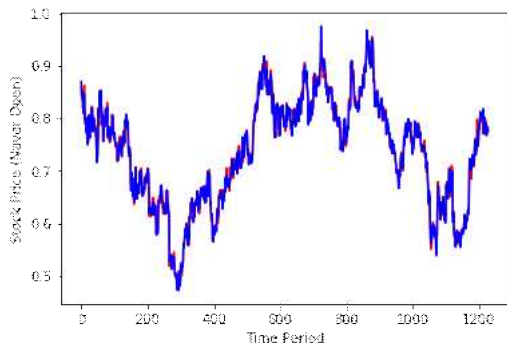
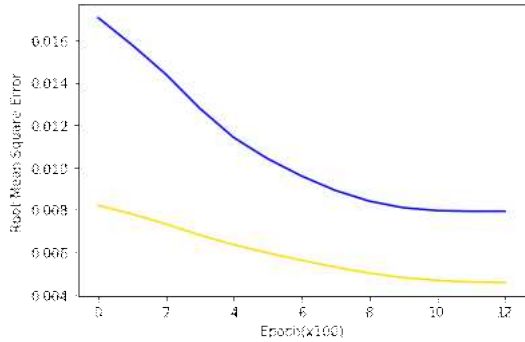


DIY 연구소 인공지능 주가 예측 프로그램 (<http://cafe.daum.net/diylab>)
네이버 주식 2019.10.29. 내일 시가

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4104 entries, 0 to 4103
Data columns (total 7 columns):
Date          4104 non-null object
Open          4104 non-null object
High          4104 non-null object
Low           4104 non-null object
Close         4104 non-null object
Adj Close     4104 non-null object
Volume        4104 non-null object
dtypes: object(7)
memory usage: 224.5+ KB
stock_info.shape: (4103, 6)
stock_info[0]: [ 1798.  1798.  1798.  1798.  1798.  501745.]
price.shape: (4103, 5)
price[0]: [1798. 1798. 1798. 1798. 1798.]
norm_price[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799]
=====
volume.shape: (4103, 1)
volume[0]: [501745.]
norm_volume[0]: [0.01103337]
=====
x.shape: (4103, 6)
x[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799 0.01103337]
x[-1]: [0.7804185  0.80883493 0.7804185  0.8036683  0.8036683  0.00642069]
=====
y[0]: [0.00179799]
y[-1]: [0.7804185]
[[1.79798502e-03 1.79798502e-03 1.79798502e-03 1.79798502e-03
 1.79798502e-03 1.10333715e-02]
 [2.90364247e-03 2.90364247e-03 2.78997675e-03 2.90364247e-03
 2.90364247e-03 5.75702063e-01]
 [3.06380780e-03 3.31697236e-03 2.14414880e-03 2.38698011e-03
 2.38698011e-03 8.92366583e-01]
 [2.64014467e-03 2.95530871e-03 1.41565487e-03 1.77731852e-03
 1.77731852e-03 5.05957237e-01]
 [1.68948592e-03 1.75665203e-03 1.09015758e-03 1.31232240e-03
 1.31232240e-03 4.66238623e-01]
 [1.27098941e-03 1.73081891e-03 1.27098941e-03 1.30198915e-03
 1.30198915e-03 4.22317679e-01]
 [1.43632136e-03 1.50348747e-03 9.09325756e-04 1.11082408e-03
 1.11082408e-03 3.42948214e-01]
 [1.05915784e-03 1.53448721e-03 1.03849135e-03 1.12115732e-03
 1.12115732e-03 3.20648852e-01]
 [9.19659003e-04 1.03849135e-03 7.95660036e-04 9.50658745e-04
 9.50658745e-04 1.83802616e-01]
 [9.29992250e-04 1.44665461e-03 9.29992250e-04 1.16249031e-03
 1.16249031e-03 2.95773891e-01]
 [1.01782485e-03 1.05915784e-03 6.35494704e-04 6.97494188e-04
 6.97494188e-04 1.95867324e-01]
 [6.97494188e-04 8.98992508e-04 2.53164557e-04 2.78997675e-04
 2.78997675e-04 2.89877093e-01]] -> [0.00053216]
X: Tensor("Placeholder_0", shape=(?, 12, 6), dtype=float32)
Y: Tensor("Placeholder_1:0", shape=(?, 1), dtype=float32)
targets: Tensor("Placeholder_2:0", shape=(?, 1), dtype=float32)
predictions: Tensor("Placeholder_3:0", shape=(?, 1), dtype=float32)

