':
np.ndarray((256, 2), dtype=float32, min=-1.834, max=1.778, mean=-0.003),
(pid=4175)                                     'obs': np.ndarray((256,
2), dtype=float32, min=-1.834, max=1.778, mean=-0.025),
(pid=4175)                                     'prev_actions':
np.ndarray((256,), dtype=int64, min=0.0, max=14.0, mean=6.648),
(pid=4175)                                     'prev_rewards':
np.ndarray((256,), dtype=float32, min=0.0, max=0.42, mean=0.267),
(pid=4175)                                     'q_values':
np.ndarray((256, 15), dtype=float32, min=-1.965, max=2.015, mean=0.269),
(pid=4175)                                     'rewards':
np.ndarray((256,), dtype=float32, min=0.222, max=1.16, mean=0.784),
(pid=4175)                                     't': np.ndarray((256,),
dtype=int64, min=0.0, max=31.0, mean=15.5),
(pid=4175)                                     'unroll_id':
np.ndarray((256,), dtype=int64, min=0.0, max=0.0, mean=0.0),
(pid=4175)                                     'weights':
np.ndarray((256,), dtype=float32, min=2.261, max=2.592, mean=2.388)},
(pid=4175)                                     'type': 'SampleBatch'},
(pid=4175)                                     'agent_1': { 'data': { 'actions':
np.ndarray((256,), dtype=int64, min=0.0, max=14.0, mean=6.762),
(pid=4175)                                     'agent_index':
np.ndarray((256,), dtype=int64, min=1.0, max=1.0, mean=1.0),
(pid=4175)                                     'dones':
np.ndarray((256,), dtype=bool, min=0.0, max=0.0, mean=0.0),
(pid=4175)                                     'eps_id':
np.ndarray((256,), dtype=int64, min=195238648.0, max=1666866853.0,
mean=798985617.0),
(pid=4175)                                     'infos':
np.ndarray((256,), dtype=object, head={'delta': 1.2367213944864417}),
(pid=4175)                                     'new_obs':
np.ndarray((256, 2), dtype=float32, min=-1.834, max=1.778, mean=-0.003),
(pid=4175)                                     'obs': np.ndarray((256,
2), dtype=float32, min=-1.834, max=1.778, mean=-0.025),
(pid=4175)                                     'prev_actions':
np.ndarray((256,), dtype=int64, min=0.0, max=14.0, mean=6.52),
(pid=4175)                                     'prev_rewards':
np.ndarray((256,), dtype=float32, min=0.0, max=0.42, mean=0.269),
(pid=4175)                                     'q_values':
np.ndarray((256, 15), dtype=float32, min=-2.476, max=0.535, mean=-0.772),
(pid=4175)                                     'rewards':
np.ndarray((256,), dtype=float32, min=0.12, max=1.167, mean=0.787),
(pid=4175)                                     't': np.ndarray((256,),
dtype=int64, min=0.0, max=31.0, mean=15.5),
(pid=4175)                                     'unroll_id':
np.ndarray((256,), dtype=int64, min=0.0, max=0.0, mean=0.0),
(pid=4175)                                     'weights':
np.ndarray((256,), dtype=float32, min=2.268, max=2.677, mean=2.409)},
(pid=4175)                                     'type': 'SampleBatch'}},
(pid=4175)                                     'type': 'MultiAgentBatch'})
(pid=4175)
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:516: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will
be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint8 = np.dtype([("qint8", np.int8, 1)])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:517: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will

