C:\Users\guzma\anaconda3\envs\DeepLearningEnv\python.exe C:/Users/guzma/Desktop/ML/Project/DRL-automated-stock-trading/run\_DRL.py

WARNING:tensorflow:

The TensorFlow contrib module will not be included in TensorFlow 2.0.

For more information, please see:

\* https://github.com/tensorflow/community/blob/master/rfcs/20180907-contrib-sunset.md

\* https://github.com/tensorflow/addons

\* https://github.com/tensorflow/io (for I/O related ops)

If you depend on functionality not listed there, please file an issue.

============Start Ensemble Strategy============

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======Model training from: 20090000 to 20151002.0

======A2C Training========

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_util.py:191: The name tf.ConfigProto is deprecated. Please use tf.compat.v1.ConfigProto instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_util.py:200: The name tf.Session is deprecated. Please use tf.compat.v1.Session instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\policies.py:116: The name tf.variable\_scope is deprecated. Please use tf.compat.v1.variable\_scope instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\input.py:25: The name tf.placeholder is deprecated. Please use tf.compat.v1.placeholder instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\policies.py:561: flatten (from tensorflow.python.layers.core) is deprecated and will be removed in a future version.

Instructions for updating:

Use keras.layers.flatten instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\tensorflow\_core\python\layers\core.py:332: Layer.apply (from tensorflow.python.keras.engine.base\_layer) is deprecated and will be removed in a future version.

Instructions for updating:

Please use `layer.\_\_call\_\_` method instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_layers.py:123: The name tf.get\_variable is deprecated. Please use tf.compat.v1.get\_variable instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\distributions.py:418: The name tf.random\_normal is deprecated. Please use tf.random.normal instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\a2c\a2c.py:160: The name tf.summary.scalar is deprecated. Please use tf.compat.v1.summary.scalar instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_util.py:449: The name tf.get\_collection is deprecated. Please use tf.compat.v1.get\_collection instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_util.py:449: The name tf.GraphKeys is deprecated. Please use tf.compat.v1.GraphKeys instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\tensorflow\_core\python\ops\clip\_ops.py:301: where (from tensorflow.python.ops.array\_ops) is deprecated and will be removed in a future version.

Instructions for updating:

Use tf.where in 2.0, which has the same broadcast rule as np.where

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\a2c\a2c.py:184: The name tf.train.RMSPropOptimizer is deprecated. Please use tf.compat.v1.train.RMSPropOptimizer instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\tensorflow\_core\python\training\rmsprop.py:119: calling Ones.\_\_init\_\_ (from tensorflow.python.ops.init\_ops) with dtype is deprecated and will be removed in a future version.

Instructions for updating:

Call initializer instance with the dtype argument instead of passing it to the constructor

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\a2c\a2c.py:194: The name tf.global\_variables\_initializer is deprecated. Please use tf.compat.v1.global\_variables\_initializer instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\a2c\a2c.py:196: The name tf.summary.merge\_all is deprecated. Please use tf.compat.v1.summary.merge\_all instead.

Training time (A2C): 0.6622846643129985 minutes

======A2C Validation from: 20151002.0 to 20160104.0

A2C Sharpe Ratio: -0.23867842044318846

======PPO Training========

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\ppo2\ppo2.py:198: The name tf.trainable\_variables is deprecated. Please use tf.compat.v1.trainable\_variables instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\ppo2\ppo2.py:206: The name tf.train.AdamOptimizer is deprecated. Please use tf.compat.v1.train.AdamOptimizer instead.

Training time (PPO): 2.277662658691406 minutes

======PPO Validation from: 20151002.0 to 20160104.0

PPO Sharpe Ratio: -inf

======DDPG Training========

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\ddpg\policies.py:136: dense (from tensorflow.python.layers.core) is deprecated and will be removed in a future version.

Instructions for updating:

Use keras.layers.Dense instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\ddpg\ddpg.py:94: The name tf.assign is deprecated. Please use tf.compat.v1.assign instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\ddpg\ddpg.py:444: The name tf.global\_variables is deprecated. Please use tf.compat.v1.global\_variables instead.

WARNING:tensorflow:From C:\Users\guzma\anaconda3\envs\DeepLearningEnv\lib\site-packages\stable\_baselines\common\tf\_util.py:432: The name tf.get\_default\_session is deprecated. Please use tf.compat.v1.get\_default\_session instead.

Training time (DDPG): 0.4667537808418274 minutes

======DDPG Validation from: 20151002.0 to 20160104.0

======Trading from: 20160104.0 to 20160405.0

previous\_total\_asset:1000000

end\_total\_asset:1003465.2255032691

total\_reward:3465.2255032691173

total\_cost: 56.39125921868287

total trades: 62

Sharpe: 0.6734291487947495

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======Model training from: 20090000 to 20160104.0

======A2C Training========

Training time (A2C): 0.665428614616394 minutes

======A2C Validation from: 20160104.0 to 20160405.0

A2C Sharpe Ratio: 0.648912503221812

======PPO Training========

Training time (PPO): 2.3340864221254987 minutes

======PPO Validation from: 20160104.0 to 20160405.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.5046108841896058 minutes

======DDPG Validation from: 20160104.0 to 20160405.0

======Trading from: 20160405.0 to 20160705.0

previous\_total\_asset:1003465.2255032691

end\_total\_asset:971055.9263555051

total\_reward:-32409.299147763988

total\_cost: 671.8209668697954

total trades: 62

Sharpe: -0.31747447398029716

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======Model training from: 20090000 to 20160405.0

======A2C Training========

Training time (A2C): 0.7020895123481751 minutes

======A2C Validation from: 20160405.0 to 20160705.0

A2C Sharpe Ratio: -0.38684436252106635

======PPO Training========

Training time (PPO): 2.375887842973073 minutes

======PPO Validation from: 20160405.0 to 20160705.0

PPO Sharpe Ratio: -0.30456912521460056

======DDPG Training========

Training time (DDPG): 0.5178417245546977 minutes

======DDPG Validation from: 20160405.0 to 20160705.0

======Trading from: 20160705.0 to 20161003.0

previous\_total\_asset:971055.9263555051

end\_total\_asset:977252.8149904204

total\_reward:6196.888634915231

total\_cost: 339.2777692000001

total trades: 62

Sharpe: 0.039706923666185265

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======Model training from: 20090000 to 20160705.0

======A2C Training========

Training time (A2C): 0.7074850996335348 minutes

======A2C Validation from: 20160705.0 to 20161003.0

A2C Sharpe Ratio: -0.006315768968301717

======PPO Training========

Training time (PPO): 2.372997995217641 minutes

======PPO Validation from: 20160705.0 to 20161003.0

PPO Sharpe Ratio: 0.07949574898688909

======DDPG Training========

Training time (DDPG): 0.5107700387636821 minutes

======DDPG Validation from: 20160705.0 to 20161003.0

======Trading from: 20161003.0 to 20170103.0

previous\_total\_asset:977252.8149904204

end\_total\_asset:987398.8660521498

total\_reward:10146.051061729435

total\_cost: 0.0

total trades: 62

Sharpe: 0.06809063727248023

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======Model training from: 20090000 to 20161003.0

======A2C Training========

Training time (A2C): 0.7053786595662435 minutes

======A2C Validation from: 20161003.0 to 20170103.0

A2C Sharpe Ratio: 0.054821914675789056

======PPO Training========

Training time (PPO): 2.2074262817700703 minutes

======PPO Validation from: 20161003.0 to 20170103.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.4704079111417135 minutes

======DDPG Validation from: 20161003.0 to 20170103.0

======Trading from: 20170103.0 to 20170404.0

previous\_total\_asset:987398.8660521498

end\_total\_asset:1013836.4995017042

total\_reward:26437.633449554443

total\_cost: 152.63871240534667

total trades: 62

Sharpe: 0.18402947497283173

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======Model training from: 20090000 to 20170103.0

======A2C Training========

Training time (A2C): 0.7012537002563477 minutes

======A2C Validation from: 20170103.0 to 20170404.0

A2C Sharpe Ratio: 0.11142279733668925

======PPO Training========

Training time (PPO): 2.4104538917541505 minutes

======PPO Validation from: 20170103.0 to 20170404.0

PPO Sharpe Ratio: 0.09815138900652234

======DDPG Training========

Training time (DDPG): 0.48992836475372314 minutes

======DDPG Validation from: 20170103.0 to 20170404.0

======Trading from: 20170404.0 to 20170705.0

previous\_total\_asset:1013836.4995017042

end\_total\_asset:1004005.8663073943

total\_reward:-9830.633194309892

total\_cost: 385.10936865237124

total trades: 62

Sharpe: -0.06590721485863628

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======Model training from: 20090000 to 20170404.0