학습을 시작합니다...
epoch: 100, train_error(A): 0.008201399818062782, test_error(B): 0.01705053262412548, B-A: 0.008849132806062698
epoch: 200, train_error(A): 0.0077939750626683235, test_error(B): 0.01577233336865902, B-A: 0.007978358305990696
epoch: 300, train_error(A): 0.007321509998291731, test_error(B): 0.01438175980001688, B-A: 0.007060249801725149
epoch: 400, train_error(A): 0.006800762843340635, test_error(B): 0.012774690054357052, B-A: 0.0059739272110164165
epoch: 500, train_error(A): 0.006339229643344879, test_error(B): 0.01139957457780838, B-A: 0.005060344934463501
```

epoch: 600, train_error(A): 0.005958125926554203, test_error(B): 0.010401720181107521, B-A: 0.004443594254553318
epoch: 700, train_error(A): 0.005609468091279268, test_error(B): 0.009584407322108746, B-A: 0.003974939230829477
epoch: 800, train_error(A): 0.005283031612634659, test_error(B): 0.00890459306538105, B-A: 0.0036215614527463913
epoch: 900, train_error(A): 0.0050024655647575855, test_error(B): 0.008398661389946938, B-A: 0.003396195825189352
epoch: 1000, train_error(A): 0.004791783634573221, test_error(B): 0.008088397793471813, B-A: 0.003296614158898592
epoch: 1100, train_error(A): 0.0046574766747653484, test_error(B): 0.007953044958412647, B-A: 0.003295568283647299
epoch: 1200, train_error(A): 0.004581786226481199, test_error(B): 0.007923244498670101, B-A: 0.003341458272188902
epoch: 1250, train_error(A): 0.004557054955512285, test_error(B): 0.007925226353108883, B-A: 0.0033681713975965977
elapsed_time: 0:01:03.277621
elapsed_time per epoch: 0:00:00.050622
input_data_column_cnt: 6,output_data_column_cnt: 1,seq_length: 12,rnn_cell_hidden_dim: 20,forget_bias: 1.0,num_stacked_layers: 1,keep_prob: 1.0,epoch_num: 1250,learning_rate: 0.01,train_error: 0.004557055,test_error: 0.007925226,min_test_error: 0.0079232445



```
recent_data.shape: (1, 12, 6)
recent_data: [[[0.80108499 0.8036683 0.78558512 0.79850168 0.79850168 0.0031405 ]
 [0.79850168 0.80108499 0.78558512 0.79850168 0.79850168 0.00396234]
 [0.80108499 0.80108499 0.77008525 0.77525187 0.77525187 0.00537916]
 [0.77525187 0.79333506 0.77266856 0.79075174 0.79075174 0.00491705]
 [0.79333506 0.80108499 0.77783518 0.78300181 0.78300181 0.00490027]
 [0.77525187 0.78558512 0.76750194 0.77008525 0.77008525 0.00394387]
 [0.77525187 0.78558512 0.76233531 0.77783518 0.77783518 0.00394373]
 [0.77008525 0.79075174 0.77008525 0.78816843 0.78816843 0.00711088]
 [0.77783518 0.78558512 0.77525187 0.7804185 0.7804185 0.00341782]
 [0.77525187 0.78300181 0.77008525 0.78300181 0.78300181 0.00336027]
 [0.77266856 0.78558512 0.77266856 0.7804185 0.7804185 0.001639 ]
 [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]]]
```

네이버 주식 2019.10.29. 내일 시가(정규화) test_predict [0.80148953]
네이버 주식 2019.10.29. 내일 시가(KRW) Tomorrow's stock price [156578.3]

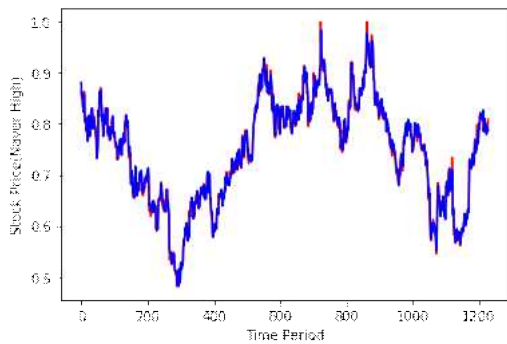
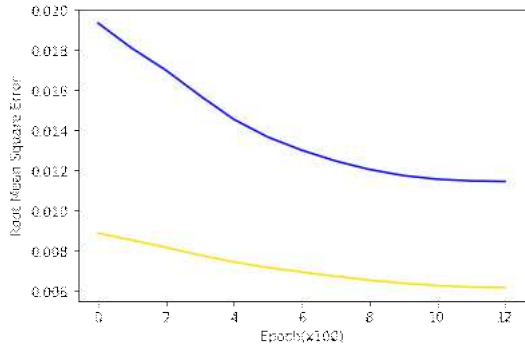
DIY 연구소 인공지능 주가 예측 프로그램 (<http://cafe.daum.net/diylab>)
네이버 주식 2019.10.29. 내일 고가

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4104 entries, 0 to 4103
Data columns (total 7 columns):
Date          4104 non-null object
Open          4104 non-null object
High          4104 non-null object
Low           4104 non-null object
Close         4104 non-null object
Adj Close     4104 non-null object
Volume        4104 non-null object
dtypes: object(7)
memory usage: 224.5+ KB
stock_info.shape: (4103, 6)
stock_info[0]: [ 1798.  1798.  1798.  1798.  1798.  501745.]
price.shape: (4103, 5)
price[0]: [1798. 1798. 1798. 1798. 1798.]
norm_price[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799]
=====
volume.shape: (4103, 1)
volume[0]: [501745.]
norm_volume[0]: [0.01103337]
=====
x.shape: (4103, 6)
x[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799 0.01103337]
x[-1]: [0.7804185  0.80883493 0.7804185  0.8036683  0.8036683  0.00642069]
=====
y[0]: [0.00179799]
y[-1]: [0.80883493]
[[1.79798502e-03 1.79798502e-03 1.79798502e-03 1.79798502e-03
 1.79798502e-03 1.10333715e-02]
 [2.90364247e-03 2.90364247e-03 2.78997675e-03 2.90364247e-03
 2.90364247e-03 5.75702063e-01]
 [3.06380780e-03 3.31697236e-03 2.14414880e-03 2.38698011e-03
 2.38698011e-03 8.92366583e-01]
 [2.64014467e-03 2.95530871e-03 1.41565487e-03 1.77731852e-03
 1.77731852e-03 5.05957237e-01]
 [1.68948592e-03 1.75665203e-03 1.09015758e-03 1.31232240e-03
 1.31232240e-03 4.66238623e-01]
 [1.27098941e-03 1.73081891e-03 1.27098941e-03 1.30198915e-03
 1.30198915e-03 4.22317679e-01]
 [1.43632136e-03 1.50348747e-03 9.09325756e-04 1.11082408e-03
 1.11082408e-03 3.42948214e-01]
 [1.05915784e-03 1.53448721e-03 1.03849135e-03 1.12115732e-03
 1.12115732e-03 3.20648852e-01]
 [9.19659003e-04 1.03849135e-03 7.95660036e-04 9.50658745e-04
 9.50658745e-04 1.83802616e-01]
 [9.29992250e-04 1.44665461e-03 9.29992250e-04 1.16249031e-03
 1.16249031e-03 2.95773891e-01]
 [1.01782485e-03 1.05915784e-03 6.35494704e-04 6.97494188e-04
 6.97494188e-04 1.95867324e-01]
 [6.97494188e-04 8.98992508e-04 2.53164557e-04 2.78997675e-04
 2.78997675e-04 2.89877093e-01]] -> [0.00061483]
X: Tensor("Placeholder_0", shape=(?, 12, 6), dtype=float32)
Y: Tensor("Placeholder_1:0", shape=(?, 1), dtype=float32)
targets: Tensor("Placeholder_2:0", shape=(?, 1), dtype=float32)
predictions: Tensor("Placeholder_3:0", shape=(?, 1), dtype=float32)
```