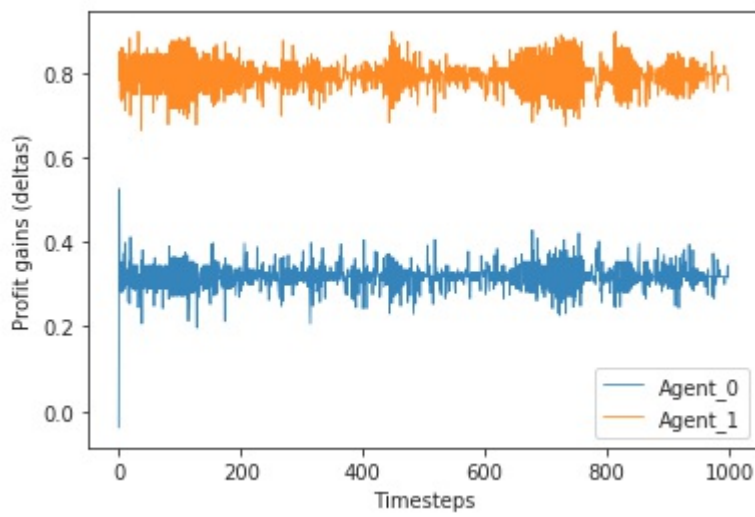
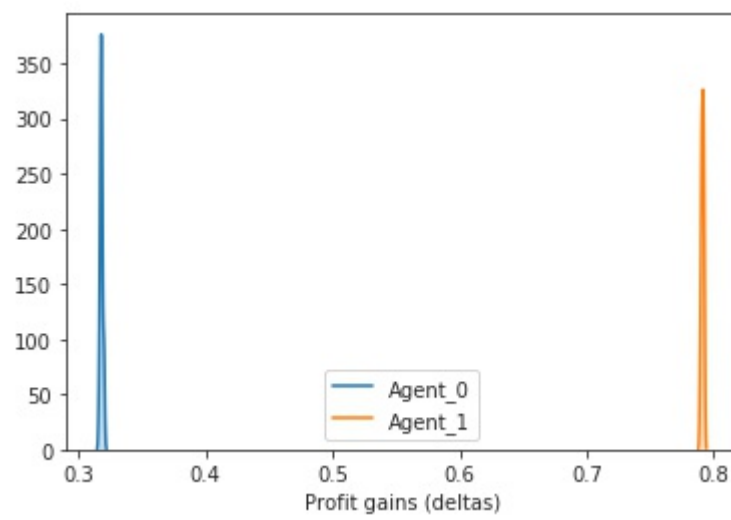
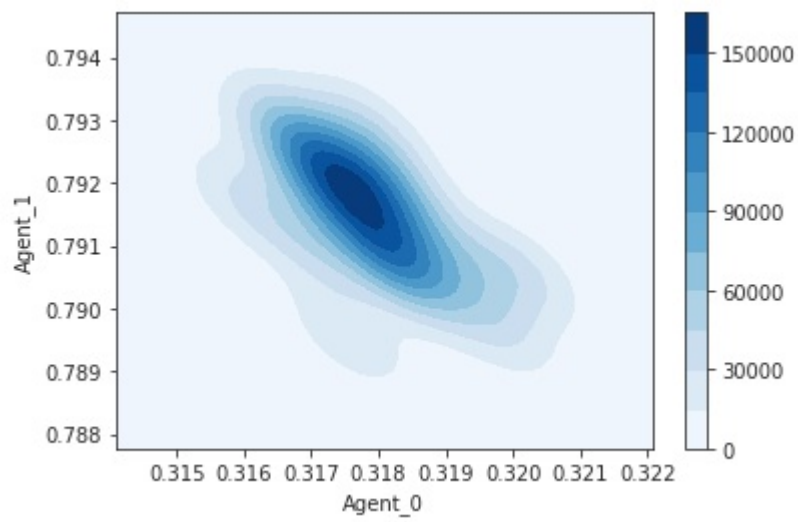
```

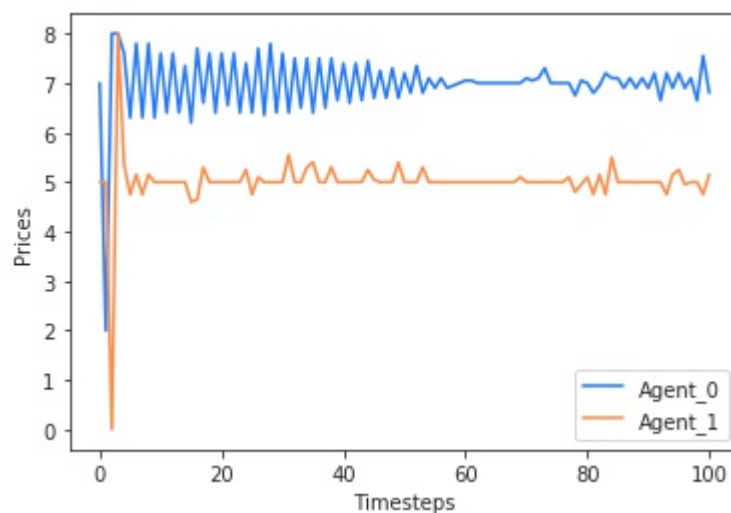
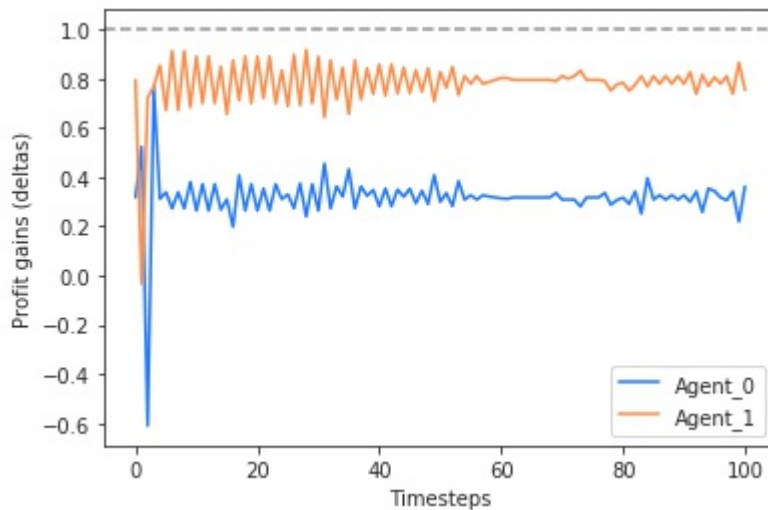
```