======A2C Training========

Training time (A2C): 0.7412352919578552 minutes

======A2C Validation from: 20170404.0 to 20170705.0

A2C Sharpe Ratio: -0.5274337779091229

======PPO Training========

Training time (PPO): 2.4187716007232667 minutes

======PPO Validation from: 20170404.0 to 20170705.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.540464460849762 minutes

======DDPG Validation from: 20170404.0 to 20170705.0

======Trading from: 20170705.0 to 20171003.0

previous\_total\_asset:1004005.8663073943

end\_total\_asset:996550.5431316913

total\_reward:-7455.323175703059

total\_cost: 46.81089857294922

total trades: 62

Sharpe: -0.05560861450105122

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======Model training from: 20090000 to 20170705.0

======A2C Training========

Training time (A2C): 0.7981830437978109 minutes

======A2C Validation from: 20170705.0 to 20171003.0

A2C Sharpe Ratio: -0.3929748711574528

======PPO Training========

Training time (PPO): 2.3426015098889668 minutes

======PPO Validation from: 20170705.0 to 20171003.0

PPO Sharpe Ratio: -0.1988573311856668

======DDPG Training========

Training time (DDPG): 0.46222259998321535 minutes

======DDPG Validation from: 20170705.0 to 20171003.0

======Trading from: 20171003.0 to 20180103.0

previous\_total\_asset:996550.5431316913

end\_total\_asset:921713.527133115

total\_reward:-74837.0159985763

total\_cost: 0.0012442000000000002

total trades: 62

Sharpe: -0.5939437978028093

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======Model training from: 20090000 to 20171003.0

======A2C Training========

Training time (A2C): 0.6328729311625163 minutes

======A2C Validation from: 20171003.0 to 20180103.0

A2C Sharpe Ratio: -0.34983517524322155

======PPO Training========

Training time (PPO): 2.0619237184524537 minutes

======PPO Validation from: 20171003.0 to 20180103.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.4477052927017212 minutes

======DDPG Validation from: 20171003.0 to 20180103.0

======Trading from: 20180103.0 to 20180405.0

previous\_total\_asset:921713.527133115

end\_total\_asset:965024.610729665

total\_reward:43311.083596550045

total\_cost: 686.1416605927612

total trades: 62

Sharpe: 0.3827768046383518

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======Model training from: 20090000 to 20180103.0

======A2C Training========

Training time (A2C): 0.618819804986318 minutes

======A2C Validation from: 20180103.0 to 20180405.0

A2C Sharpe Ratio: 0.1730566938738044

======PPO Training========

Training time (PPO): 2.2170573592185976 minutes

======PPO Validation from: 20180103.0 to 20180405.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.4473967711130778 minutes

======DDPG Validation from: 20180103.0 to 20180405.0

======Trading from: 20180405.0 to 20180705.0

previous\_total\_asset:965024.610729665

end\_total\_asset:979751.8472804561

total\_reward:14727.236550791073

total\_cost: 23.983535300390628

total trades: 62

Sharpe: 0.1134211496536634

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======Model training from: 20090000 to 20180405.0

======A2C Training========

Training time (A2C): 0.6201670686403911 minutes

======A2C Validation from: 20180405.0 to 20180705.0

A2C Sharpe Ratio: 0.38935876807644537

======PPO Training========

Training time (PPO): 2.065881836414337 minutes

======PPO Validation from: 20180405.0 to 20180705.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.4501845081647237 minutes

======DDPG Validation from: 20180405.0 to 20180705.0

======Trading from: 20180705.0 to 20181003.0

previous\_total\_asset:979751.8472804561

end\_total\_asset:974797.9248661952

total\_reward:-4953.922414260916

total\_cost: 0.0

total trades: 62

Sharpe: -0.028069445162215583

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======Model training from: 20090000 to 20180705.0

======A2C Training========

Training time (A2C): 0.611762277285258 minutes

======A2C Validation from: 20180705.0 to 20181003.0

A2C Sharpe Ratio: 0.2005366543230212

======PPO Training========

Training time (PPO): 2.0421507318814593 minutes

======PPO Validation from: 20180705.0 to 20181003.0

PPO Sharpe Ratio: -inf

======DDPG Training========

Training time (DDPG): 0.4441612998644511 minutes

======DDPG Validation from: 20180705.0 to 20181003.0

======Trading from: 20181003.0 to 20190104.0

previous\_total\_asset:974797.9248661952

end\_total\_asset:987929.1387808325

total\_reward:13131.213914637337

total\_cost: 734.3932082250001

total trades: 62

Sharpe: 0.1277146912359576

Ensemble Strategy took: 41.172650782267254 minutes

Process finished with exit code 0