학습을 시작합니다...

```
epoch: 100, train_error(A): 0.008859719149768353, test_error(B): 0.019347352907061577, B-A: 0.010487633757293224
epoch: 200, train_error(A): 0.008516542613506317, test_error(B): 0.018085435032844543, B-A: 0.009568892419338226
epoch: 300, train_error(A): 0.008151557296514511, test_error(B): 0.016995282843708992, B-A: 0.008843725547194481
epoch: 400, train_error(A): 0.00776742585003376, test_error(B): 0.015733201056718826, B-A: 0.007965775206685066
epoch: 500, train_error(A): 0.0074241929687559605, test_error(B): 0.014546056278049946, B-A: 0.007121863309293985
```

epoch: 600, train_error(A): 0.007154264487326145, test_error(B): 0.01366577111184597, B-A: 0.006511506624519825
epoch: 700, train_error(A): 0.006924256682395935, test_error(B): 0.013007435016334057, B-A: 0.006083178333938122
epoch: 800, train_error(A): 0.006711044814437628, test_error(B): 0.012467804364860058, B-A: 0.00575675955042243
epoch: 900, train_error(A): 0.0065200491808354855, test_error(B): 0.012044048868119717, B-A: 0.005523999687284231
epoch: 1000, train_error(A): 0.0063634910620749, test_error(B): 0.011740891262888908, B-A: 0.005377400200814009
epoch: 1100, train_error(A): 0.006248423829674721, test_error(B): 0.011556653305888176, B-A: 0.005308229476213455
epoch: 1200, train_error(A): 0.006171639077365398, test_error(B): 0.011472863145172596, B-A: 0.005301224067807198
epoch: 1250, train_error(A): 0.0061456551775336266, test_error(B): 0.011446624994277954, B-A: 0.0053009698167443275
elapsed_time: 0:01:03.401718
elapsed_time per epoch: 0:00:00.050721
input_data_column_cnt: 6,output_data_column_cnt: 1,seq_length: 12,rnn_cell_hidden_dim: 20,forget_bias: 1.0,num_stacked_layers: 1,keep_prob: 1.0,epoch_num: 1250,learning_rate: 0.01,train_error: 0.006145655,test_error: 0.011446625,min_test_error: 0.011446625



```
recent_data.shape: (1, 12, 6)
recent_data: [[[0.80108499 0.8036683 0.78558512 0.79850168 0.79850168 0.0031405 ]
 [0.79850168 0.80108499 0.78558512 0.79850168 0.79850168 0.00396234]
 [0.80108499 0.80108499 0.77008525 0.77525187 0.77525187 0.00537916]
 [0.77525187 0.79333506 0.77266856 0.79075174 0.79075174 0.00491705]
 [0.79333506 0.80108499 0.77783518 0.78300181 0.78300181 0.00490027]
 [0.77525187 0.78558512 0.76750194 0.77008525 0.77008525 0.00394387]
 [0.77525187 0.78558512 0.76233531 0.77783518 0.77783518 0.00394373]
 [0.77008525 0.79075174 0.77008525 0.78816843 0.78816843 0.00711088]
 [0.77783518 0.78558512 0.77525187 0.7804185 0.7804185 0.00341782]
 [0.77525187 0.78300181 0.77008525 0.78300181 0.78300181 0.00336027]
 [0.77266856 0.78558512 0.77266856 0.7804185 0.7804185 0.001639 ]
 [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]]]
```