be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_quint8 = np.dtype(["quint8", np.uint8, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:518: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will
be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint16 = np.dtype(["qint16", np.int16, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:519: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will
be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_quint16 = np.dtype(["quint16", np.uint16, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:520: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will
be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint32 = np.dtype(["qint32", np.int32, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorflow/python/framework/dtypes.py:525: FutureWarning: Passing (type, 1) or
'1type' as a synonym of type is deprecated; in a future version of numpy, it will
be understood as (type, (1,)) / '(1,)type'.
(pid=4187) np_resource = np.dtype(["resource", np.ubyte, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:541: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint8 = np.dtype(["qint8", np.int8, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:542: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_quint8 = np.dtype(["quint8", np.uint8, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:543: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint16 = np.dtype(["qint16", np.int16, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:544: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_quint16 = np.dtype(["quint16", np.uint16, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:545: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) _np_qint32 = np.dtype(["qint32", np.int32, 1])
(pid=4187) /home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/
tensorboard/compat/tensorflow_stub/dtypes.py:550: FutureWarning: Passing (type, 1)
or '1type' as a synonym of type is deprecated; in a future version of numpy, it
will be understood as (type, (1,)) / '(1,)type'.
(pid=4187) np_resource = np.dtype(["resource", np.ubyte, 1])
(pid=4187) WARNING:tensorflow:From /home/lorenzo/anaconda3/envs/py36/lib/
python3.6/site-packages/tensorflow/python/compat/v2_compat.py:61:
disable_resource_variables (from tensorflow.python.ops.variable_scope) is
deprecated and will be removed in a future version.
(pid=4187) Instructions for updating:
(pid=4187) non-resource variables are not supported in the long term
Episode reward 5755.2916902079505

```

```
Episode 1 of 20
Episode reward 5755.750084671412
Episode 2 of 20
Episode reward 5756.435397674219
Episode 3 of 20
Episode reward 5755.948456068565
Episode 4 of 20
Episode reward 5756.381031724041
Episode 5 of 20
Episode reward 5754.116057190266
Episode 6 of 20
Episode reward 5755.651923680699
Episode 7 of 20
Episode reward 5756.648268595706
Episode 8 of 20
Episode reward 5755.175599847088
Episode 9 of 20
Episode reward 5755.786392531991
Episode 10 of 20
Episode reward 5755.498389918693
Episode 11 of 20
Episode reward 5755.261383569157
Episode 12 of 20
Episode reward 5753.153826493749
Episode 13 of 20
Episode reward 5757.198128283301
Episode 14 of 20
Episode reward 5757.156632592539
Episode 15 of 20
Episode reward 5756.099666593857
Episode 16 of 20
Episode reward 5753.846215288199
Episode 17 of 20
Episode reward 5755.1849676508655
Episode 18 of 20
Episode reward 5755.501798865026
Episode 19 of 20
Episode reward 5755.899982971264
Overall deltas mean: 0.5547 and std: 0.2368
Agent0 deltas mean: 0.3179 and std: 0.0010
Agent1 deltas mean: 0.7914 and std: 0.0010
/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/seaborn/
distributions.py:679: UserWarning: Passing a 2D dataset for a bivariate plot is
deprecated in favor of kdeplot(x, y), and it will cause an error in future
versions. Please update your code.
  warnings.warn(warn_msg, UserWarning)
```



Traceback (most recent call last):

```
File "<ipython-input-1-b9d5ffeb4c0f>", line 1, in <module>
    runfile('/home/lorenzo/algorithmic-pricing/rollout/rollout.py', args='/home/lorenzo/algorithmic-pricing/train_results/Azure_ApexDQN_Disc/azure_disc_10_res2/APEX_MultiAgentFirmsPricing_0_2019-09-21_14-03-453aaxi5sb/checkpoint_940/checkpoint-940 --run APEX --env env_disc', wdir='/home/lorenzo/algorithmic-pricing/rollout')
```

```
File "/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/spyder_kernels/customize/spydercustomize.py", line 827, in runfile
    execfile(filename, namespace)
```

```
File "/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/spyder_kernels/customize/spydercustomize.py", line 110, in execfile
    exec(compile(f.read(), filename, 'exec'), namespace)
```

```
File "/home/lorenzo/algorithmic-pricing/rollout/rollout.py", line 404, in <module>
    Deltas_df = pd.DataFrame(d_array)
```

```
File "/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/pandas/core/frame.py", line 440, in __init__
    mgr = init_ndarray(data, index, columns, dtype=dtype, copy=copy)
```

```
File "/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/pandas/core/
internals/construction.py", line 171, in init_ndarray
    values = prep_ndarray(values, copy=copy)
```

```
File "/home/lorenzo/anaconda3/envs/py36/lib/python3.6/site-packages/pandas/core/
internals/construction.py", line 295, in prep_ndarray
    raise ValueError("Must pass 2-d input")
```

ValueError: Must pass 2-d input

In [2]:

In [2]: