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): 1.4869385878245036 minutes

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

A2C Sharpe Ratio: -0.38979931238702464

======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): 5.0724619428316755 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): 1.0818896134694418 minutes

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

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

previous\_total\_asset:1000000

end\_total\_asset:1000483.1396221572

total\_reward:483.13962215720676

total\_cost: 8.370146360316467

total trades: 62

Sharpe: 0.6551795951185478

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

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

Training time (A2C): 1.44955016374588 minutes

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

A2C Sharpe Ratio: 0.45307343195496524

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

Training time (PPO): 6.0492893099784855 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 1.239860463142395 minutes

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

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

previous\_total\_asset:1000483.1396221572

end\_total\_asset:999273.4686889197

total\_reward:-1209.6709332375322

total\_cost: 8.452103151563263

total trades: 62

Sharpe: -0.35703949207799823

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

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

Training time (A2C): 1.580191429456075 minutes

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

A2C Sharpe Ratio: -0.5658181113756537

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

Training time (PPO): 4.259883308410645 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.5194308082262675 minutes

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

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

previous\_total\_asset:999273.4686889197

end\_total\_asset:999357.4476153784

total\_reward:83.97892645874526

total\_cost: 7.981060000000001

total trades: 62

Sharpe: 0.02059664899744411

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

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

Training time (A2C): 0.8521084984143575 minutes

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

A2C Sharpe Ratio: -0.0357575322261553

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

Training time (PPO): 2.559290333588918 minutes

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

PPO Sharpe Ratio: 0.07907646012085885

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

Training time (DDPG): 0.4722224593162537 minutes

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

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

previous\_total\_asset:999357.4476153784

end\_total\_asset:999650.4675675516

total\_reward:293.0199521732284

total\_cost: 7.702035758093738

total trades: 62

Sharpe: 0.06248493240958176

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

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

Training time (A2C): 0.7293423970540365 minutes

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

A2C Sharpe Ratio: -0.09941589119447529

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

Training time (PPO): 2.474497652053833 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.48957539796829225 minutes

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

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

previous\_total\_asset:999650.4675675516

end\_total\_asset:1000507.4908226869

total\_reward:857.0232551352819

total\_cost: 8.130470262030029

total trades: 62

Sharpe: 0.17688975339346863

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

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

Training time (A2C): 0.9422705769538879 minutes

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

A2C Sharpe Ratio: 0.026321052089809924

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

Training time (PPO): 2.44069056113561 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.44089417457580565 minutes

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

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

previous\_total\_asset:1000507.4908226869

end\_total\_asset:1000216.05127843

total\_reward:-291.439544256893

total\_cost: 7.751233115950776

total trades: 62

Sharpe: -0.0630691414006308

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

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

Training time (A2C): 0.61951056321462 minutes

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

A2C Sharpe Ratio: -0.13857729427185178

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

Training time (PPO): 2.048846423625946 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.44867085218429564 minutes

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

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

previous\_total\_asset:1000216.05127843

end\_total\_asset:999939.5512219773

total\_reward:-276.50005645269994

total\_cost: 8.224513279903412

total trades: 62

Sharpe: -0.06253462629744598

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

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

Training time (A2C): 0.6113092104593912 minutes

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

A2C Sharpe Ratio: -0.203008785815535

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

Training time (PPO): 2.0488845745722455 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.43917075792948407 minutes

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

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

previous\_total\_asset:999939.5512219773

end\_total\_asset:997028.4737174861

total\_reward:-2911.0775044912007

total\_cost: 7.810702539933013

total trades: 62

Sharpe: -0.5841642664780876

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

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

Training time (A2C): 0.7658325632413229 minutes

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

A2C Sharpe Ratio: -0.43643554485756697

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

Training time (PPO): 2.043743062019348 minutes

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

PPO Sharpe Ratio: -0.285403390956614

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

Training time (DDPG): 0.4344313065210978 minutes

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

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

previous\_total\_asset:997028.4737174861

end\_total\_asset:998879.653395321

total\_reward:1851.1796778348507

total\_cost: 7.203418199362183

total trades: 62

Sharpe: 0.3884518857337898

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

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

Training time (A2C): 0.6122089346249898 minutes

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

A2C Sharpe Ratio: -0.07968706179244683

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

Training time (PPO): 2.043717964490255 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.4525889754295349 minutes

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

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

previous\_total\_asset:998879.653395321

end\_total\_asset:999697.9597253221

total\_reward:818.3063300010981

total\_cost: 7.809919920137023

total trades: 62

Sharpe: 0.1490094721783879

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

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

Training time (A2C): 0.6134671648343404 minutes

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

A2C Sharpe Ratio: 0.2547067016526423

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

Training time (PPO): 2.039573876063029 minutes

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

PPO Sharpe Ratio: -inf

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

Training time (DDPG): 0.45203638076782227 minutes

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

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

previous\_total\_asset:999697.9597253221

end\_total\_asset:999552.9019342818

total\_reward:-145.05779104027897

total\_cost: 7.964344488883975

total trades: 62

Sharpe: -0.019264925499034236

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

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

Training time (A2C): 0.6046950340270996 minutes

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

A2C Sharpe Ratio: 0.13124369779003237

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

Training time (PPO): 2.082267447312673 minutes

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

PPO Sharpe Ratio: 0.09728259942847044

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

Training time (DDPG): 0.43902021646499634 minutes

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

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

previous\_total\_asset:999552.9019342818

end\_total\_asset:1000278.4914853828

total\_reward:725.589551100973

total\_cost: 8.102926816911316

total trades: 62

Sharpe: 0.12627020988788812

Ensemble Strategy took: 53.089890325069426 minutes

Process finished with exit code 0