네이버 주식 2019.10.29. 내일 고가(정규화) test_predict [0.80985904]
네이버 주식 2019.10.29. 내일 고가(KRW) Tomorrow's stock price [158198.22]

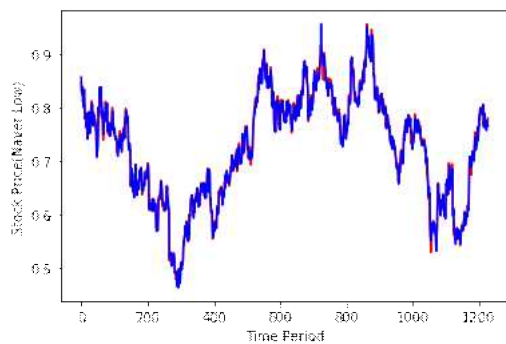
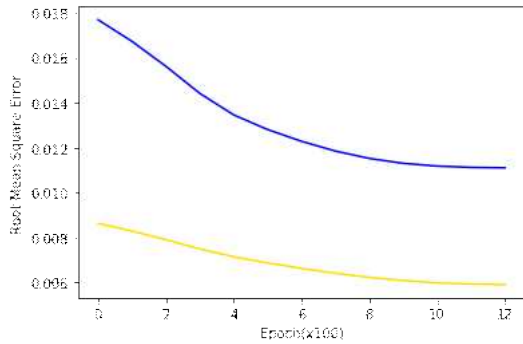
DIY 연구소 인공지능 주가 예측 프로그램 (<http://cafe.daum.net/diylab>)
네이버 주식 2019.10.29. 내일 저가

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4104 entries, 0 to 4103
Data columns (total 7 columns):
Date          4104 non-null object
Open          4104 non-null object
High          4104 non-null object
Low           4104 non-null object
Close         4104 non-null object
Adj Close     4104 non-null object
Volume        4104 non-null object
dtypes: object(7)
memory usage: 224.5+ KB
stock_info.shape: (4103, 6)
stock_info[0]: [ 1798.  1798.  1798.  1798.  1798.  501745.]
price.shape: (4103, 5)
price[0]: [1798. 1798. 1798. 1798. 1798.]
norm_price[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799]
=====
volume.shape: (4103, 1)
volume[0]: [501745.]
norm_volume[0]: [0.01103337]
=====
x.shape: (4103, 6)
x[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799 0.01103337]
x[-1]: [0.7804185  0.80883493 0.7804185  0.8036683  0.8036683  0.00642069]
=====
y[0]: [0.00179799]
y[-1]: [0.7804185]
[[1.79798502e-03 1.79798502e-03 1.79798502e-03 1.79798502e-03
 1.79798502e-03 1.10333715e-02]
 [2.90364247e-03 2.90364247e-03 2.78997675e-03 2.90364247e-03
 2.90364247e-03 5.75702063e-01]
 [3.06380780e-03 3.31697236e-03 2.14414880e-03 2.38698011e-03
 2.38698011e-03 8.92366583e-01]
 [2.64014467e-03 2.95530871e-03 1.41565487e-03 1.77731852e-03
 1.77731852e-03 5.05957237e-01]
 [1.68948592e-03 1.75665203e-03 1.09015758e-03 1.31232240e-03
 1.31232240e-03 4.66238623e-01]
 [1.27098941e-03 1.73081891e-03 1.27098941e-03 1.30198915e-03
 1.30198915e-03 4.22317679e-01]
 [1.43632136e-03 1.50348747e-03 9.09325756e-04 1.11082408e-03
 1.11082408e-03 3.42948214e-01]
 [1.05915784e-03 1.53448721e-03 1.03849135e-03 1.12115732e-03
 1.12115732e-03 3.20648852e-01]
 [9.19659003e-04 1.03849135e-03 7.95660036e-04 9.50658745e-04
 9.50658745e-04 1.83802616e-01]
 [9.29992250e-04 1.44665461e-03 9.29992250e-04 1.16249031e-03
 1.16249031e-03 2.95773891e-01]
 [1.01782485e-03 1.05915784e-03 6.35494704e-04 6.97494188e-04
 6.97494188e-04 1.95867324e-01]
 [6.97494188e-04 8.9892508e-04 2.53164557e-04 2.78997675e-04
 2.78997675e-04 2.89877093e-01]] -> [0.]
X: Tensor("Placeholder_0", shape=(?, 12, 6), dtype=float32)
Y: Tensor("Placeholder_1:0", shape=(?, 1), dtype=float32)
targets: Tensor("Placeholder_2:0", shape=(?, 1), dtype=float32)
predictions: Tensor("Placeholder_3:0", shape=(?, 1), dtype=float32)
```

학습을 시작합니다...

```
epoch: 100, train_error(A): 0.008630656637251377, test_error(B): 0.017688479274511337, B-A: 0.00905782263725996
epoch: 200, train_error(A): 0.008288463577628136, test_error(B): 0.016725001856684685, B-A: 0.008436538279056549
epoch: 300, train_error(A): 0.00790337473154068, test_error(B): 0.015617001801729202, B-A: 0.007713627070188522
epoch: 400, train_error(A): 0.007494011893868446, test_error(B): 0.01441260613501072, B-A: 0.006918594241142273
epoch: 500, train_error(A): 0.007145395036786795, test_error(B): 0.013456844724714756, B-A: 0.006311449687927961
```

epoch: 600, train_error(A): 0.006869427394121885, test_error(B): 0.01280337106436491, B-A: 0.005933943670243025
epoch: 700, train_error(A): 0.006628039758652449, test_error(B): 0.012280376628041267, B-A: 0.005652336869388819
epoch: 800, train_error(A): 0.006411103997379541, test_error(B): 0.01184723898768425, B-A: 0.0054361349903047085
epoch: 900, train_error(A): 0.0062273526564240456, test_error(B): 0.011519821360707283, B-A: 0.0052924687042832375
epoch: 1000, train_error(A): 0.006086023524403572, test_error(B): 0.011301095597445965, B-A: 0.005215072073042393
epoch: 1100, train_error(A): 0.0059895021840929985, test_error(B): 0.011179589666426182, B-A: 0.005190087482333183
epoch: 1200, train_error(A): 0.00592938344925642, test_error(B): 0.011120853945612907, B-A: 0.005191470496356487
epoch: 1250, train_error(A): 0.005908407270908356, test_error(B): 0.011103375814855099, B-A: 0.005194968543946743
elapsed_time: 0:01:03.910076
elapsed_time per epoch: 0:00:00.051128
input_data_column_cnt: 6,output_data_column_cnt: 1,seq_length: 12,rnn_cell_hidden_dim: 20,forget_bias: 1.0,num_stacked_layers: 1,keep_prob: 1.0,epoch_num: 1250,learning_rate: 0.01,train_error: 0.0059084073,test_error: 0.011103376,min_test_error: 0.011103376



```
recent_data.shape: (1, 12, 6)
recent_data: [[[[0.80108499 0.8036683 0.78558512 0.79850168 0.79850168 0.0031405 ]
 [0.79850168 0.80108499 0.78558512 0.79850168 0.79850168 0.00396234]
 [0.80108499 0.80108499 0.77008525 0.77525187 0.77525187 0.00537916]
 [0.77525187 0.79333506 0.77266856 0.79075174 0.79075174 0.00491705]
 [0.79333506 0.80108499 0.77783518 0.78300181 0.78300181 0.00490027]
 [0.77525187 0.78558512 0.76750194 0.77008525 0.77008525 0.00394387]
 [0.77525187 0.78558512 0.76233531 0.77783518 0.77783518 0.00394373]
 [0.77008525 0.79075174 0.77008525 0.78816843 0.78816843 0.00711088]
 [0.77783518 0.78558512 0.77525187 0.7804185 0.7804185 0.00341782]
 [0.77525187 0.78300181 0.77008525 0.78300181 0.78300181 0.00336027]
 [0.77266856 0.78558512 0.77266856 0.7804185 0.7804185 0.001639 ]
 [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]]]]
```

네이버 주식 2019.10.29. 내일 저가(정규화) test_predict [0.7884545]
네이버 주식 2019.10.29. 내일 저가(KRW) Tomorrow's stock price [154055.36]

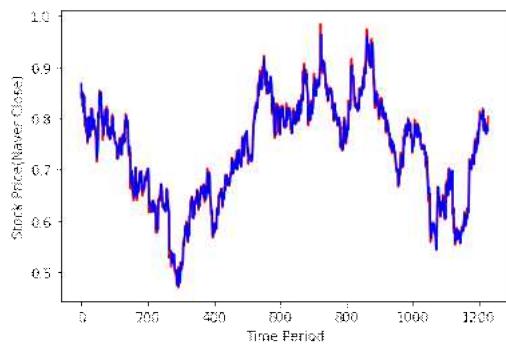
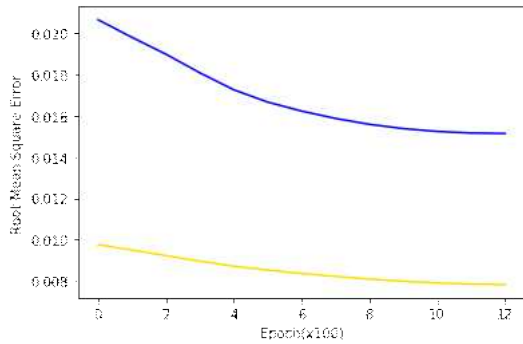
DIY 연구소 인공지능 주가 예측 프로그램 (<http://cafe.daum.net/diylab>)
네이버 주식 2019.10.29. 내일 증가

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4104 entries, 0 to 4103
Data columns (total 7 columns):
Date          4104 non-null object
Open          4104 non-null object
High          4104 non-null object
Low           4104 non-null object
Close         4104 non-null object
Adj Close     4104 non-null object
Volume        4104 non-null object
dtypes: object(7)
memory usage: 224.5+ KB
stock_info.shape: (4103, 6)
stock_info[0]: [ 1798.  1798.  1798.  1798.  1798.  501745.]
price.shape: (4103, 5)
price[0]: [1798. 1798. 1798. 1798. 1798.]
norm_price[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799]
=====
volume.shape: (4103, 1)
volume[0]: [501745.]
norm_volume[0]: [0.01103337]
=====
x.shape: (4103, 6)
x[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799 0.01103337]
x[-1]: [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]
=====
y[0]: [0.00179799]
y[-1]: [0.8036683]
[[1.79798502e-03 1.79798502e-03 1.79798502e-03 1.79798502e-03
 1.79798502e-03 1.10333715e-02]
 [2.90364247e-03 2.90364247e-03 2.78997675e-03 2.90364247e-03
 2.90364247e-03 5.75702063e-01]
 [3.06380780e-03 3.31697236e-03 2.14414880e-03 2.38698011e-03
 2.38698011e-03 8.92366583e-01]
 [2.64014467e-03 2.95530871e-03 1.41565487e-03 1.77731852e-03
 1.77731852e-03 5.05957237e-01]
 [1.68948592e-03 1.75665203e-03 1.09015758e-03 1.31232240e-03
 1.31232240e-03 4.66238623e-01]
 [1.27098941e-03 1.73081891e-03 1.27098941e-03 1.30198915e-03
 1.30198915e-03 4.22317679e-01]
 [1.43632136e-03 1.50348747e-03 9.09325756e-04 1.11082408e-03
 1.11082408e-03 3.42948214e-01]
 [1.05915784e-03 1.53448721e-03 1.03849135e-03 1.12115732e-03
 1.12115732e-03 3.20648852e-01]
 [9.19659003e-04 1.03849135e-03 7.95660036e-04 9.50658745e-04
 9.50658745e-04 1.83802616e-01]
 [9.29992250e-04 1.44665461e-03 9.29992250e-04 1.16249031e-03
 1.16249031e-03 2.95773891e-01]
 [1.01782485e-03 1.05915784e-03 6.35494704e-04 6.97494188e-04
 6.97494188e-04 1.95867324e-01]
 [6.97494188e-04 8.9892508e-04 2.53164557e-04 2.78997675e-04
 2.78997675e-04 2.89877093e-01]] -> [0.0002325]
X: Tensor("Placeholder_0", shape=(?, 12, 6), dtype=float32)
Y: Tensor("Placeholder_1:0", shape=(?, 1), dtype=float32)
targets: Tensor("Placeholder_2:0", shape=(?, 1), dtype=float32)
predictions: Tensor("Placeholder_3:0", shape=(?, 1), dtype=float32)
```

