

```
In [1]: from scipy.io import loadmat
import pandas as pd
import numpy as np
import csv
import matplotlib.pyplot as plt
from IPython.display import display
import warnings
warnings.filterwarnings("ignore")

# Importing Keras modules from TensorFlow
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, SimpleRNN, LSTM, Dropout

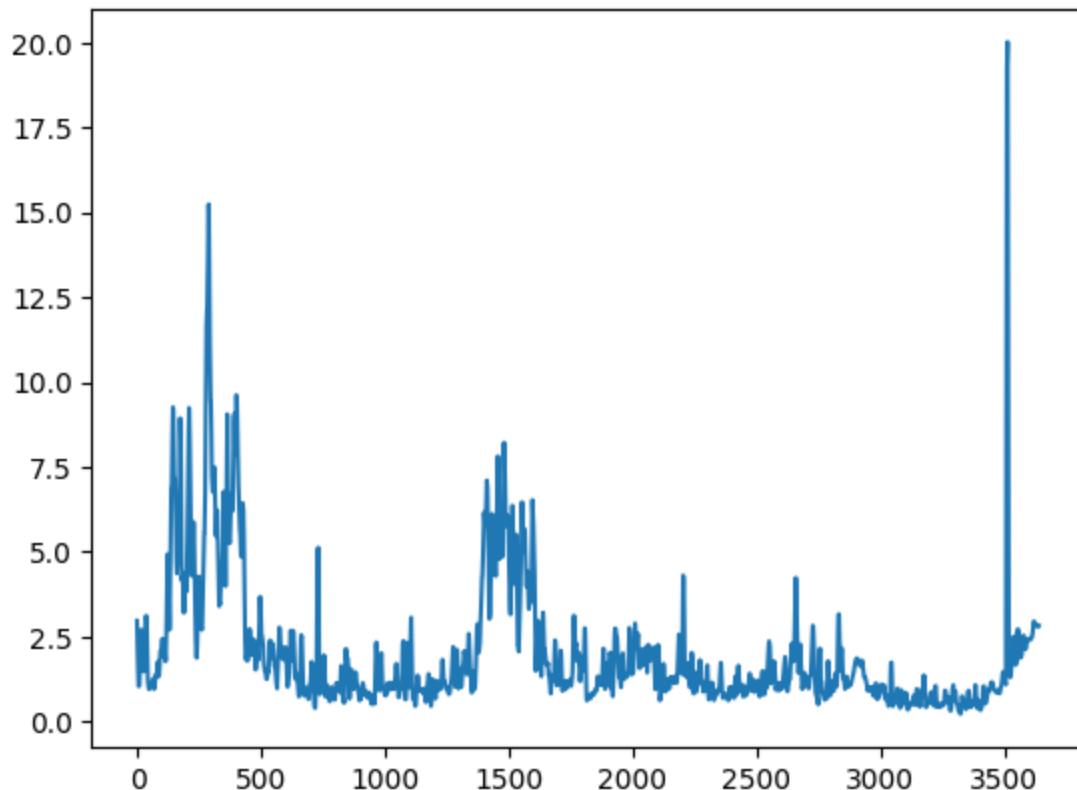
# Other imports
from sklearn import metrics
from sklearn.metrics import accuracy_score, f1_score, r2_score, mean_squared_error, mean
from sklearn.preprocessing import MinMaxScaler
```

```
In [2]: train_data_file = pd.read_csv("train_data2.csv")
print(train_data_file.columns)
```

```
Index(['HDFCBANK_M&M', 'HDFCBANK_ULTRACEMCO', 'HDFCBANK_GRASIM',
       'HDFCBANK_PIDILITIND', 'HDFCBANK_LT', 'HDFCBANK_HINDUNILVR',
       'HDFCBANK_ITC', 'HDFCBANK_RELIANCE', 'HDFCBANK_ONGC',
       'HDFCBANK_UPL',
       ...
       'INFY_TATASTEEL', 'INFY_SUNPHARMA', 'INFY_CONCOR',
       'INFY_BHARTIARTL', 'TATASTEEL_SUNPHARMA', 'TATASTEEL_CONCOR',
       'TATASTEEL_BHARTIARTL', 'SUNPHARMA_CONCOR',
       'SUNPHARMA_BHARTIARTL', 'CONCOR_BHARTIARTL'],
      dtype='object', length=190)
```

```
In [3]: train_price = train_data_file['HDFCBANK_M&M']
plt.plot(train_price)
```

```
Out[3]: [
```



```
In [4]: train_data_file['HDFCBANK_M&M']
```

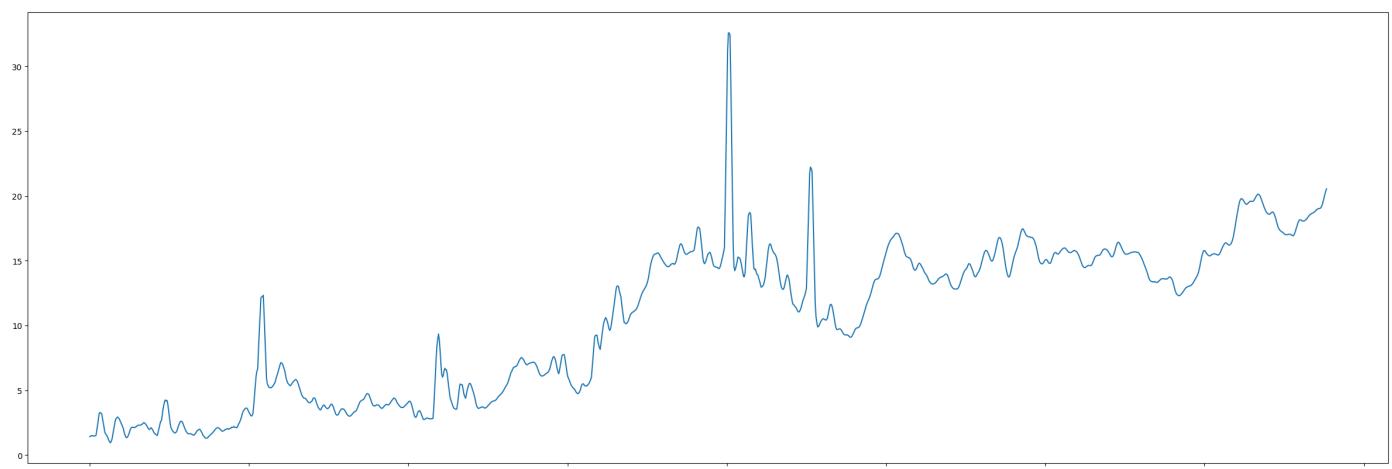
```
Out[4]: 0      2.974444  
1      2.680847  
2      2.304385  
3      1.860661  
4      1.517272  
...  
3634    2.803465  
3635    2.794807  
3636    2.793349  
3637    2.806755  
3638    2.830975  
Name: "HDFCBANK_M&M", Length: 3639, dtype: float64
```

```
In [5]: test_data_file = pd.read_csv("test_data2.csv")  
print(test_data_file.columns)
```

```
Index(['HDFCBANK_M&M', 'HDFCBANK_ULTRACEMCO', 'HDFCBANK_GRASIM',  
       'HDFCBANK_PIDILITIND', 'HDFCBANK_LT', 'HDFCBANK_HINDUNILVR',  
       'HDFCBANK_ITC', 'HDFCBANK_RELIANCE', 'HDFCBANK_ONGC',  
       'HDFCBANK_UPL',  
       ...  
       'INFY_TATASTEEL', 'INFY_SUNPHARMA', 'INFY_CONCOR',  
       'INFY_BHARTIARTL', 'TATASTEEL_SUNPHARMA', 'TATASTEEL_CONCOR',  
       'TATASTEEL_BHARTIARTL', 'SUNPHARMA_CONCOR',  
       'SUNPHARMA_BHARTIARTL', 'CONCOR_BHARTIARTL'],  
       dtype='object', length=190)
```

```
In [6]: test_price = test_data_file['RELIA  
plt.figure(figsize = (30,10))  
plt.plot(test_price)
```

```
Out[6]: [
```



```
In [7]: names = train_data_file.columns  
names = list(names)  
print(names)
```

```
['HDFCBANK_M&M', 'HDFCBANK_ULTRACEMCO', 'HDFCBANK_GRASIM', 'HDFCBANK_PIDILITIN  
D', 'HDFCBANK_LT', 'HDFCBANK_HINDUNILVR', 'HDFCBANK_ITC', 'HDFCBANK_RELIANCE',  
'HDFCBANK_ONGC', 'HDFCBANK_UPL', 'HDFCBANK_ICICIBANK', 'HDFCBANK_SIEMENS', 'HDF  
CBANK_ABB', 'HDFCBANK_TCS', 'HDFCBANK_INFY', 'HDFCBANK_TATASTEEL', 'HDFCBANK_SUN  
PHARMA', 'HDFCBANK_CONCOR', 'HDFCBANK_BHARTIARTL', 'M&M_ULTRACEMCO', 'M&M_GRASI  
M', 'M&M_PIDILITIND', 'M&M_LT', 'M&M_HINDUNILVR', 'M&M_ITC', 'M&M_RELIANCE',  
'M&M_ONGC', 'M&M_UPL', 'M&M_ICICIBANK', 'M&M_SIEMENS', 'M&M_ABB', 'M&M_TCS',  
'M&M_INFY', 'M&M_TATASTEEL', 'M&M_SUNPHARMA', 'M&M_CONCOR', 'M&M_BHARTIARTL',  
'ULTRACEMCO_GRASIM', 'ULTRACEMCO_PIDILITIND', 'ULTRACEMCO_LT', 'ULTRACEMCO_HINDUN  
ILVR', 'ULTRACEMCO_ITC', 'ULTRACEMCO_RELIANCE', 'ULTRACEMCO_ONGC', 'ULTRACEMCO_U  
PL', 'ULTRACEMCO_ICICIBANK', 'ULTRACEMCO_SIEMENS', 'ULTRACEMCO_ABB', 'ULTRACEMCO  
_TCS', 'ULTRACEMCO_INFY', 'ULTRACEMCO_TATASTEEL', 'ULTRACEMCO_SUNPHARMA', 'ULTRA
```

```
CEMCO_CONCOR'', ''ULTRACEMCO_BHARTIARTL'', ''GRASIM_PIDILITIND'', ''GRASIM_LT'', ''GRASIM_HINDUNILVR'', ''GRASIM_ITC'', ''GRASIM_RELIA  
NCE'', ''GRASIM_ONGC'', ''GRASIM_UPL'', ''GRASIM_ICICIBANK'', ''GRASIM_SIEMENS'', ''GRASIM_ABB'', ''GRASIM_TCS'', ''GRASIM_INF  
Y'', ''GRASIM_TATASTEEL'', ''GRASIM_SUNPHARMA'', ''GRASIM_CONCOR'', ''GRASIM_BHARTIARTL'', ''PIDILITIND_LT'', ''PIDILITIND_HINDUNILVR'',  
''PIDILITIND_ITC'', ''PIDILITIND_RELIA  
NCE'', ''PIDILITIND_ONGC'', ''PIDILITIND_UPL'', ''PIDILITIND_ICICIBANK'', ''PIDILITIND_SIEMENS'', ''PIDILITIND_ABB'', ''PIDILITIND_TCS'',  
''PIDILITIND_INFY'', ''PIDILITIND_TAT  
ASTEEL'', ''PIDILITIND_SUNPHARMA'', ''PIDILITIND_CONCOR'', ''PIDILITIND_BHARTIARTL'', ''LT_HINDUNILVR'', ''LT_ITC'', ''LT_RELIA  
NCE'', ''LT_ONGC'', ''LT_UPL'', ''LT_ICICIBAN  
K'', ''LT_SIEMENS'', ''LT_ABB'', ''LT_TCS'', ''LT_INFY'', ''LT_TATASTEEL'', ''LT_SUNPHAR  
MA'', ''LT_CONCOR'', ''LT_BHARTIARTL'', ''HINDUNILVR_ITC'', ''HINDUNILVR_RELIA  
NCE'', ''HINDUNILVR_ONGC'', ''HINDUNILVR_UPL'', ''HINDUNILVR_ICICIBANK'', ''HINDUNILVR_SIEMENS'',  
''HINDUNILVR_ABB'', ''HINDUNILVR_TCS'', ''HINDUNILVR_INFY'', ''HINDUNILVR_TATASTEEL'', ''HINDUNILVR_SUNPHAR  
MA'', ''HINDUNILVR_CONCOR'', ''HINDUNILVR_BHARTIARTL'', ''ITC_RELIA  
NCE'', ''ITC_ONGC'', ''ITC_UPL'', ''ITC_ICICIBANK'', ''ITC_SIEMENS'', ''ITC_ABB'', ''ITC_TCS'', ''ITC_INFY'', ''ITC_TATASTEEL'', ''ITC_SUNPHAR  
MA'', ''ITC_CONCOR'', ''ITC_BHARTIARTL'', ''RELIANCE_ONGC'', ''RELIANCE_UPL'', ''RELIANCE_ICICIBANK'', ''RELIANCE_SIEMEN  
S'', ''RELIANCE_ABB'', ''RELIANCE_TCS'', ''RELIANCE_INFY'', ''RELIANCE_TATASTEEL'', ''RE  
LIANCE_SUNPHARMA'', ''RELIANCE_CONCOR'', ''RELIANCE_BHARTIARTL'', ''ONGC_UPL'', ''ONGC_I  
CICIBANK'', ''ONGC_SIEMENS'', ''ONGC_ABB'', ''ONGC_TCS'', ''ONGC_INFY'', ''ONGC_TATASTEE  
L'', ''ONGC_SUNPHARMA'', ''ONGC_CONCOR'', ''ONGC_BHARTIARTL'', ''UPL_ICICIBANK'', ''UPL_SIEMENS'', ''UPL_ABB'', ''UPL_TCS'', ''UPL_INFY'', ''UPL_TATASTEEL'', ''UPL_SUNPHAR  
MA'', ''UPL_CONCOR'', ''UPL_BHARTIARTL'', ''ICICIBANK_SIEMENS'', ''ICICIBANK_ABB'', ''ICICIBAN  
K_TCS'', ''ICICIBANK_INFY'', ''ICICIBANK_TATASTEEL'', ''ICICIBANK_SUNPHARMA'', ''ICICIBA  
NK_CONCOR'', ''ICICIBANK_BHARTIARTL'', ''SIEMENS_ABB'', ''SIEMENS_TCS'', ''SIEMENS_INF  
Y'', ''SIEMENS_TATASTEEL'', ''SIEMENS_SUNPHARMA'', ''SIEMENS_CONCOR'', ''SIEMENS_BHARTIA  
RTL'', ''ABB_TCS'', ''ABB_INFY'', ''ABB_TATASTEEL'', ''ABB_SUNPHARMA'', ''ABB_CONCOR'',  
''ABB_BHARTIARTL'', ''TCS_INFY'', ''TCS_TATASTEEL'', ''TCS_SUNPHARMA'', ''TCS_CONCOR'',  
''TCS_BHARTIARTL'', ''INFY_TATASTEEL'', ''INFY_SUNPHARMA'', ''INFY_CONCOR'', ''INFY_BHAR  
TIARTL'', ''TATASTEEL_SUNPHARMA'', ''TATASTEEL_CONCOR'', ''TATASTEEL_BHARTIARTL'', ''SUN  
PHARMA_CONCOR'', ''SUNPHARMA_BHARTIARTL'', ''CONCOR_BHARTIARTL'']
```

```
In [8]: data = {"A": [1, 2, 3], "b": [3, 4, 5], "c": [4, 5, 6]}\n        df = pd.DataFrame(data, columns = ["A", "b", "c"])
```

```
In [9]: df.to_csv("sample_out.csv")
```

```
In [10]: df["A"]
```

```
Out[10]: 0    1\n1    2\n2    3\nName: A, dtype: int64
```

```
In [11]: predicted_series_rnn = {}  
predicted_series_lstm = {}
```

```
In [ ]: rows = []\ncount = 0\nfor file in names:\n    print("\n*****\n")\n    print("Pair Number:", count)\n    count+=1\n    train_data = train_data_file[file]\ntest_data = test_data_file[file]\nlength_validation = len(test_data)\nlength_train = len(train_data)\n\ntrain = np.array(train_data)\ndataset_train = train\ndataset_train = train.reshape(-1,1)\n\nscaler = MinMaxScaler(feature_range = (0,1))
```

```

# scaling dataset
dataset_train_scaled = scaler.fit_transform(dataset_train)

X_train = []
y_train = []

time_step = 50

for i in range(time_step, length_train):
    X_train.append(dataset_train_scaled[i-time_step:i,0])
    y_train.append(dataset_train_scaled[i,0])

# convert list to array
X_train, y_train = np.array(X_train), np.array(y_train)

X_train = np.reshape(X_train, (X_train.shape[0], X_train.shape[1],1))
y_train = np.reshape(y_train, (y_train.shape[0],1))

# initializing the RNN
regressor = Sequential()

# adding first RNN layer and dropout regularization
regressor.add(SimpleRNN(units = 50, activation = "tanh", return_sequences = True, in
regressor.add(Dropout(0.2))

# # adding third RNN layer and dropout regularization

regressor.add(SimpleRNN(units = 50, activation = "tanh", return_sequences = True))

regressor.add(Dropout(0.2))

# adding fourth RNN layer and dropout regularization

regressor.add(SimpleRNN(units = 50))

regressor.add(Dropout(0.2))

# adding the output layer
regressor.add(Dense(units = 1))

# # compiling RNN
regressor.compile(
    optimizer = "adam",
    loss = "mean_squared_error")

# fitting the RNN
history = regressor.fit(X_train, y_train, epochs = 35, batch_size = 32, shuffle = Fa

y_train = scaler.inverse_transform(y_train) # scaling back from 0-1 to original
y_pred = regressor.predict(X_train) # predictions
y_pred = scaler.inverse_transform(y_pred) # scaling back from 0-1 to original

validation_data = np.array(test_data)
dataset_validation = validation_data # getting "open" column and converting to arra
dataset_validation = np.reshape(dataset_validation, (-1,1)) # converting 1D to 2D a
scaled_dataset_validation = scaler.fit_transform(dataset_validation) # scaling ope

# Creating X_test and y_test
X_test = []
y_test = []

for i in range(time_step, length_validation):