학습을 시작합니다...

```
epoch: 100, train_error(A): 0.009757311083376408, test_error(B): 0.020655682310461998, B-A: 0.01089837122708559
epoch: 200, train_error(A): 0.009497640654444695, test_error(B): 0.019801821559667587, B-A: 0.010304180905222893
epoch: 300, train_error(A): 0.009230108000338078, test_error(B): 0.018988370895385742, B-A: 0.009758262895047665
epoch: 400, train_error(A): 0.008956635370850563, test_error(B): 0.018085457384586334, B-A: 0.009128822013735771
epoch: 500, train_error(A): 0.008715810254216194, test_error(B): 0.017263757064938545, B-A: 0.008547946810722351
```

epoch: 600, train_error(A): 0.008526170626282692, test_error(B): 0.01666709966957569, B-A: 0.008140929043293
epoch: 700, train_error(A): 0.008366157300770283, test_error(B): 0.016232239082455635, B-A: 0.007866081781685352
epoch: 800, train_error(A): 0.00822101067751646, test_error(B): 0.015875477343797684, B-A: 0.00765446666281223
epoch: 900, train_error(A): 0.008091741241514683, test_error(B): 0.015590334311127663, B-A: 0.00749859306961298
epoch: 1000, train_error(A): 0.007984471507370472, test_error(B): 0.015381927601993084, B-A: 0.007397456094622612
epoch: 1100, train_error(A): 0.007902536541223526, test_error(B): 0.01524480152875185, B-A: 0.007342264987528324
epoch: 1200, train_error(A): 0.007845520973205566, test_error(B): 0.015168865211308002, B-A: 0.007323344238102436
epoch: 1250, train_error(A): 0.007825463078916073, test_error(B): 0.015145537443459034, B-A: 0.007320074364542961
elapsed_time: 0:01:03.494783
elapsed_time per epoch: 0:00:00.050796
input_data_column_cnt: 6,output_data_column_cnt: 1,seq_length: 12,rnn_cell_hidden_dim: 20,forget_bias: 1.0,num_stacked_layers: 1,keep_prob: 1.0,epoch_num: 1250,learning_rate: 0.01,train_error: 0.007825463,test_error: 0.015145537,min_test_error: 0.015145537



```
recent_data.shape: (1, 12, 6)
recent_data: [[[0.80108499 0.8036683 0.78558512 0.79850168 0.79850168 0.0031405 ]
 [0.79850168 0.80108499 0.78558512 0.79850168 0.79850168 0.00396234]
 [0.80108499 0.80108499 0.77008525 0.77525187 0.77525187 0.00537916]
 [0.77525187 0.79333506 0.77266856 0.79075174 0.79075174 0.00491705]
 [0.79333506 0.80108499 0.77783518 0.78300181 0.78300181 0.00490027]
 [0.77525187 0.78558512 0.76750194 0.77008525 0.77008525 0.00394387]
 [0.77525187 0.78558512 0.76233531 0.77783518 0.77783518 0.00394373]
 [0.77008525 0.79075174 0.77008525 0.78816843 0.78816843 0.00711088]
 [0.77783518 0.78558512 0.77525187 0.7804185 0.7804185 0.00341782]
 [0.77525187 0.78300181 0.77008525 0.78300181 0.78300181 0.00336027]
 [0.77266856 0.78558512 0.77266856 0.7804185 0.7804185 0.001639 ]
 [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]]]
```