```

```

X_test.append(scaled_dataset_validation[i-time_step:i,0])
y_test.append(scaled_dataset_validation[i,0])

# Converting to array
X_test, y_test = np.array(X_test), np.array(y_test)

X_test = np.reshape(X_test, (X_test.shape[0],X_test.shape[1],1)) # reshape to 3D array
y_test = np.reshape(y_test, (-1,1)) # reshape to 2D array

# predictions with X_test data
y_pred_of_test = regressor.predict(X_test)
# scaling back from 0-1 to original
y_pred_of_test = scaler.inverse_transform(y_pred_of_test)
flattened_results = np.array(y_pred_of_test).flatten().tolist()
predicted_series_rnn[names.index(file)] = flattened_results
# visualisation
plt.figure(figsize = (30,10))
plt.plot(y_pred_of_test, label = "y_pred_of_test", c = "orange")
plt.plot(scaler.inverse_transform(y_test) , label = "y_test", c = "g")
plt.xlabel("time")
plt.ylabel("distance")
plt.title("Testing Graph")
plt.legend()
plt.show()

R2score = r2_score(scaler.inverse_transform(y_test), y_pred_of_test)
rsme = np.sqrt(mean_squared_error(scaler.inverse_transform(y_test), y_pred_of_test))
mape = mean_absolute_percentage_error(scaler.inverse_transform(y_test), y_pred_of_test)
mae = mean_absolute_error(scaler.inverse_transform(y_test), y_pred_of_test)
print("\nPrediction results:")
results_rnn = [R2score, rsme, mae, mape]
y = scaler.inverse_transform(y_test)
# thresholds = [epsilon1[names.index(file)],epsilon2[names.index(file)],epsilon3[names.index(file)]]

print("r2_score: ", R2score)
print("MAPE: ", mape)
print("MAE: ", mae)
print("RMSE: ", rsme)

print("_____")

####LSTM#####
train_data = train_data_file[file]
test_data = test_data_file[file]
length_validation = len(test_data)
length_train = len(train_data)

train = np.array(train_data)
dataset_train = train
dataset_train = train.reshape(-1,1)

scaler = MinMaxScaler(feature_range = (0,1))

# scaling dataset
dataset_train_scaled = scaler.fit_transform(dataset_train)

X_train = []
y_train = []

time_step = 50

for i in range(time_step, length_train):
    X_train.append(dataset_train_scaled[i-time_step:i,0])
    y_train.append(dataset_train_scaled[i,0])

```

```

# convert list to array
X_train, y_train = np.array(X_train), np.array(y_train)

X_train = np.reshape(X_train, (X_train.shape[0], X_train.shape[1],1))
y_train = np.reshape(y_train, (y_train.shape[0],1))

#Initialise LSTM
regressor = Sequential()

regressor.add(LSTM(units = 50, activation = "tanh", return_sequences = True, input_shape=(None,1)))
regressor.add(Dropout(0.2))

regressor.add(LSTM(units = 50, activation = "tanh"))
regressor.add(Dropout(0.2))

regressor.add(Dense(units = 1))

# # compiling RNN
regressor.compile(
    optimizer = "adam",
    loss = "mean_squared_error")

# fitting the RNN
history = regressor.fit(X_train, y_train, epochs = 35, batch_size = 32, shuffle = False)

y_train = scaler.inverse_transform(y_train) # scaling back from 0-1 to original
y_pred = regressor.predict(X_train) # predictions
y_pred = scaler.inverse_transform(y_pred) # scaling back from 0-1 to original

validation_data = np.array(test_data)
dataset_validation = validation_data # getting "open" column and converting to array
dataset_validation = np.reshape(dataset_validation, (-1,1)) # converting 1D to 2D array
scaled_dataset_validation = scaler.fit_transform(dataset_validation) # scaling open

# Creating X_test and y_test
X_test = []
y_test = []

for i in range(time_step, length_validation):
    X_test.append(scaled_dataset_validation[i-time_step:i,0])
    y_test.append(scaled_dataset_validation[i,0])

# Converting to array
X_test, y_test = np.array(X_test), np.array(y_test)

X_test = np.reshape(X_test, (X_test.shape[0],X_test.shape[1],1)) # reshape to 3D array
y_test = np.reshape(y_test, (-1,1)) # reshape to 2D array

# predictions with X_test data
y_pred_of_test = regressor.predict(X_test)
# scaling back from 0-1 to original
y_pred_of_test = scaler.inverse_transform(y_pred_of_test)
flattened_results = np.array(y_pred_of_test).flatten().tolist()
predicted_series_lstm[names.index(file)] = flattened_results
# visualisation
plt.figure(figsize = (30,10))
plt.plot(y_pred_of_test, label = "y_pred_of_test", c = "orange")
plt.plot(scaler.inverse_transform(y_test), label = "y_test", c = "green")
plt.xlabel("time")
plt.ylabel("distance")
plt.title("Testing Graph")
plt.legend()
plt.show()

```

```

R2score = r2_score(scaler.inverse_transform(y_test), y_pred_of_test)
rsme = np.sqrt(mean_squared_error(scaler.inverse_transform(y_test), y_pred_of_test))
mape = mean_absolute_percentage_error(scaler.inverse_transform(y_test), y_pred_of_test)
mae = mean_absolute_error(scaler.inverse_transform(y_test), y_pred_of_test)
print("\nPrediction results:")

results_lstm = [R2score, rsme, mae, mape]
y = scaler.inverse_transform(y_test)
# thresholds = [epsilon1[names.index(file)], epsilon2[names.index(file)], epsilon3[nam

```

print("r2_score: ", R2score)
 print("MAPE: ", mape)
 print("MAE: ", mae)
 print("RSME: ", rsme)

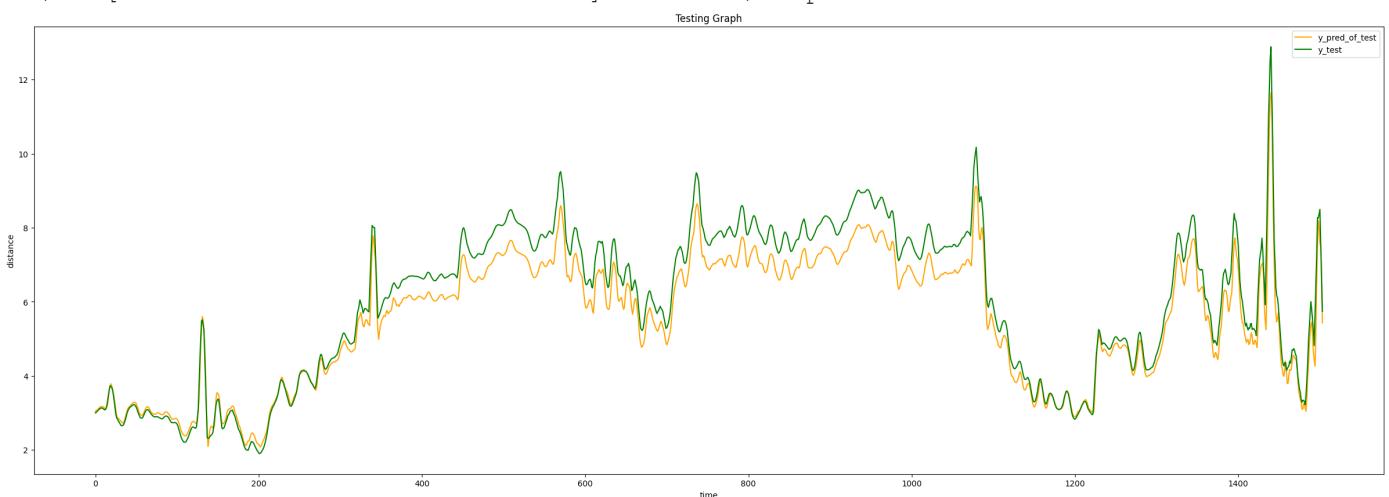
final_results = [file]
 final_results.append(results_rnn)
 final_results.append(results_lstm)
 print(final_results)
 rows.append(final_results)

```
*****
*****
Pair Number: 0
Epoch 1/35
113/113 [=====] - 4s 21ms/step - loss: 0.1732
Epoch 2/35
113/113 [=====] - 3s 23ms/step - loss: 0.0212
Epoch 3/35
113/113 [=====] - 3s 26ms/step - loss: 0.0091
Epoch 4/35
113/113 [=====] - 3s 29ms/step - loss: 0.0064
Epoch 5/35
113/113 [=====] - 4s 33ms/step - loss: 0.0048
Epoch 6/35
113/113 [=====] - 4s 38ms/step - loss: 0.0036
Epoch 7/35
113/113 [=====] - 4s 37ms/step - loss: 0.0033
Epoch 8/35
113/113 [=====] - 4s 34ms/step - loss: 0.0028
Epoch 9/35
113/113 [=====] - 4s 32ms/step - loss: 0.0023
Epoch 10/35
113/113 [=====] - 3s 29ms/step - loss: 0.0021
Epoch 11/35
113/113 [=====] - 4s 34ms/step - loss: 0.0015
Epoch 12/35
113/113 [=====] - 3s 31ms/step - loss: 0.0016
Epoch 13/35
113/113 [=====] - 3s 29ms/step - loss: 0.0014
Epoch 14/35
113/113 [=====] - 3s 29ms/step - loss: 0.0013
Epoch 15/35
113/113 [=====] - 3s 31ms/step - loss: 0.0014
Epoch 16/35
113/113 [=====] - 4s 33ms/step - loss: 0.0013
Epoch 17/35
113/113 [=====] - 3s 31ms/step - loss: 0.0010
Epoch 18/35
113/113 [=====] - 3s 29ms/step - loss: 0.0011
Epoch 19/35
113/113 [=====] - 3s 30ms/step - loss: 0.0012
Epoch 20/35
113/113 [=====] - 4s 32ms/step - loss: 8.6571e-04
```

```

Epoch 21/35
113/113 [=====] - 4s 32ms/step - loss: 0.0011
Epoch 22/35
113/113 [=====] - 3s 30ms/step - loss: 0.0011
Epoch 23/35
113/113 [=====] - 4s 33ms/step - loss: 8.8969e-04
Epoch 24/35
113/113 [=====] - 3s 30ms/step - loss: 8.0407e-04
Epoch 25/35
113/113 [=====] - 4s 33ms/step - loss: 7.2010e-04
Epoch 26/35
113/113 [=====] - 3s 29ms/step - loss: 9.9621e-04
Epoch 27/35
113/113 [=====] - 3s 29ms/step - loss: 7.3083e-04
Epoch 28/35
113/113 [=====] - 3s 30ms/step - loss: 6.9204e-04
Epoch 29/35
113/113 [=====] - 4s 32ms/step - loss: 6.6361e-04
Epoch 30/35
113/113 [=====] - 4s 33ms/step - loss: 7.6043e-04
Epoch 31/35
113/113 [=====] - 3s 29ms/step - loss: 5.8610e-04
Epoch 32/35
113/113 [=====] - 3s 29ms/step - loss: 5.9597e-04
Epoch 33/35
113/113 [=====] - 3s 30ms/step - loss: 9.9743e-04
Epoch 34/35
113/113 [=====] - 4s 33ms/step - loss: 6.7685e-04
Epoch 35/35
113/113 [=====] - 3s 30ms/step - loss: 9.1790e-04
113/113 [=====] - 1s 9ms/step
47/47 [=====] - 0s 9ms/step

```



Prediction results:

```

r2_score: 0.9243752530371248
MAPE: 0.07154910698045856
MAE: 0.475667191570653
RMSE: 0.5644770838175801

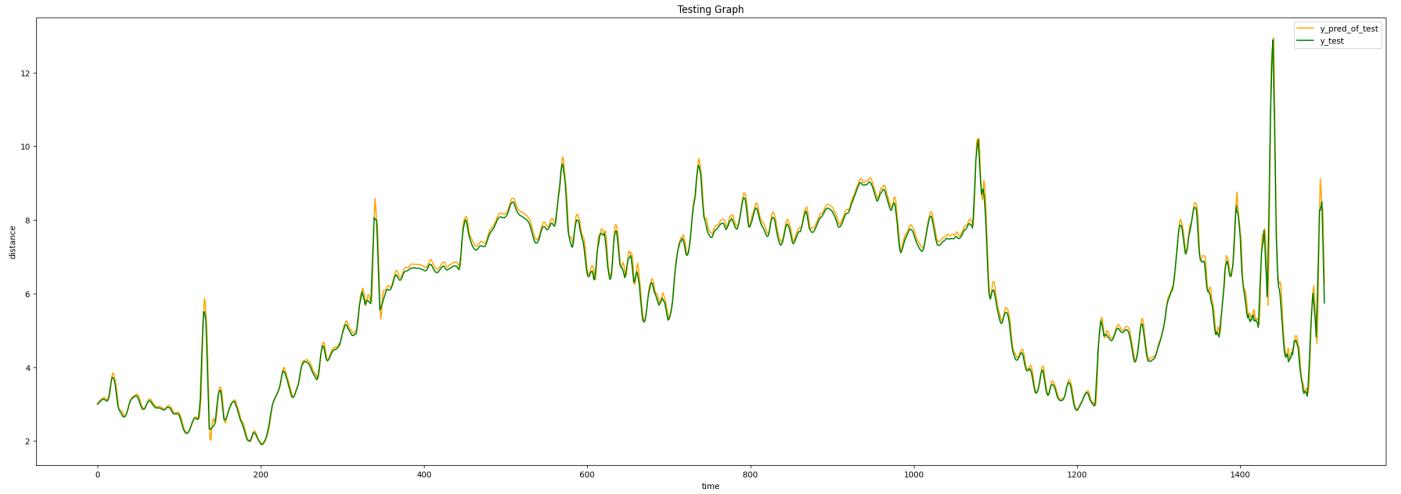
```

```

Epoch 1/35
113/113 [=====] - 8s 42ms/step - loss: 0.0067
Epoch 2/35
113/113 [=====] - 5s 42ms/step - loss: 0.0051
Epoch 3/35
113/113 [=====] - 5s 41ms/step - loss: 0.0035
Epoch 4/35
113/113 [=====] - 5s 41ms/step - loss: 0.0029
Epoch 5/35
113/113 [=====] - 5s 43ms/step - loss: 0.0024
Epoch 6/35
113/113 [=====] - 5s 40ms/step - loss: 0.0021

```

Epoch 7/35
113/113 [=====] - 5s 40ms/step - loss: 0.0018
Epoch 8/35
113/113 [=====] - 5s 43ms/step - loss: 0.0017
Epoch 9/35
113/113 [=====] - 5s 41ms/step - loss: 0.0012
Epoch 10/35
113/113 [=====] - 5s 40ms/step - loss: 0.0010
Epoch 11/35
113/113 [=====] - 5s 40ms/step - loss: 8.3992e-04
Epoch 12/35
113/113 [=====] - 5s 44ms/step - loss: 7.8342e-04
Epoch 13/35
113/113 [=====] - 5s 41ms/step - loss: 7.0608e-04
Epoch 14/35
113/113 [=====] - 5s 43ms/step - loss: 6.4417e-04
Epoch 15/35
113/113 [=====] - 5s 44ms/step - loss: 5.5119e-04
Epoch 16/35
113/113 [=====] - 5s 40ms/step - loss: 5.2111e-04
Epoch 17/35
113/113 [=====] - 5s 46ms/step - loss: 5.4044e-04
Epoch 18/35
113/113 [=====] - 6s 52ms/step - loss: 4.8994e-04
Epoch 19/35
113/113 [=====] - 5s 47ms/step - loss: 5.1370e-04
Epoch 20/35
113/113 [=====] - 6s 55ms/step - loss: 4.2527e-04
Epoch 21/35
113/113 [=====] - 8s 67ms/step - loss: 4.4781e-04
Epoch 22/35
113/113 [=====] - 8s 68ms/step - loss: 4.5794e-04
Epoch 23/35
113/113 [=====] - 10s 88ms/step - loss: 3.6545e-04
Epoch 24/35
113/113 [=====] - 12s 104ms/step - loss: 3.2861e-04
Epoch 25/35
113/113 [=====] - 13s 114ms/step - loss: 4.3349e-04
Epoch 26/35
113/113 [=====] - 15s 130ms/step - loss: 3.8405e-04
Epoch 27/35
113/113 [=====] - 37s 331ms/step - loss: 3.4060e-04
Epoch 28/35
113/113 [=====] - 28s 244ms/step - loss: 3.3690e-04
Epoch 29/35
113/113 [=====] - 44s 395ms/step - loss: 4.7295e-04
Epoch 30/35
113/113 [=====] - 29s 254ms/step - loss: 3.6135e-04
Epoch 31/35
113/113 [=====] - 24s 211ms/step - loss: 2.9768e-04
Epoch 32/35
113/113 [=====] - 18s 160ms/step - loss: 3.5808e-04
Epoch 33/35
113/113 [=====] - 14s 127ms/step - loss: 3.6909e-04
Epoch 34/35
113/113 [=====] - 14s 127ms/step - loss: 2.8927e-04
Epoch 35/35
113/113 [=====] - 15s 129ms/step - loss: 2.7886e-04
113/113 [=====] - 8s 51ms/step
47/47 [=====] - 3s 56ms/step



Prediction results:

r2_score: 0.9942303761652661

MAPE: 0.019465636189976356

MAE: 0.11147803630242732

RSME: 0.15591507135005397

```
[["HDFCBANK_M&M", [0.9243752530371248, 0.5644770838175801, 0.475667191570653, 0.07154910698045856], [0.9942303761652661, 0.15591507135005397, 0.11147803630242732, 0.019465636189976356]]
```


Pair Number: 1

Epoch 1/35

113/113 [=====] - 19s 105ms/step - loss: 0.0848

Epoch 2/35

113/113 [=====] - 12s 106ms/step - loss: 0.0096

Epoch 3/35

113/113 [=====] - 10s 92ms/step - loss: 0.0047

Epoch 4/35

113/113 [=====] - 8s 70ms/step - loss: 0.0033

Epoch 5/35

113/113 [=====] - 8s 67ms/step - loss: 0.0029

Epoch 6/35

113/113 [=====] - 9s 78ms/step - loss: 0.0022

Epoch 7/35

113/113 [=====] - 11s 98ms/step - loss: 0.0019

Epoch 8/35

113/113 [=====] - 7s 64ms/step - loss: 0.0019

Epoch 9/35

113/113 [=====] - 7s 59ms/step - loss: 0.0013

Epoch 10/35

113/113 [=====] - 5s 47ms/step - loss: 0.0012

Epoch 11/35

113/113 [=====] - 5s 46ms/step - loss: 9.6141e-04

Epoch 12/35

113/113 [=====] - 5s 44ms/step - loss: 9.5670e-04

Epoch 13/35

113/113 [=====] - 4s 36ms/step - loss: 7.6372e-04

Epoch 14/35

113/113 [=====] - 4s 35ms/step - loss: 6.8377e-04

Epoch 15/35

113/113 [=====] - 4s 35ms/step - loss: 9.3194e-04

Epoch 16/35

113/113 [=====] - 4s 38ms/step - loss: 7.5159e-04

Epoch 17/35

113/113 [=====] - 4s 36ms/step - loss: 7.0302e-04

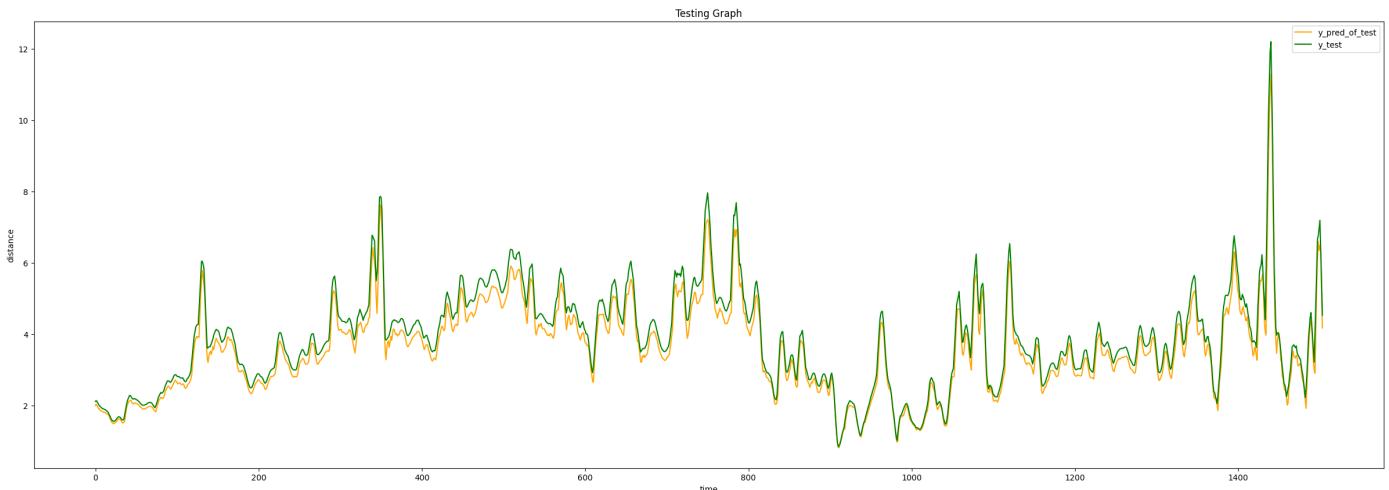
Epoch 18/35

113/113 [=====] - 4s 38ms/step - loss: 5.7857e-04

Epoch 19/35

113/113 [=====] - 5s 44ms/step - loss: 6.3058e-04

Epoch 20/35
 113/113 [=====] - 5s 46ms/step - loss: 5.7725e-04
 Epoch 21/35
 113/113 [=====] - 5s 45ms/step - loss: 6.2729e-04
 Epoch 22/35
 113/113 [=====] - 7s 58ms/step - loss: 4.5884e-04
 Epoch 23/35
 113/113 [=====] - 8s 70ms/step - loss: 3.9324e-04
 Epoch 24/35
 113/113 [=====] - 9s 83ms/step - loss: 4.6717e-04
 Epoch 25/35
 113/113 [=====] - 11s 95ms/step - loss: 5.3801e-04
 Epoch 26/35
 113/113 [=====] - 11s 97ms/step - loss: 4.1088e-04
 Epoch 27/35
 113/113 [=====] - 10s 91ms/step - loss: 3.9824e-04
 Epoch 28/35
 113/113 [=====] - 8s 72ms/step - loss: 4.0587e-04
 Epoch 29/35
 113/113 [=====] - 6s 57ms/step - loss: 4.7814e-04
 Epoch 30/35
 113/113 [=====] - 9s 77ms/step - loss: 6.3718e-04
 Epoch 31/35
 113/113 [=====] - 10s 86ms/step - loss: 5.3958e-04
 Epoch 32/35
 113/113 [=====] - 9s 78ms/step - loss: 3.9709e-04
 Epoch 33/35
 113/113 [=====] - 8s 75ms/step - loss: 3.7976e-04
 Epoch 34/35
 113/113 [=====] - 7s 64ms/step - loss: 3.4117e-04
 Epoch 35/35
 113/113 [=====] - 6s 55ms/step - loss: 4.1552e-04
 113/113 [=====] - 2s 15ms/step
 47/47 [=====] - 1s 13ms/step

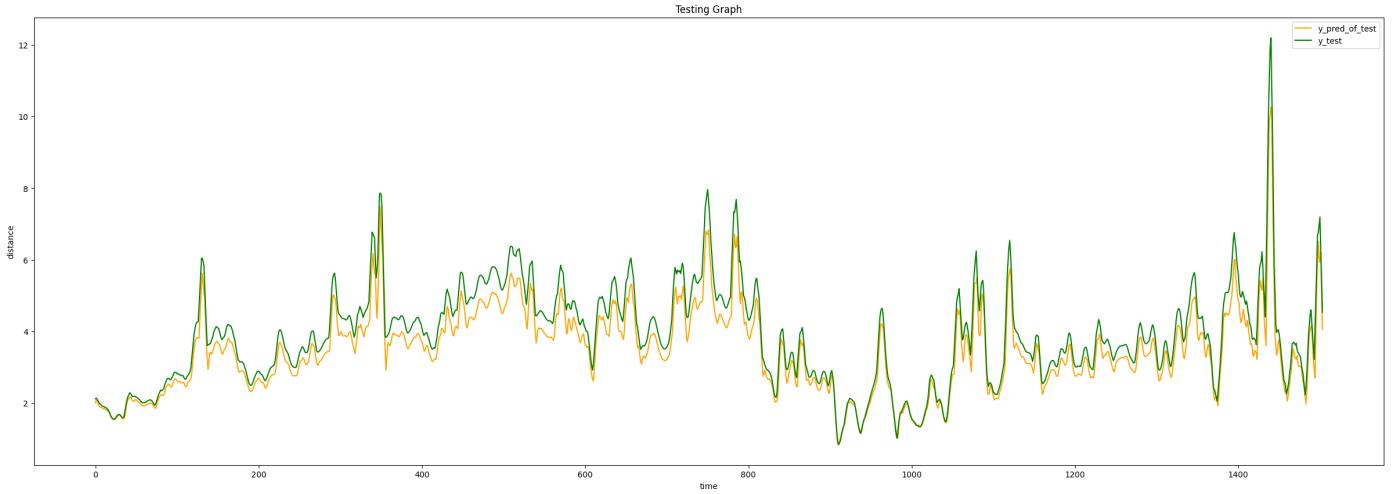


Prediction results:

r2_score: 0.9445780648510905
 MAPE: 0.06950568419900652
 MAE: 0.2818617242721542
 RMSE: 0.32443203301380863

Epoch 1/35
 113/113 [=====] - 15s 74ms/step - loss: 0.0035
 Epoch 2/35
 113/113 [=====] - 7s 61ms/step - loss: 0.0030
 Epoch 3/35
 113/113 [=====] - 8s 72ms/step - loss: 0.0025
 Epoch 4/35
 113/113 [=====] - 8s 72ms/step - loss: 0.0021
 Epoch 5/35
 113/113 [=====] - 4s 37ms/step - loss: 0.0017

Epoch 6/35
113/113 [=====] - 4s 34ms/step - loss: 0.0012
Epoch 7/35
113/113 [=====] - 4s 35ms/step - loss: 0.0010
Epoch 8/35
113/113 [=====] - 4s 35ms/step - loss: 7.5353e-04
Epoch 9/35
113/113 [=====] - 5s 41ms/step - loss: 6.0937e-04
Epoch 10/35
113/113 [=====] - 6s 54ms/step - loss: 5.0987e-04
Epoch 11/35
113/113 [=====] - 6s 55ms/step - loss: 4.5805e-04
Epoch 12/35
113/113 [=====] - 6s 53ms/step - loss: 4.5483e-04
Epoch 13/35
113/113 [=====] - 5s 46ms/step - loss: 5.8184e-04
Epoch 14/35
113/113 [=====] - 5s 47ms/step - loss: 5.6001e-04
Epoch 15/35
113/113 [=====] - 5s 43ms/step - loss: 3.8812e-04
Epoch 16/35
113/113 [=====] - 4s 40ms/step - loss: 3.3961e-04
Epoch 17/35
113/113 [=====] - 5s 44ms/step - loss: 3.0861e-04
Epoch 18/35
113/113 [=====] - 6s 50ms/step - loss: 3.6095e-04
Epoch 19/35
113/113 [=====] - 6s 50ms/step - loss: 3.5299e-04
Epoch 20/35
113/113 [=====] - 6s 53ms/step - loss: 3.1263e-04
Epoch 21/35
113/113 [=====] - 6s 55ms/step - loss: 2.8118e-04
Epoch 22/35
113/113 [=====] - 6s 53ms/step - loss: 3.0178e-04
Epoch 23/35
113/113 [=====] - 6s 56ms/step - loss: 2.3897e-04
Epoch 24/35
113/113 [=====] - 6s 50ms/step - loss: 2.6216e-04
Epoch 25/35
113/113 [=====] - 5s 45ms/step - loss: 2.5196e-04
Epoch 26/35
113/113 [=====] - 6s 57ms/step - loss: 2.3763e-04
Epoch 27/35
113/113 [=====] - 7s 58ms/step - loss: 3.4062e-04
Epoch 28/35
113/113 [=====] - 5s 47ms/step - loss: 2.7414e-04
Epoch 29/35
113/113 [=====] - 6s 49ms/step - loss: 2.9179e-04
Epoch 30/35
113/113 [=====] - 5s 48ms/step - loss: 2.2347e-04
Epoch 31/35
113/113 [=====] - 6s 52ms/step - loss: 2.6090e-04
Epoch 32/35
113/113 [=====] - 6s 50ms/step - loss: 2.8463e-04
Epoch 33/35
113/113 [=====] - 5s 43ms/step - loss: 2.2335e-04
Epoch 34/35
113/113 [=====] - 5s 46ms/step - loss: 2.0610e-04
Epoch 35/35
113/113 [=====] - 5s 45ms/step - loss: 2.1850e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.8854708402580697

MAPE: 0.09303077521543869

MAE: 0.3944658381803684

RSME: 0.4663810784422087

```
[ "HDFCBANK_ULTRACEMCO", [ 0.9445780648510905, 0.32443203301380863, 0.2818617242721542, 0.06950568419900652], [ 0.8854708402580697, 0.4663810784422087, 0.3944658381803684, 0.09303077521543869] ]
```


Pair Number: 2

Epoch 1/35

113/113 [=====] - 8s 40ms/step - loss: 0.0674

Epoch 2/35

113/113 [=====] - 5s 42ms/step - loss: 0.0088

Epoch 3/35

113/113 [=====] - 4s 35ms/step - loss: 0.0048

Epoch 4/35

113/113 [=====] - 4s 34ms/step - loss: 0.0032

Epoch 5/35

113/113 [=====] - 4s 33ms/step - loss: 0.0026

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0022

Epoch 7/35

113/113 [=====] - 4s 32ms/step - loss: 0.0017

Epoch 8/35

113/113 [=====] - 3s 30ms/step - loss: 0.0016

Epoch 9/35

113/113 [=====] - 4s 35ms/step - loss: 0.0016

Epoch 10/35

113/113 [=====] - 4s 34ms/step - loss: 0.0013

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 0.0010

Epoch 12/35

113/113 [=====] - 3s 29ms/step - loss: 0.0010

Epoch 13/35

113/113 [=====] - 3s 29ms/step - loss: 9.4621e-04

Epoch 14/35

113/113 [=====] - 4s 34ms/step - loss: 9.1309e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 7.4657e-04

Epoch 16/35

113/113 [=====] - 3s 29ms/step - loss: 8.1103e-04

Epoch 17/35

113/113 [=====] - 3s 29ms/step - loss: 7.2438e-04

Epoch 18/35

113/113 [=====] - 3s 29ms/step - loss: 7.0301e-04

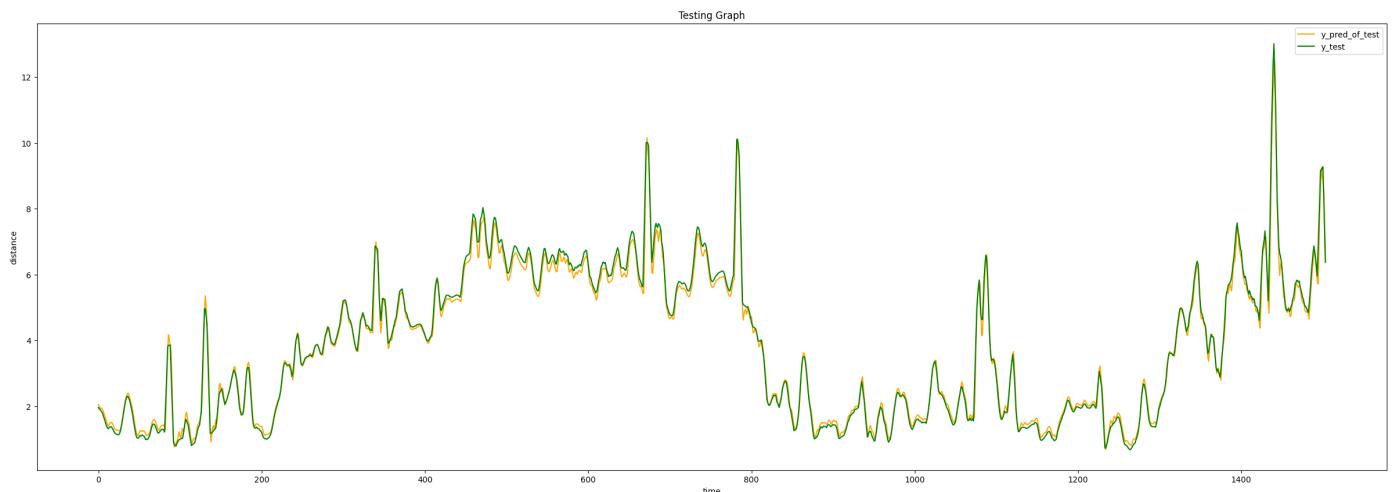
Epoch 19/35

113/113 [=====] - 4s 33ms/step - loss: 6.9697e-04

```

Epoch 20/35
113/113 [=====] - 3s 30ms/step - loss: 7.7298e-04
Epoch 21/35
113/113 [=====] - 3s 29ms/step - loss: 6.0706e-04
Epoch 22/35
113/113 [=====] - 3s 31ms/step - loss: 5.1141e-04
Epoch 23/35
113/113 [=====] - 3s 30ms/step - loss: 5.0629e-04
Epoch 24/35
113/113 [=====] - 4s 33ms/step - loss: 4.8548e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 5.3558e-04
Epoch 26/35
113/113 [=====] - 4s 33ms/step - loss: 6.5798e-04
Epoch 27/35
113/113 [=====] - 4s 39ms/step - loss: 5.0635e-04
Epoch 28/35
113/113 [=====] - 5s 45ms/step - loss: 5.0575e-04
Epoch 29/35
113/113 [=====] - 6s 56ms/step - loss: 6.7083e-04
Epoch 30/35
113/113 [=====] - 10s 88ms/step - loss: 5.5396e-04
Epoch 31/35
113/113 [=====] - 8s 67ms/step - loss: 4.1640e-04
Epoch 32/35
113/113 [=====] - 8s 67ms/step - loss: 4.1393e-04
Epoch 33/35
113/113 [=====] - 9s 81ms/step - loss: 3.9561e-04
Epoch 34/35
113/113 [=====] - 11s 93ms/step - loss: 3.5970e-04
Epoch 35/35
113/113 [=====] - 10s 93ms/step - loss: 4.6512e-04
113/113 [=====] - 5s 28ms/step
47/47 [=====] - 2s 34ms/step

```



Prediction results:

```

r2_score: 0.9930043683262078
MAPE: 0.04764554325349221
MAE: 0.13958221223192815
RMSE: 0.18726407600137604

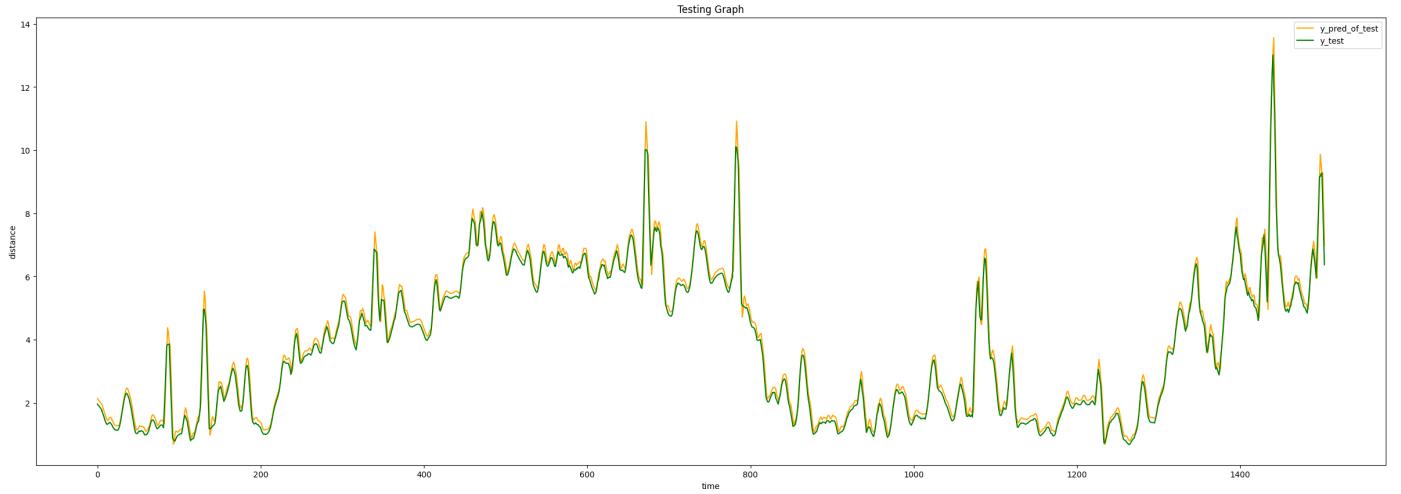
```

```

Epoch 1/35
113/113 [=====] - 21s 107ms/step - loss: 0.0040
Epoch 2/35
113/113 [=====] - 18s 162ms/step - loss: 0.0026
Epoch 3/35
113/113 [=====] - 17s 150ms/step - loss: 0.0020
Epoch 4/35
113/113 [=====] - 15s 130ms/step - loss: 0.0016
Epoch 5/35
113/113 [=====] - 15s 129ms/step - loss: 0.0012

```

Epoch 6/35
113/113 [=====] - 14s 124ms/step - loss: 0.0011
Epoch 7/35
113/113 [=====] - 16s 142ms/step - loss: 9.2259e-04
Epoch 8/35
113/113 [=====] - 16s 142ms/step - loss: 8.1229e-04
Epoch 9/35
113/113 [=====] - 14s 122ms/step - loss: 7.4305e-04
Epoch 10/35
113/113 [=====] - 17s 149ms/step - loss: 6.1815e-04
Epoch 11/35
113/113 [=====] - 17s 148ms/step - loss: 5.4240e-04
Epoch 12/35
113/113 [=====] - 11s 101ms/step - loss: 4.3923e-04
Epoch 13/35
113/113 [=====] - 8s 74ms/step - loss: 3.7538e-04
Epoch 14/35
113/113 [=====] - 7s 59ms/step - loss: 3.8347e-04
Epoch 15/35
113/113 [=====] - 7s 58ms/step - loss: 3.4576e-04
Epoch 16/35
113/113 [=====] - 6s 51ms/step - loss: 3.8319e-04
Epoch 17/35
113/113 [=====] - 6s 49ms/step - loss: 3.5268e-04
Epoch 18/35
113/113 [=====] - 5s 48ms/step - loss: 3.1241e-04
Epoch 19/35
113/113 [=====] - 5s 45ms/step - loss: 3.2224e-04
Epoch 20/35
113/113 [=====] - 5s 41ms/step - loss: 2.8797e-04
Epoch 21/35
113/113 [=====] - 5s 42ms/step - loss: 3.3317e-04
Epoch 22/35
113/113 [=====] - 5s 45ms/step - loss: 4.2283e-04
Epoch 23/35
113/113 [=====] - 5s 42ms/step - loss: 2.9895e-04
Epoch 24/35
113/113 [=====] - 5s 44ms/step - loss: 2.6109e-04
Epoch 25/35
113/113 [=====] - 6s 53ms/step - loss: 4.1705e-04
Epoch 26/35
113/113 [=====] - 6s 50ms/step - loss: 2.5595e-04
Epoch 27/35
113/113 [=====] - 7s 66ms/step - loss: 2.2762e-04
Epoch 28/35
113/113 [=====] - 9s 77ms/step - loss: 2.0999e-04
Epoch 29/35
113/113 [=====] - 9s 76ms/step - loss: 2.5535e-04
Epoch 30/35
113/113 [=====] - 11s 98ms/step - loss: 2.7577e-04
Epoch 31/35
113/113 [=====] - 13s 115ms/step - loss: 3.2735e-04
Epoch 32/35
113/113 [=====] - 14s 125ms/step - loss: 2.4573e-04
Epoch 33/35
113/113 [=====] - 14s 126ms/step - loss: 3.3604e-04
Epoch 34/35
113/113 [=====] - 16s 139ms/step - loss: 2.2949e-04
Epoch 35/35
113/113 [=====] - 12s 104ms/step - loss: 2.7961e-04
113/113 [=====] - 5s 29ms/step
47/47 [=====] - 1s 28ms/step



Prediction results:

r2_score: 0.9898292437271613

MAPE: 0.06518786625545171

MAE: 0.17874184669431997

RSME: 0.22579671948147464

```
["HDFCBANK_GRASIM", [0.9930043683262078, 0.18726407600137604, 0.13958221223192815, 0.04764554325349221], [0.9898292437271613, 0.22579671948147464, 0.17874184669431997, 0.06518786625545171]]
```


Pair Number: 3

Epoch 1/35

113/113 [=====] - 9s 45ms/step - loss: 0.0677

Epoch 2/35

113/113 [=====] - 4s 37ms/step - loss: 0.0105

Epoch 3/35

113/113 [=====] - 4s 35ms/step - loss: 0.0053

Epoch 4/35

113/113 [=====] - 4s 35ms/step - loss: 0.0037

Epoch 5/35

113/113 [=====] - 4s 36ms/step - loss: 0.0026

Epoch 6/35

113/113 [=====] - 4s 31ms/step - loss: 0.0024

Epoch 7/35

113/113 [=====] - 4s 35ms/step - loss: 0.0021

Epoch 8/35

113/113 [=====] - 4s 37ms/step - loss: 0.0015

Epoch 9/35

113/113 [=====] - 5s 41ms/step - loss: 0.0016

Epoch 10/35

113/113 [=====] - 3s 28ms/step - loss: 0.0014

Epoch 11/35

113/113 [=====] - 3s 27ms/step - loss: 0.0013

Epoch 12/35

113/113 [=====] - 3s 26ms/step - loss: 0.0012

Epoch 13/35

113/113 [=====] - 3s 27ms/step - loss: 0.0011

Epoch 14/35

113/113 [=====] - 3s 28ms/step - loss: 8.3312e-04

Epoch 15/35

113/113 [=====] - 3s 25ms/step - loss: 8.1108e-04

Epoch 16/35

113/113 [=====] - 3s 22ms/step - loss: 7.3250e-04

Epoch 17/35

113/113 [=====] - 2s 22ms/step - loss: 7.8242e-04

Epoch 18/35

113/113 [=====] - 3s 24ms/step - loss: 7.9154e-04

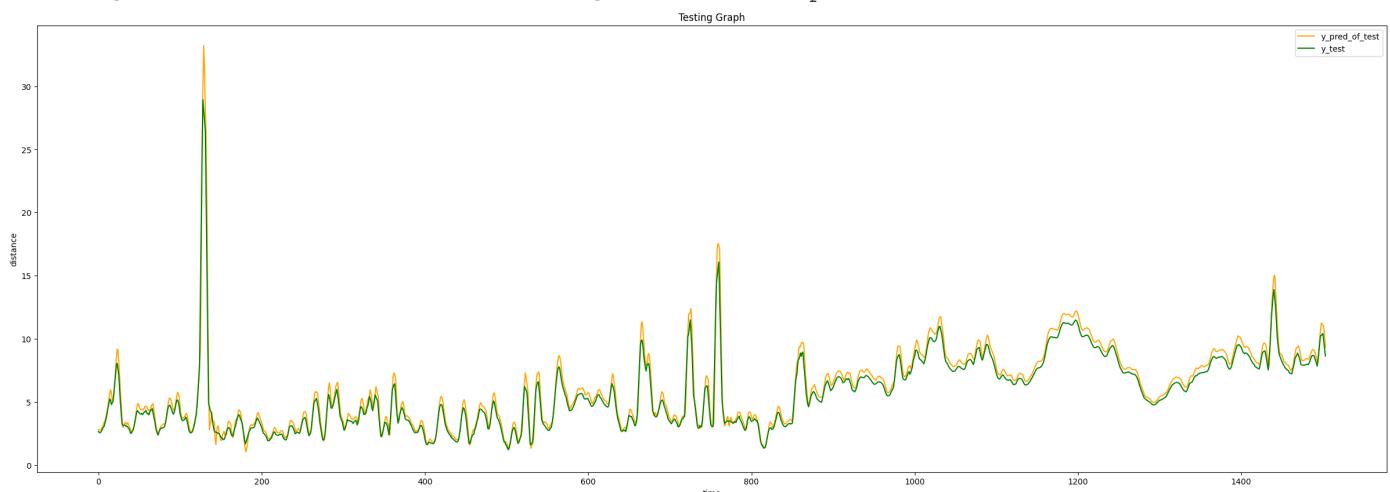
Epoch 19/35

113/113 [=====] - 3s 25ms/step - loss: 7.1578e-04

```

Epoch 20/35
113/113 [=====] - 3s 25ms/step - loss: 6.7364e-04
Epoch 21/35
113/113 [=====] - 3s 24ms/step - loss: 6.3451e-04
Epoch 22/35
113/113 [=====] - 3s 23ms/step - loss: 6.4306e-04
Epoch 23/35
113/113 [=====] - 3s 24ms/step - loss: 6.2343e-04
Epoch 24/35
113/113 [=====] - 3s 26ms/step - loss: 5.8911e-04
Epoch 25/35
113/113 [=====] - 4s 31ms/step - loss: 5.8921e-04
Epoch 26/35
113/113 [=====] - 4s 32ms/step - loss: 5.6330e-04
Epoch 27/35
113/113 [=====] - 3s 29ms/step - loss: 6.1193e-04
Epoch 28/35
113/113 [=====] - 3s 29ms/step - loss: 6.2181e-04
Epoch 29/35
113/113 [=====] - 3s 30ms/step - loss: 5.5005e-04
Epoch 30/35
113/113 [=====] - 4s 32ms/step - loss: 5.0784e-04
Epoch 31/35
113/113 [=====] - 3s 29ms/step - loss: 4.8474e-04
Epoch 32/35
113/113 [=====] - 3s 26ms/step - loss: 4.3800e-04
Epoch 33/35
113/113 [=====] - 3s 27ms/step - loss: 4.0460e-04
Epoch 34/35
113/113 [=====] - 3s 29ms/step - loss: 4.2313e-04
Epoch 35/35
113/113 [=====] - 4s 32ms/step - loss: 5.1487e-04
113/113 [=====] - 1s 8ms/step
47/47 [=====] - 0s 9ms/step

```



Prediction results:

```

r2_score: 0.9615819341726392
MAPE: 0.07912990904031238
MAE: 0.4304362822743835
RMSE: 0.5734105074361717

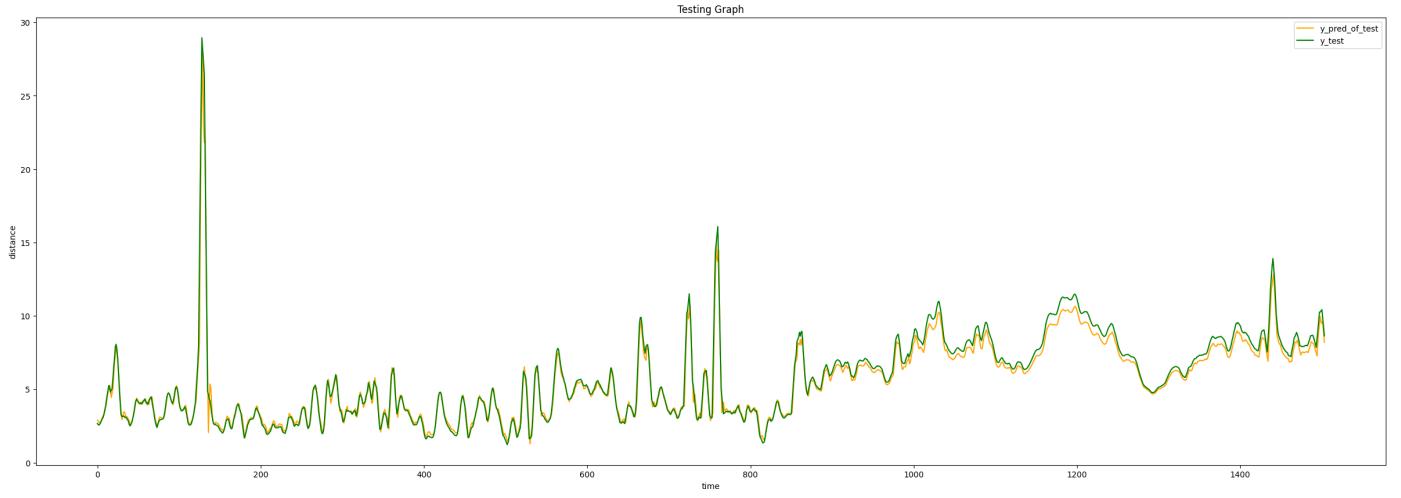
```

```

Epoch 1/35
113/113 [=====] - 9s 43ms/step - loss: 0.0043
Epoch 2/35
113/113 [=====] - 5s 46ms/step - loss: 0.0039
Epoch 3/35
113/113 [=====] - 5s 43ms/step - loss: 0.0029
Epoch 4/35
113/113 [=====] - 5s 42ms/step - loss: 0.0021
Epoch 5/35
113/113 [=====] - 5s 45ms/step - loss: 0.0016

```

Epoch 6/35
113/113 [=====] - 5s 42ms/step - loss: 0.0011
Epoch 7/35
113/113 [=====] - 5s 42ms/step - loss: 9.3192e-04
Epoch 8/35
113/113 [=====] - 5s 46ms/step - loss: 6.5632e-04
Epoch 9/35
113/113 [=====] - 5s 43ms/step - loss: 6.1576e-04
Epoch 10/35
113/113 [=====] - 5s 42ms/step - loss: 6.1670e-04
Epoch 11/35
113/113 [=====] - 5s 43ms/step - loss: 6.2507e-04
Epoch 12/35
113/113 [=====] - 5s 44ms/step - loss: 4.6977e-04
Epoch 13/35
113/113 [=====] - 5s 44ms/step - loss: 4.2299e-04
Epoch 14/35
113/113 [=====] - 5s 42ms/step - loss: 4.2644e-04
Epoch 15/35
113/113 [=====] - 5s 48ms/step - loss: 4.8135e-04
Epoch 16/35
113/113 [=====] - 5s 42ms/step - loss: 4.6562e-04
Epoch 17/35
113/113 [=====] - 7s 63ms/step - loss: 4.3301e-04
Epoch 18/35
113/113 [=====] - 7s 62ms/step - loss: 3.6526e-04
Epoch 19/35
113/113 [=====] - 6s 50ms/step - loss: 3.8457e-04
Epoch 20/35
113/113 [=====] - 7s 60ms/step - loss: 3.9284e-04
Epoch 21/35
113/113 [=====] - 6s 55ms/step - loss: 3.3851e-04
Epoch 22/35
113/113 [=====] - 6s 55ms/step - loss: 3.1827e-04
Epoch 23/35
113/113 [=====] - 6s 49ms/step - loss: 2.8702e-04
Epoch 24/35
113/113 [=====] - 5s 44ms/step - loss: 2.8668e-04
Epoch 25/35
113/113 [=====] - 5s 47ms/step - loss: 3.6287e-04
Epoch 26/35
113/113 [=====] - 5s 48ms/step - loss: 3.1547e-04
Epoch 27/35
113/113 [=====] - 5s 46ms/step - loss: 2.6889e-04
Epoch 28/35
113/113 [=====] - 5s 43ms/step - loss: 3.3665e-04
Epoch 29/35
113/113 [=====] - 5s 44ms/step - loss: 2.6929e-04
Epoch 30/35
113/113 [=====] - 5s 40ms/step - loss: 2.5621e-04
Epoch 31/35
113/113 [=====] - 5s 40ms/step - loss: 2.4571e-04
Epoch 32/35
113/113 [=====] - 5s 46ms/step - loss: 2.1768e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 2.2912e-04
Epoch 34/35
113/113 [=====] - 5s 43ms/step - loss: 2.5520e-04
Epoch 35/35
113/113 [=====] - 6s 49ms/step - loss: 2.1763e-04
113/113 [=====] - 3s 16ms/step
47/47 [=====] - 1s 17ms/step



Prediction results:

r2_score: 0.973987999517922

MAPE: 0.05349628343889678

MAE: 0.3145068596116809

RSME: 0.47182915755748467

```
[!"HDFCBANK_PIDILITIND", [0.9615819341726392, 0.5734105074361717, 0.4304362822743835,
0.07912990904031238], [0.973987999517922, 0.47182915755748467, 0.3145068596116809, 0.053
49628343889678]]
```


Pair Number: 4

Epoch 1/35

113/113 [=====] - 5s 28ms/step - loss: 0.0608

Epoch 2/35

113/113 [=====] - 3s 29ms/step - loss: 0.0078

Epoch 3/35

113/113 [=====] - 4s 33ms/step - loss: 0.0042

Epoch 4/35

113/113 [=====] - 3s 29ms/step - loss: 0.0026

Epoch 5/35

113/113 [=====] - 3s 29ms/step - loss: 0.0018

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0016

Epoch 7/35

113/113 [=====] - 3s 31ms/step - loss: 0.0012

Epoch 8/35

113/113 [=====] - 4s 32ms/step - loss: 0.0012

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 9.9934e-04

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 8.0541e-04

Epoch 11/35

113/113 [=====] - 3s 29ms/step - loss: 8.2777e-04

Epoch 12/35

113/113 [=====] - 4s 33ms/step - loss: 8.4473e-04

Epoch 13/35

113/113 [=====] - 3s 31ms/step - loss: 7.8615e-04

Epoch 14/35

113/113 [=====] - 3s 30ms/step - loss: 7.7940e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 5.6686e-04

Epoch 16/35

113/113 [=====] - 4s 31ms/step - loss: 5.5524e-04

Epoch 17/35

113/113 [=====] - 4s 34ms/step - loss: 4.8238e-04

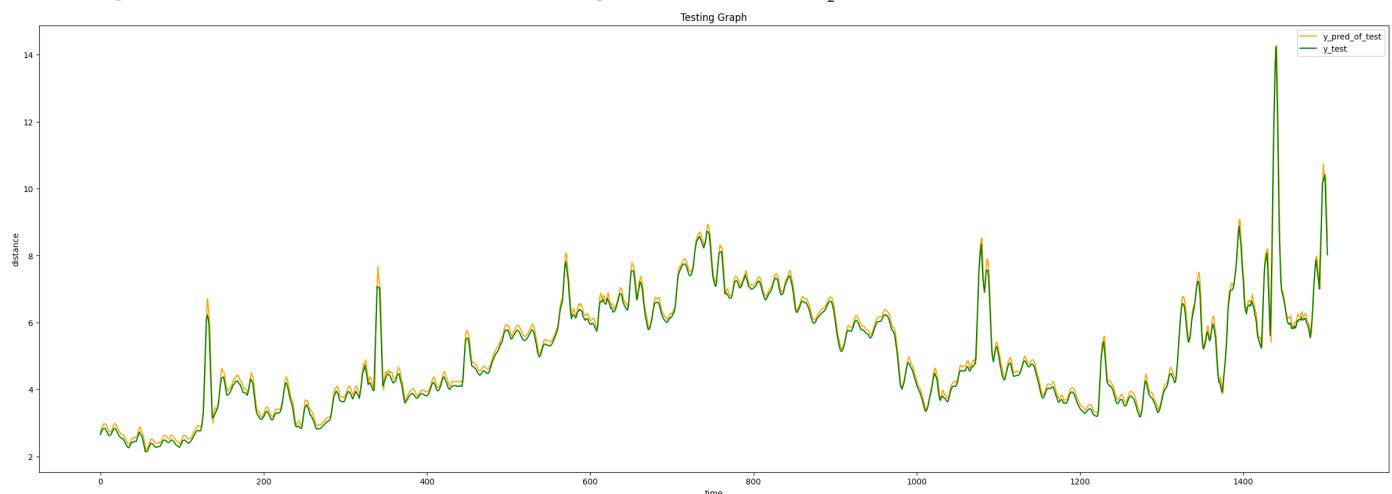
Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 5.0960e-04

Epoch 19/35

113/113 [=====] - 3s 30ms/step - loss: 4.8115e-04

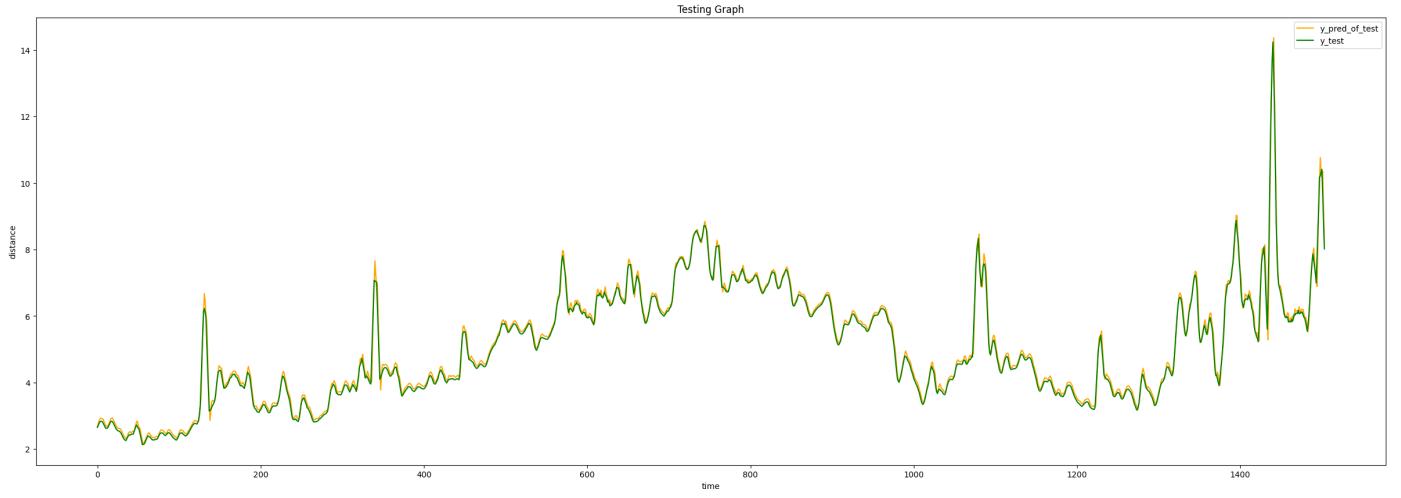
Epoch 20/35
 113/113 [=====] - 3s 30ms/step - loss: 5.1078e-04
 Epoch 21/35
 113/113 [=====] - 4s 33ms/step - loss: 5.0123e-04
 Epoch 22/35
 113/113 [=====] - 4s 34ms/step - loss: 3.9790e-04
 Epoch 23/35
 113/113 [=====] - 3s 28ms/step - loss: 3.7123e-04
 Epoch 24/35
 113/113 [=====] - 3s 28ms/step - loss: 3.5777e-04
 Epoch 25/35
 113/113 [=====] - 4s 35ms/step - loss: 4.0232e-04
 Epoch 26/35
 113/113 [=====] - 4s 36ms/step - loss: 3.4800e-04
 Epoch 27/35
 113/113 [=====] - 4s 33ms/step - loss: 3.7754e-04
 Epoch 28/35
 113/113 [=====] - 4s 33ms/step - loss: 2.5699e-04
 Epoch 29/35
 113/113 [=====] - 4s 31ms/step - loss: 3.4667e-04
 Epoch 30/35
 113/113 [=====] - 4s 31ms/step - loss: 2.7521e-04
 Epoch 31/35
 113/113 [=====] - 3s 30ms/step - loss: 3.4255e-04
 Epoch 32/35
 113/113 [=====] - 3s 30ms/step - loss: 3.2311e-04
 Epoch 33/35
 113/113 [=====] - 3s 30ms/step - loss: 2.8369e-04
 Epoch 34/35
 113/113 [=====] - 4s 31ms/step - loss: 3.1365e-04
 Epoch 35/35
 113/113 [=====] - 4s 34ms/step - loss: 3.2557e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9900836718556119
 MAPE: 0.029441216708528777
 MAE: 0.1386819721365212
 RMSE: 0.16691498605788832

Epoch 1/35
 113/113 [=====] - 9s 46ms/step - loss: 0.0028
 Epoch 2/35
 113/113 [=====] - 6s 49ms/step - loss: 0.0020
 Epoch 3/35
 113/113 [=====] - 6s 51ms/step - loss: 0.0015
 Epoch 4/35
 113/113 [=====] - 5s 45ms/step - loss: 0.0010
 Epoch 5/35
 113/113 [=====] - 6s 52ms/step - loss: 6.9362e-04

Epoch 6/35
113/113 [=====] - 5s 46ms/step - loss: 5.7413e-04
Epoch 7/35
113/113 [=====] - 5s 46ms/step - loss: 5.2115e-04
Epoch 8/35
113/113 [=====] - 5s 47ms/step - loss: 5.2306e-04
Epoch 9/35
113/113 [=====] - 5s 44ms/step - loss: 3.6801e-04
Epoch 10/35
113/113 [=====] - 5s 46ms/step - loss: 3.2826e-04
Epoch 11/35
113/113 [=====] - 7s 62ms/step - loss: 3.3649e-04
Epoch 12/35
113/113 [=====] - 6s 53ms/step - loss: 2.8721e-04
Epoch 13/35
113/113 [=====] - 7s 62ms/step - loss: 3.2888e-04
Epoch 14/35
113/113 [=====] - 7s 60ms/step - loss: 2.4820e-04
Epoch 15/35
113/113 [=====] - 6s 51ms/step - loss: 2.3302e-04
Epoch 16/35
113/113 [=====] - 6s 52ms/step - loss: 2.2023e-04
Epoch 17/35
113/113 [=====] - 5s 43ms/step - loss: 2.5397e-04
Epoch 18/35
113/113 [=====] - 5s 45ms/step - loss: 2.4215e-04
Epoch 19/35
113/113 [=====] - 6s 53ms/step - loss: 2.6843e-04
Epoch 20/35
113/113 [=====] - 5s 44ms/step - loss: 2.5162e-04
Epoch 21/35
113/113 [=====] - 7s 58ms/step - loss: 2.4599e-04
Epoch 22/35
113/113 [=====] - 7s 58ms/step - loss: 1.8990e-04
Epoch 23/35
113/113 [=====] - 6s 54ms/step - loss: 1.9623e-04
Epoch 24/35
113/113 [=====] - 7s 58ms/step - loss: 2.5273e-04
Epoch 25/35
113/113 [=====] - 6s 56ms/step - loss: 2.1523e-04
Epoch 26/35
113/113 [=====] - 6s 55ms/step - loss: 1.9146e-04
Epoch 27/35
113/113 [=====] - 6s 53ms/step - loss: 1.5624e-04
Epoch 28/35
113/113 [=====] - 5s 46ms/step - loss: 1.5645e-04
Epoch 29/35
113/113 [=====] - 5s 46ms/step - loss: 1.6555e-04
Epoch 30/35
113/113 [=====] - 5s 43ms/step - loss: 2.0439e-04
Epoch 31/35
113/113 [=====] - 5s 45ms/step - loss: 2.3282e-04
Epoch 32/35
113/113 [=====] - 5s 48ms/step - loss: 2.0225e-04
Epoch 33/35
113/113 [=====] - 5s 48ms/step - loss: 2.1745e-04
Epoch 34/35
113/113 [=====] - 5s 45ms/step - loss: 1.9665e-04
Epoch 35/35
113/113 [=====] - 5s 48ms/step - loss: 1.6329e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 18ms/step



Prediction results:

r2_score: 0.9934628082611809

MAPE: 0.021003696528009066

MAE: 0.09940313931580029

RSME: 0.13552377714573471

```
['HDFCBANK_LT', [0.9900836718556119, 0.16691498605788832, 0.1386819721365212, 0.029441216708528777], [0.9934628082611809, 0.13552377714573471, 0.09940313931580029, 0.021003696528009066]]
```


Pair Number: 5

Epoch 1/35

113/113 [=====] - 6s 30ms/step - loss: 0.0453

Epoch 2/35

113/113 [=====] - 3s 30ms/step - loss: 0.0063

Epoch 3/35

113/113 [=====] - 4s 33ms/step - loss: 0.0034

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0023

Epoch 5/35

113/113 [=====] - 3s 30ms/step - loss: 0.0017

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0015

Epoch 7/35

113/113 [=====] - 3s 31ms/step - loss: 0.0012

Epoch 8/35

113/113 [=====] - 4s 33ms/step - loss: 0.0010

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 0.0010

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 8.0757e-04

Epoch 11/35

113/113 [=====] - 3s 31ms/step - loss: 7.3437e-04

Epoch 12/35

113/113 [=====] - 4s 32ms/step - loss: 7.5005e-04

Epoch 13/35

113/113 [=====] - 4s 32ms/step - loss: 7.1466e-04

Epoch 14/35

113/113 [=====] - 3s 30ms/step - loss: 7.3266e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 5.5170e-04

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 5.1717e-04

Epoch 17/35

113/113 [=====] - 4s 33ms/step - loss: 5.6005e-04

Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 6.2742e-04

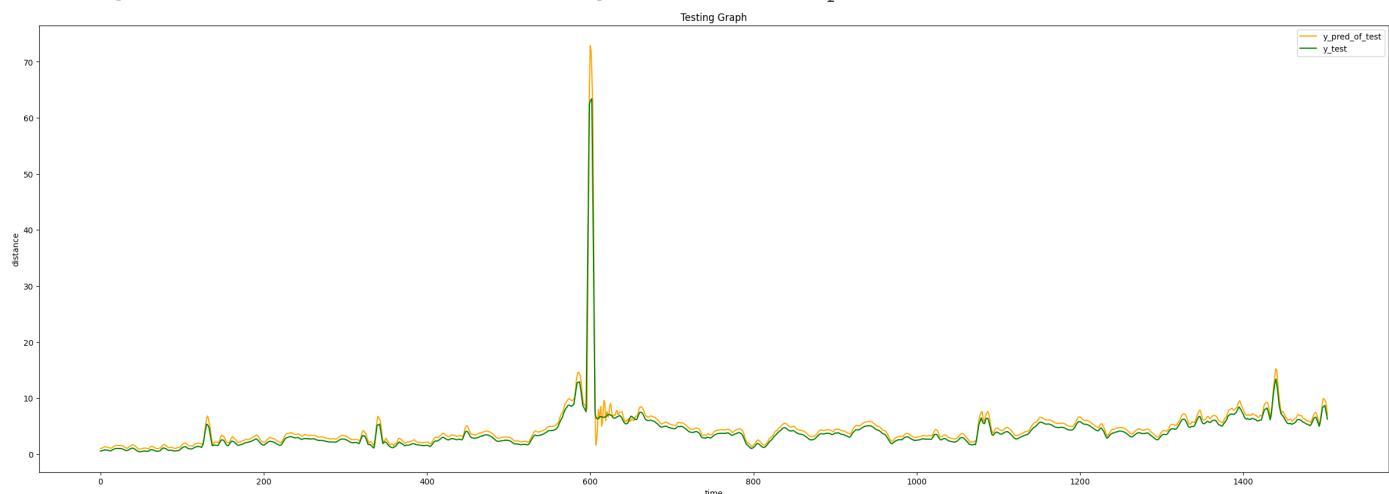
Epoch 19/35

113/113 [=====] - 3s 30ms/step - loss: 5.0236e-04

```

Epoch 20/35
113/113 [=====] - 3s 30ms/step - loss: 4.2518e-04
Epoch 21/35
113/113 [=====] - 4s 32ms/step - loss: 3.6927e-04
Epoch 22/35
113/113 [=====] - 4s 32ms/step - loss: 3.8777e-04
Epoch 23/35
113/113 [=====] - 3s 30ms/step - loss: 3.9809e-04
Epoch 24/35
113/113 [=====] - 3s 30ms/step - loss: 3.7432e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 3.4817e-04
Epoch 26/35
113/113 [=====] - 4s 34ms/step - loss: 3.1641e-04
Epoch 27/35
113/113 [=====] - 3s 30ms/step - loss: 2.9532e-04
Epoch 28/35
113/113 [=====] - 3s 30ms/step - loss: 3.4908e-04
Epoch 29/35
113/113 [=====] - 3s 30ms/step - loss: 4.1526e-04
Epoch 30/35
113/113 [=====] - 4s 31ms/step - loss: 4.1054e-04
Epoch 31/35
113/113 [=====] - 4s 32ms/step - loss: 3.4085e-04
Epoch 32/35
113/113 [=====] - 3s 30ms/step - loss: 3.1580e-04
Epoch 33/35
113/113 [=====] - 3s 30ms/step - loss: 3.1280e-04
Epoch 34/35
113/113 [=====] - 3s 30ms/step - loss: 2.8704e-04
Epoch 35/35
113/113 [=====] - 4s 33ms/step - loss: 3.7245e-04
113/113 [=====] - 1s 10ms/step
47/47 [=====] - 0s 10ms/step

```



Prediction results:

```

r2_score: 0.9448402790539984
MAPE: 0.2361367632970551
MAE: 0.7088493576318479
RMSE: 0.9912354711878947

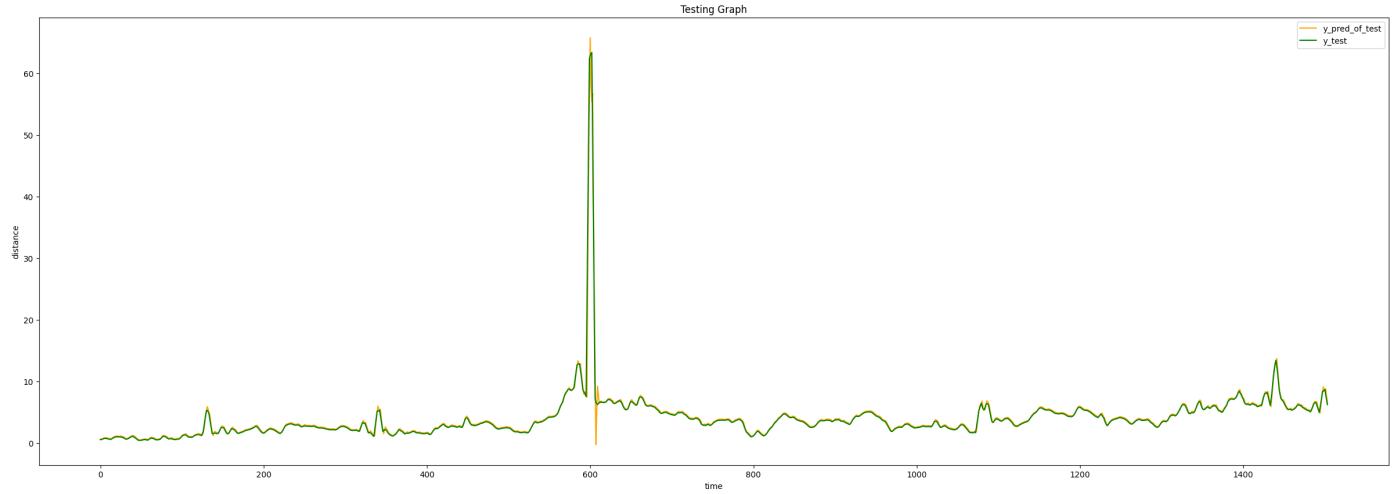
```

```

Epoch 1/35
113/113 [=====] - 8s 42ms/step - loss: 0.0031
Epoch 2/35
113/113 [=====] - 5s 45ms/step - loss: 0.0019
Epoch 3/35
113/113 [=====] - 5s 42ms/step - loss: 0.0012
Epoch 4/35
113/113 [=====] - 5s 42ms/step - loss: 8.0891e-04
Epoch 5/35
113/113 [=====] - 5s 43ms/step - loss: 6.2826e-04

```

Epoch 6/35
113/113 [=====] - 5s 44ms/step - loss: 5.5067e-04
Epoch 7/35
113/113 [=====] - 5s 42ms/step - loss: 4.6529e-04
Epoch 8/35
113/113 [=====] - 5s 42ms/step - loss: 4.1808e-04
Epoch 9/35
113/113 [=====] - 6s 53ms/step - loss: 2.9978e-04
Epoch 10/35
113/113 [=====] - 5s 42ms/step - loss: 3.4128e-04
Epoch 11/35
113/113 [=====] - 5s 42ms/step - loss: 3.4842e-04
Epoch 12/35
113/113 [=====] - 5s 46ms/step - loss: 2.7825e-04
Epoch 13/35
113/113 [=====] - 5s 42ms/step - loss: 2.8192e-04
Epoch 14/35
113/113 [=====] - 5s 42ms/step - loss: 2.8029e-04
Epoch 15/35
113/113 [=====] - 6s 51ms/step - loss: 2.4675e-04
Epoch 16/35
113/113 [=====] - 5s 43ms/step - loss: 2.1959e-04
Epoch 17/35
113/113 [=====] - 5s 42ms/step - loss: 2.0845e-04
Epoch 18/35
113/113 [=====] - 5s 45ms/step - loss: 2.4600e-04
Epoch 19/35
113/113 [=====] - 5s 43ms/step - loss: 1.6702e-04
Epoch 20/35
113/113 [=====] - 5s 42ms/step - loss: 2.0340e-04
Epoch 21/35
113/113 [=====] - 5s 43ms/step - loss: 2.1307e-04
Epoch 22/35
113/113 [=====] - 5s 45ms/step - loss: 1.9771e-04
Epoch 23/35
113/113 [=====] - 6s 54ms/step - loss: 2.0361e-04
Epoch 24/35
113/113 [=====] - 5s 47ms/step - loss: 1.9651e-04
Epoch 25/35
113/113 [=====] - 5s 45ms/step - loss: 1.9464e-04
Epoch 26/35
113/113 [=====] - 5s 43ms/step - loss: 1.9619e-04
Epoch 27/35
113/113 [=====] - 5s 42ms/step - loss: 2.0421e-04
Epoch 28/35
113/113 [=====] - 5s 47ms/step - loss: 1.7936e-04
Epoch 29/35
113/113 [=====] - 5s 42ms/step - loss: 1.8562e-04
Epoch 30/35
113/113 [=====] - 5s 43ms/step - loss: 1.8667e-04
Epoch 31/35
113/113 [=====] - 6s 49ms/step - loss: 2.0018e-04
Epoch 32/35
113/113 [=====] - 5s 42ms/step - loss: 1.7487e-04
Epoch 33/35
113/113 [=====] - 5s 42ms/step - loss: 2.3870e-04
Epoch 34/35
113/113 [=====] - 5s 46ms/step - loss: 1.8325e-04
Epoch 35/35
113/113 [=====] - 5s 44ms/step - loss: 1.9868e-04
113/113 [=====] - 2s 16ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9782642135733259

MAPE: 0.05755017829763129

MAE: 0.20235508706447516

RSME: 0.6222336354859224

```
[ "HDFCBANK_HINDUNILVR", [ 0.9448402790539984, 0.9912354711878947, 0.7088493576318479,
 0.2361367632970551], [ 0.9782642135733259, 0.6222336354859224, 0.20235508706447516, 0.057
55017829763129] ]
```


Pair Number: 6

Epoch 1/35

113/113 [=====] - 6s 31ms/step - loss: 0.0549

Epoch 2/35

113/113 [=====] - 4s 31ms/step - loss: 0.0070

Epoch 3/35

113/113 [=====] - 3s 29ms/step - loss: 0.0034

Epoch 4/35

113/113 [=====] - 3s 29ms/step - loss: 0.0024

Epoch 5/35

113/113 [=====] - 3s 29ms/step - loss: 0.0017

Epoch 6/35

113/113 [=====] - 4s 32ms/step - loss: 0.0013

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 8/35

113/113 [=====] - 3s 29ms/step - loss: 0.0011

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 8.9590e-04

Epoch 10/35

113/113 [=====] - 3s 29ms/step - loss: 8.0621e-04

Epoch 11/35

113/113 [=====] - 4s 32ms/step - loss: 7.4645e-04

Epoch 12/35

113/113 [=====] - 3s 29ms/step - loss: 6.3297e-04

Epoch 13/35

113/113 [=====] - 3s 29ms/step - loss: 6.7989e-04

Epoch 14/35

113/113 [=====] - 3s 29ms/step - loss: 6.3755e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 7.0943e-04

Epoch 16/35

113/113 [=====] - 4s 32ms/step - loss: 5.4384e-04

Epoch 17/35

113/113 [=====] - 3s 29ms/step - loss: 5.5276e-04

Epoch 18/35

113/113 [=====] - 3s 29ms/step - loss: 4.3100e-04

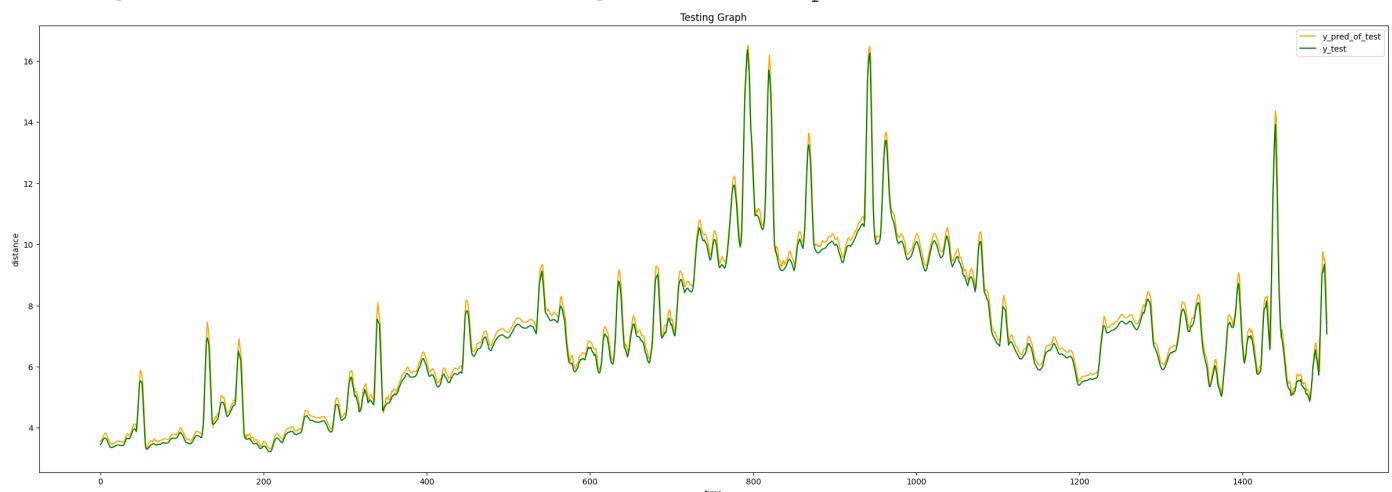
Epoch 19/35

113/113 [=====] - 3s 29ms/step - loss: 5.0009e-04

```

Epoch 20/35
113/113 [=====] - 4s 32ms/step - loss: 5.4287e-04
Epoch 21/35
113/113 [=====] - 3s 30ms/step - loss: 5.3901e-04
Epoch 22/35
113/113 [=====] - 3s 29ms/step - loss: 3.9607e-04
Epoch 23/35
113/113 [=====] - 3s 29ms/step - loss: 3.9444e-04
Epoch 24/35
113/113 [=====] - 3s 29ms/step - loss: 4.3111e-04
Epoch 25/35
113/113 [=====] - 4s 33ms/step - loss: 3.6857e-04
Epoch 26/35
113/113 [=====] - 3s 29ms/step - loss: 3.4775e-04
Epoch 27/35
113/113 [=====] - 3s 29ms/step - loss: 3.5947e-04
Epoch 28/35
113/113 [=====] - 3s 29ms/step - loss: 4.3624e-04
Epoch 29/35
113/113 [=====] - 3s 30ms/step - loss: 3.3573e-04
Epoch 30/35
113/113 [=====] - 4s 33ms/step - loss: 4.0555e-04
Epoch 31/35
113/113 [=====] - 3s 29ms/step - loss: 3.6637e-04
Epoch 32/35
113/113 [=====] - 3s 29ms/step - loss: 3.6521e-04
Epoch 33/35
113/113 [=====] - 3s 29ms/step - loss: 4.2825e-04
Epoch 34/35
113/113 [=====] - 4s 31ms/step - loss: 3.0677e-04
Epoch 35/35
113/113 [=====] - 4s 31ms/step - loss: 3.0788e-04
113/113 [=====] - 1s 9ms/step
47/47 [=====] - 0s 9ms/step

```



Prediction results:

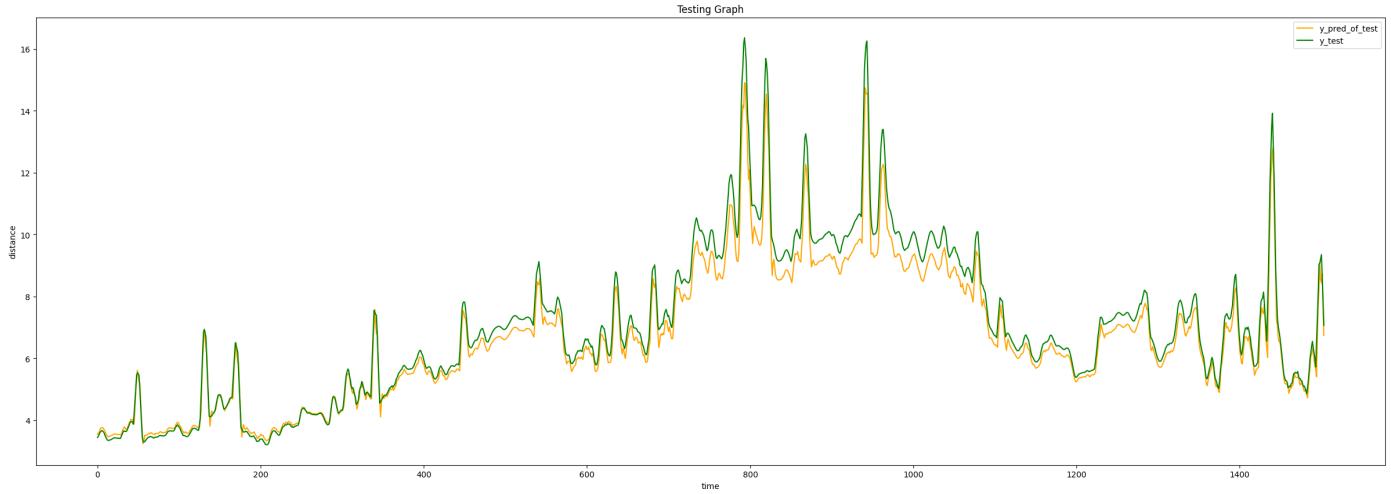
r2_score: 0.9919731201212225
 MAPE: 0.028870389519306042
 MAE: 0.19425482712004669
 RMSE: 0.22017516752461588

```

Epoch 1/35
113/113 [=====] - 8s 46ms/step - loss: 0.0039
Epoch 2/35
113/113 [=====] - 5s 47ms/step - loss: 0.0024
Epoch 3/35
113/113 [=====] - 5s 46ms/step - loss: 0.0016
Epoch 4/35
113/113 [=====] - 5s 46ms/step - loss: 0.0011
Epoch 5/35
113/113 [=====] - 5s 48ms/step - loss: 8.0150e-04

```

Epoch 6/35
113/113 [=====] - 5s 45ms/step - loss: 5.8623e-04
Epoch 7/35
113/113 [=====] - 5s 45ms/step - loss: 5.6397e-04
Epoch 8/35
113/113 [=====] - 6s 55ms/step - loss: 4.5871e-04
Epoch 9/35
113/113 [=====] - 8s 69ms/step - loss: 4.1457e-04
Epoch 10/35
113/113 [=====] - 6s 56ms/step - loss: 3.6660e-04
Epoch 11/35
113/113 [=====] - 5s 46ms/step - loss: 3.7633e-04
Epoch 12/35
113/113 [=====] - 5s 45ms/step - loss: 3.3335e-04
Epoch 13/35
113/113 [=====] - 6s 49ms/step - loss: 3.2743e-04
Epoch 14/35
113/113 [=====] - 5s 45ms/step - loss: 2.9052e-04
Epoch 15/35
113/113 [=====] - 5s 45ms/step - loss: 3.1345e-04
Epoch 16/35
113/113 [=====] - 6s 49ms/step - loss: 2.5039e-04
Epoch 17/35
113/113 [=====] - 5s 45ms/step - loss: 2.1498e-04
Epoch 18/35
113/113 [=====] - 5s 45ms/step - loss: 2.4640e-04
Epoch 19/35
113/113 [=====] - 5s 48ms/step - loss: 2.1046e-04
Epoch 20/35
113/113 [=====] - 5s 45ms/step - loss: 2.2556e-04
Epoch 21/35
113/113 [=====] - 5s 45ms/step - loss: 2.3773e-04
Epoch 22/35
113/113 [=====] - 6s 49ms/step - loss: 2.4117e-04
Epoch 23/35
113/113 [=====] - 6s 50ms/step - loss: 2.2717e-04
Epoch 24/35
113/113 [=====] - 5s 49ms/step - loss: 2.8234e-04
Epoch 25/35
113/113 [=====] - 5s 49ms/step - loss: 3.6823e-04
Epoch 26/35
113/113 [=====] - 5s 45ms/step - loss: 2.0019e-04
Epoch 27/35
113/113 [=====] - 5s 45ms/step - loss: 2.0388e-04
Epoch 28/35
113/113 [=====] - 6s 49ms/step - loss: 1.9246e-04
Epoch 29/35
113/113 [=====] - 5s 45ms/step - loss: 1.7924e-04
Epoch 30/35
113/113 [=====] - 5s 45ms/step - loss: 2.0681e-04
Epoch 31/35
113/113 [=====] - 6s 49ms/step - loss: 1.7800e-04
Epoch 32/35
113/113 [=====] - 5s 45ms/step - loss: 2.0806e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 1.7610e-04
Epoch 34/35
113/113 [=====] - 5s 48ms/step - loss: 1.8461e-04
Epoch 35/35
113/113 [=====] - 5s 45ms/step - loss: 2.1168e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 17ms/step



Prediction results:

r2_score: 0.9623679243824326

MAPE: 0.04609433683721711

MAE: 0.3701530072681048

RSME: 0.47673170970390083

```
["HDFCBANK_ITC", [0.9919731201212225, 0.22017516752461588, 0.19425482712004669, 0.028870389519306042], [0.9623679243824326, 0.47673170970390083, 0.3701530072681048, 0.04609433683721711]]
```