네이버 주식 2019.10.29. 내일 증가(정규화) test_predict [0.79685885]
네이버 주식 2019.10.29. 내일 증가(KRW) Tomorrow's stock price [155682.03]

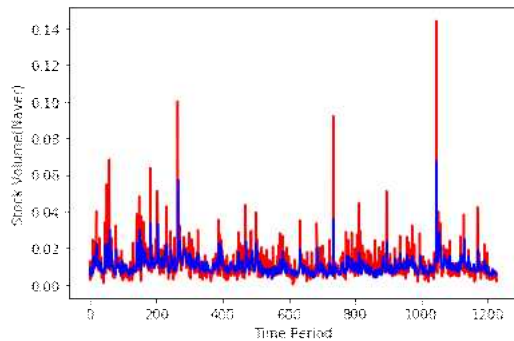
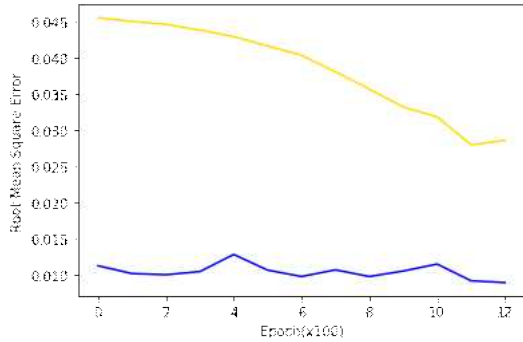
DIY 연구소 인공지능 주가 예측 프로그램 (<http://cafe.daum.net/diylab>)
네이버 주식 2019.10.29. 내일 거래량

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4104 entries, 0 to 4103
Data columns (total 7 columns):
Date          4104 non-null object
Open          4104 non-null object
High          4104 non-null object
Low           4104 non-null object
Close         4104 non-null object
Adj Close     4104 non-null object
Volume        4104 non-null object
dtypes: object(7)
memory usage: 224.5+ KB
stock_info.shape: (4103, 6)
stock_info[0]: [ 1798.  1798.  1798.  1798.  1798.  501745.]
price.shape: (4103, 5)
price[0]: [1798. 1798. 1798. 1798. 1798.]
norm_price[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799]
=====
volume.shape: (4103, 1)
volume[0]: [501745.]
norm_volume[0]: [0.01103337]
=====
x.shape: (4103, 6)
x[0]: [0.00179799 0.00179799 0.00179799 0.00179799 0.00179799 0.01103337]
x[-1]: [0.7804185  0.80883493 0.7804185  0.8036683  0.8036683  0.00642069]
=====
y[0]: [0.01103337]
y[-1]: [0.00642069]
[[1.79798502e-03 1.79798502e-03 1.79798502e-03 1.79798502e-03
 1.79798502e-03 1.10333715e-02]
 [2.90364247e-03 2.90364247e-03 2.78997675e-03 2.90364247e-03
 2.90364247e-03 5.75702063e-01]
 [3.06380780e-03 3.31697236e-03 2.14414880e-03 2.38698011e-03
 2.38698011e-03 8.92366583e-01]
 [2.64014467e-03 2.95530871e-03 1.41565487e-03 1.77731852e-03
 1.77731852e-03 5.05957237e-01]
 [1.68948592e-03 1.75665203e-03 1.09015758e-03 1.31232240e-03
 1.31232240e-03 4.66238623e-01]
 [1.27098941e-03 1.73081891e-03 1.27098941e-03 1.30198915e-03
 1.30198915e-03 4.22317679e-01]
 [1.43632136e-03 1.50348747e-03 9.09325756e-04 1.11082408e-03
 1.11082408e-03 3.42948214e-01]
 [1.05915784e-03 1.53448721e-03 1.03849135e-03 1.12115732e-03
 1.12115732e-03 3.20648852e-01]
 [9.19659003e-04 1.03849135e-03 7.95660036e-04 9.50658745e-04
 9.50658745e-04 1.83802616e-01]
 [9.29992250e-04 1.44665461e-03 9.29992250e-04 1.16249031e-03
 1.16249031e-03 2.95773891e-01]
 [1.01782485e-03 1.05915784e-03 6.35494704e-04 6.97494188e-04
 6.97494188e-04 1.95867324e-01]
 [6.97494188e-04 8.98992508e-04 2.53164557e-04 2.78997675e-04
 2.78997675e-04 2.89877093e-01]] -> [0.2343659]
X: Tensor("Placeholder_0", shape=(?, 12, 6), dtype=float32)
Y: Tensor("Placeholder_1:0", shape=(?, 1), dtype=float32)
targets: Tensor("Placeholder_2:0", shape=(?, 1), dtype=float32)
predictions: Tensor("Placeholder_3:0", shape=(?, 1), dtype=float32)
```

학습을 시작합니다...

```
epoch: 100, train_error(A): 0.04547436162829399, test_error(B): 0.011226382106542587, B-A: -0.034247979521751404
epoch: 200, train_error(A): 0.044962503015995026, test_error(B): 0.010154549963772297, B-A: -0.0348079539835453
epoch: 300, train_error(A): 0.04457151144742966, test_error(B): 0.009992350824177265, B-A: -0.034579161554574966
epoch: 400, train_error(A): 0.04376807436347008, test_error(B): 0.010424559004604816, B-A: -0.033343516290187836
epoch: 500, train_error(A): 0.042864538729190826, test_error(B): 0.012793229892849922, B-A: -0.030071308836340904
```

epoch: 600, train_error(A): 0.04157917946577072, test_error(B): 0.01062568835914135, B-A: -0.03095349110662937
epoch: 700, train_error(A): 0.04030150547623634, test_error(B): 0.009747529402375221, B-A: -0.030553976073861122
epoch: 800, train_error(A): 0.0379939079284668, test_error(B): 0.010661420412361622, B-A: -0.02733248844742775
epoch: 900, train_error(A): 0.03563319519162178, test_error(B): 0.009745754301548004, B-A: -0.025887440890073776
epoch: 1000, train_error(A): 0.0331447534263134, test_error(B): 0.010502373799681664, B-A: -0.022642379626631737
epoch: 1100, train_error(A): 0.03179040551185608, test_error(B): 0.011462700553238392, B-A: -0.020327705889940262
epoch: 1200, train_error(A): 0.02794719859957695, test_error(B): 0.0091523677110672, B-A: -0.01879483088850975
epoch: 1250, train_error(A): 0.028553908690810204, test_error(B): 0.008906776085495949, B-A: -0.019647132605314255
elapsed_time: 0:01:03.112515
elapsed_time per epoch: 0:00:00.050490
input_data_column_cnt: 6,output_data_column_cnt: 1,seq_length: 12,rnn_cell_hidden_dim: 20,forget_bias: 1.0,num_stacked_layers: 1,keep_prob: 1.0,epoch_num: 1250,learning_rate: 0.01,train_error: 0.028553909,test_error: 0.008906776,min_test_error: 0.008906776



```
recent_data.shape: (1, 12, 6)
recent_data: [[[0.80108499 0.8036683 0.78558512 0.79850168 0.79850168 0.0031405 ]
 [0.79850168 0.80108499 0.78558512 0.79850168 0.79850168 0.00396234]
 [0.80108499 0.80108499 0.77008525 0.77525187 0.77525187 0.00537916]
 [0.77525187 0.79333506 0.77266856 0.79075174 0.79075174 0.00491705]
 [0.79333506 0.80108499 0.77783518 0.78300181 0.78300181 0.00490027]
 [0.77525187 0.78558512 0.76750194 0.77008525 0.77008525 0.00394387]
 [0.77525187 0.78558512 0.76233531 0.77783518 0.77783518 0.00394373]
 [0.77008525 0.79075174 0.77008525 0.78816843 0.78816843 0.00711088]
 [0.77783518 0.78558512 0.77525187 0.7804185 0.7804185 0.00341782]
 [0.77525187 0.78300181 0.77008525 0.78300181 0.78300181 0.00336027]
 [0.77266856 0.78558512 0.77266856 0.7804185 0.7804185 0.001639 ]
 [0.7804185 0.80883493 0.7804185 0.8036683 0.8036683 0.00642069]]]
```

네이버 주식 2019.10.29. 내일 거래량(정규화) test_predict [0.00565759]
네이버 주식 2019.10.29. 내일 거래량(KRW) Tomorrow's stock volume [2545.0269]

# 네이버										
# 1일씩 예측	시가예측	시가실제	고가예측	고가실제	저가예측	저가실제	종가예측	종가실제	거래량예측	거래량실제
2019-10-28(월)		152500		158000		152500		157000		335179
2019-10-29(화)	156578.3		158198.22		154055.36		155682.03		2545.0269	
2019-10-30(수)										
2019-10-31(목)										
# 3일후 예측	시가예측	시가실제	고가예측	고가실제	저가예측	저가실제	종가예측	종가실제	거래량예측	거래량실제
2019-10-29(화)	156578.3		158198.22		154055.36		155682.03		2545.0269	
2019-10-30(수)	155214.33		157042.56		153089.92		154882.19		3511.5896	
2019-10-31(목)	154221.81		156077.77		152016.58		153905.02		4126.6025	