Pair Number: 7

Epoch 1/35

113/113 [=====] - 6s 31ms/step - loss: 0.1419

Epoch 2/35

113/113 [=====] - 4s 31ms/step - loss: 0.0185

Epoch 3/35

113/113 [=====] - 3s 29ms/step - loss: 0.0090

Epoch 4/35

113/113 [=====] - 3s 29ms/step - loss: 0.0054

Epoch 5/35

113/113 [=====] - 3s 29ms/step - loss: 0.0035

Epoch 6/35

113/113 [=====] - 4s 33ms/step - loss: 0.0027

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0022

Epoch 8/35

113/113 [=====] - 3s 29ms/step - loss: 0.0019

Epoch 9/35

113/113 [=====] - 3s 29ms/step - loss: 0.0017

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 11/35

113/113 [=====] - 4s 33ms/step - loss: 0.0013

Epoch 12/35

113/113 [=====] - 3s 30ms/step - loss: 0.0011

Epoch 13/35

113/113 [=====] - 3s 30ms/step - loss: 0.0011

Epoch 14/35

113/113 [=====] - 3s 29ms/step - loss: 9.1758e-04

Epoch 15/35

113/113 [=====] - 4s 31ms/step - loss: 8.5390e-04

Epoch 16/35

113/113 [=====] - 4s 31ms/step - loss: 9.2577e-04

Epoch 17/35

113/113 [=====] - 3s 29ms/step - loss: 9.1738e-04

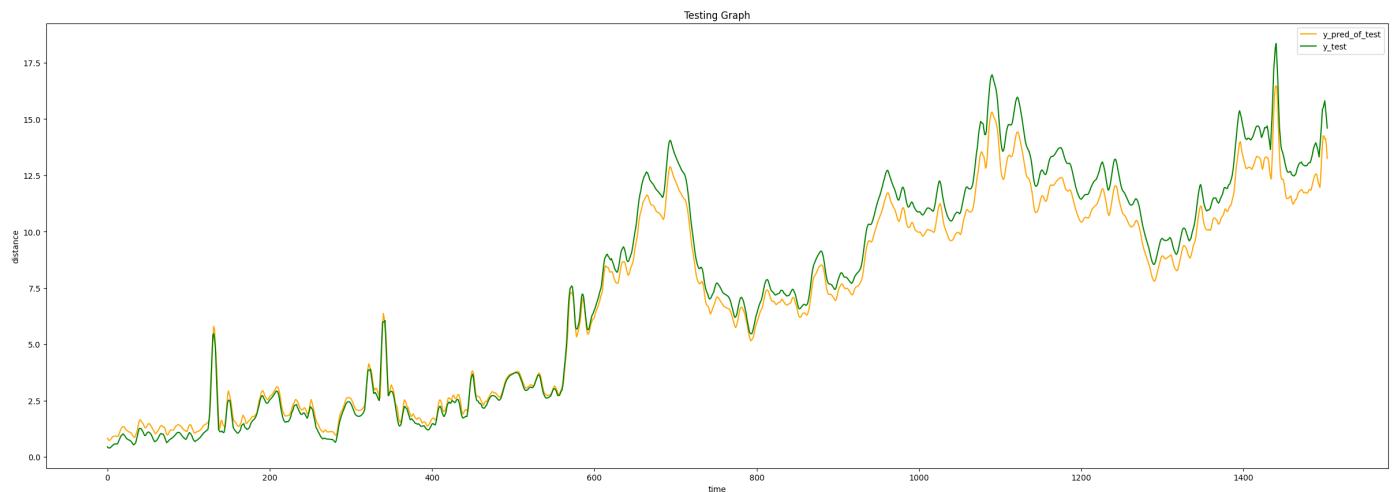
Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 6.9583e-04

Epoch 19/35

113/113 [=====] - 3s 29ms/step - loss: 7.4835e-04

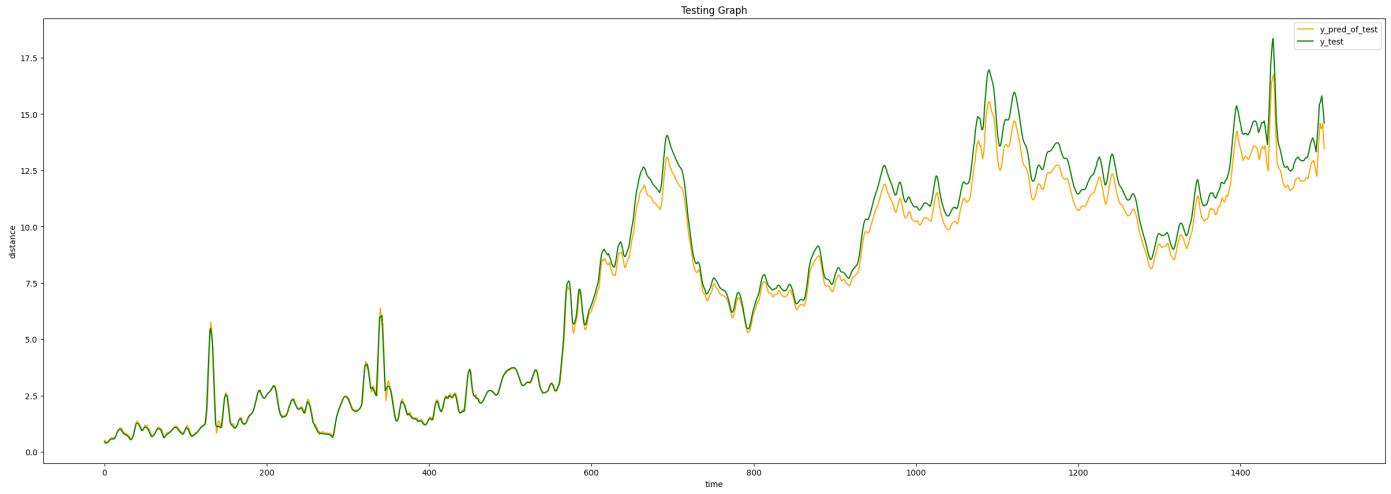
Epoch 20/35
 113/113 [=====] - 4s 32ms/step - loss: 7.7500e-04
 Epoch 21/35
 113/113 [=====] - 3s 31ms/step - loss: 6.8459e-04
 Epoch 22/35
 113/113 [=====] - 3s 29ms/step - loss: 6.4451e-04
 Epoch 23/35
 113/113 [=====] - 3s 29ms/step - loss: 5.7902e-04
 Epoch 24/35
 113/113 [=====] - 3s 30ms/step - loss: 6.4175e-04
 Epoch 25/35
 113/113 [=====] - 4s 35ms/step - loss: 7.3747e-04
 Epoch 26/35
 113/113 [=====] - 3s 29ms/step - loss: 5.9997e-04
 Epoch 27/35
 113/113 [=====] - 3s 29ms/step - loss: 4.3692e-04
 Epoch 28/35
 113/113 [=====] - 3s 29ms/step - loss: 4.8681e-04
 Epoch 29/35
 113/113 [=====] - 4s 31ms/step - loss: 5.7355e-04
 Epoch 30/35
 113/113 [=====] - 4s 32ms/step - loss: 5.5905e-04
 Epoch 31/35
 113/113 [=====] - 3s 30ms/step - loss: 4.4061e-04
 Epoch 32/35
 113/113 [=====] - 4s 32ms/step - loss: 4.5507e-04
 Epoch 33/35
 113/113 [=====] - 3s 31ms/step - loss: 3.5684e-04
 Epoch 34/35
 113/113 [=====] - 4s 33ms/step - loss: 4.2672e-04
 Epoch 35/35
 113/113 [=====] - 3s 30ms/step - loss: 4.0515e-04
 113/113 [=====] - 1s 9ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9741322539434645
 MAPE: 0.11946493635672413
 MAE: 0.6467242164260392
 RMSE: 0.7776241873000396

Epoch 1/35
 113/113 [=====] - 8s 45ms/step - loss: 0.0042
 Epoch 2/35
 113/113 [=====] - 5s 43ms/step - loss: 0.0028
 Epoch 3/35
 113/113 [=====] - 5s 42ms/step - loss: 0.0023
 Epoch 4/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0017
 Epoch 5/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0011

Epoch 6/35
113/113 [=====] - 5s 44ms/step - loss: 0.0010
Epoch 7/35
113/113 [=====] - 5s 44ms/step - loss: 6.9250e-04
Epoch 8/35
113/113 [=====] - 5s 48ms/step - loss: 6.7435e-04
Epoch 9/35
113/113 [=====] - 5s 44ms/step - loss: 8.0812e-04
Epoch 10/35
113/113 [=====] - 5s 45ms/step - loss: 5.0590e-04
Epoch 11/35
113/113 [=====] - 6s 50ms/step - loss: 4.8059e-04
Epoch 12/35
113/113 [=====] - 5s 44ms/step - loss: 5.1341e-04
Epoch 13/35
113/113 [=====] - 5s 44ms/step - loss: 3.7366e-04
Epoch 14/35
113/113 [=====] - 5s 48ms/step - loss: 4.2485e-04
Epoch 15/35
113/113 [=====] - 5s 47ms/step - loss: 4.4117e-04
Epoch 16/35
113/113 [=====] - 5s 45ms/step - loss: 3.4397e-04
Epoch 17/35
113/113 [=====] - 5s 49ms/step - loss: 2.6703e-04
Epoch 18/35
113/113 [=====] - 5s 44ms/step - loss: 2.6918e-04
Epoch 19/35
113/113 [=====] - 5s 46ms/step - loss: 2.8481e-04
Epoch 20/35
113/113 [=====] - 6s 49ms/step - loss: 2.5274e-04
Epoch 21/35
113/113 [=====] - 5s 44ms/step - loss: 2.8947e-04
Epoch 22/35
113/113 [=====] - 5s 45ms/step - loss: 2.2974e-04
Epoch 23/35
113/113 [=====] - 5s 49ms/step - loss: 2.5329e-04
Epoch 24/35
113/113 [=====] - 5s 44ms/step - loss: 2.1198e-04
Epoch 25/35
113/113 [=====] - 5s 44ms/step - loss: 2.1169e-04
Epoch 26/35
113/113 [=====] - 5s 48ms/step - loss: 2.9554e-04
Epoch 27/35
113/113 [=====] - 5s 44ms/step - loss: 2.4454e-04
Epoch 28/35
113/113 [=====] - 5s 44ms/step - loss: 2.2092e-04
Epoch 29/35
113/113 [=====] - 5s 49ms/step - loss: 2.1844e-04
Epoch 30/35
113/113 [=====] - 5s 45ms/step - loss: 2.3996e-04
Epoch 31/35
113/113 [=====] - 5s 46ms/step - loss: 3.2071e-04
Epoch 32/35
113/113 [=====] - 6s 50ms/step - loss: 2.0019e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 1.9039e-04
Epoch 34/35
113/113 [=====] - 5s 44ms/step - loss: 2.1124e-04
Epoch 35/35
113/113 [=====] - 5s 48ms/step - loss: 1.7331e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 17ms/step



Prediction results:

r2_score: 0.985176575877384

MAPE: 0.05251580564415563

MAE: 0.44459105445954417

RSME: 0.5886602809682109

["HDFCBANK_RELIANCE", [0.9741322539434645, 0.7776241873000396, 0.6467242164260392, 0.11946493635672413], [0.985176575877384, 0.5886602809682109, 0.44459105445954417, 0.05251580564415563]]

Pair Number: 8

Epoch 1/35

113/113 [=====] - 5s 29ms/step - loss: 0.1145

Epoch 2/35

113/113 [=====] - 3s 30ms/step - loss: 0.0201

Epoch 3/35

113/113 [=====] - 4s 33ms/step - loss: 0.0084

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0057

Epoch 5/35

113/113 [=====] - 3s 30ms/step - loss: 0.0037

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0032

Epoch 7/35

113/113 [=====] - 3s 31ms/step - loss: 0.0025

Epoch 8/35

113/113 [=====] - 4s 32ms/step - loss: 0.0021

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 0.0018

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 0.0016

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 0.0014

Epoch 12/35

113/113 [=====] - 4s 32ms/step - loss: 0.0013

Epoch 13/35

113/113 [=====] - 4s 32ms/step - loss: 0.0012

Epoch 14/35

113/113 [=====] - 3s 30ms/step - loss: 0.0012

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 9.7848e-04

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 0.0010

Epoch 17/35

113/113 [=====] - 4s 33ms/step - loss: 8.7207e-04

Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 8.0533e-04

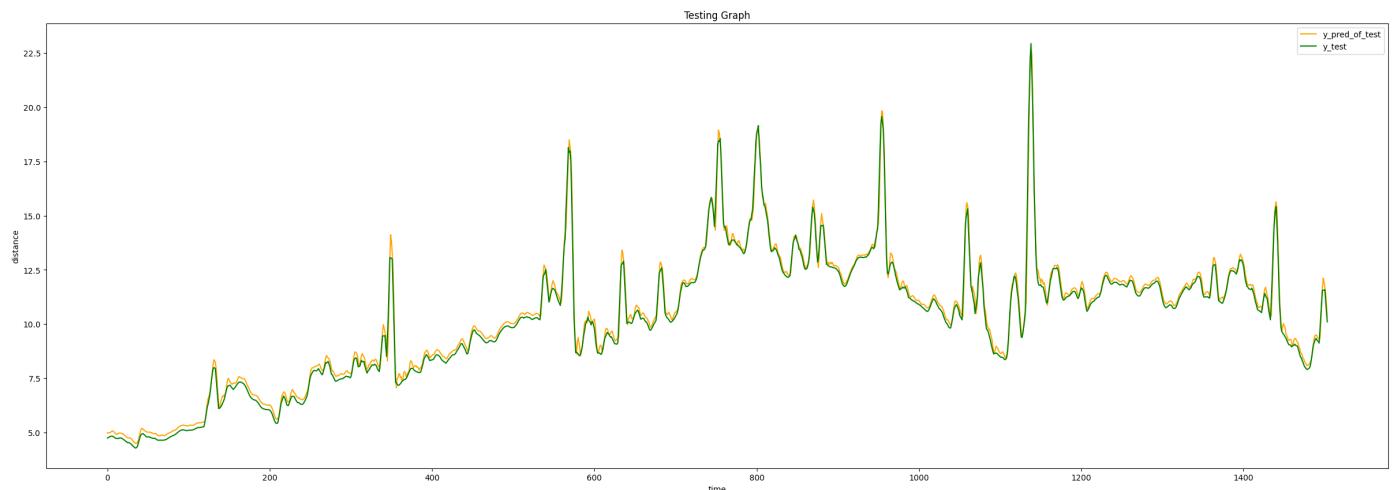
Epoch 19/35

113/113 [=====] - 3s 30ms/step - loss: 9.1789e-04

```

Epoch 20/35
113/113 [=====] - 3s 30ms/step - loss: 7.4775e-04
Epoch 21/35
113/113 [=====] - 4s 31ms/step - loss: 6.3458e-04
Epoch 22/35
113/113 [=====] - 4s 32ms/step - loss: 6.7587e-04
Epoch 23/35
113/113 [=====] - 3s 30ms/step - loss: 8.1742e-04
Epoch 24/35
113/113 [=====] - 3s 30ms/step - loss: 6.3145e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 5.5201e-04
Epoch 26/35
113/113 [=====] - 4s 33ms/step - loss: 6.8654e-04
Epoch 27/35
113/113 [=====] - 4s 31ms/step - loss: 5.1785e-04
Epoch 28/35
113/113 [=====] - 3s 31ms/step - loss: 5.7275e-04
Epoch 29/35
113/113 [=====] - 3s 30ms/step - loss: 4.9371e-04
Epoch 30/35
113/113 [=====] - 3s 31ms/step - loss: 7.7443e-04
Epoch 31/35
113/113 [=====] - 4s 33ms/step - loss: 4.5683e-04
Epoch 32/35
113/113 [=====] - 3s 30ms/step - loss: 4.1744e-04
Epoch 33/35
113/113 [=====] - 3s 30ms/step - loss: 6.0178e-04
Epoch 34/35
113/113 [=====] - 3s 30ms/step - loss: 4.4736e-04
Epoch 35/35
113/113 [=====] - 4s 32ms/step - loss: 4.4355e-04
113/113 [=====] - 1s 10ms/step
47/47 [=====] - 0s 10ms/step

```



Prediction results:

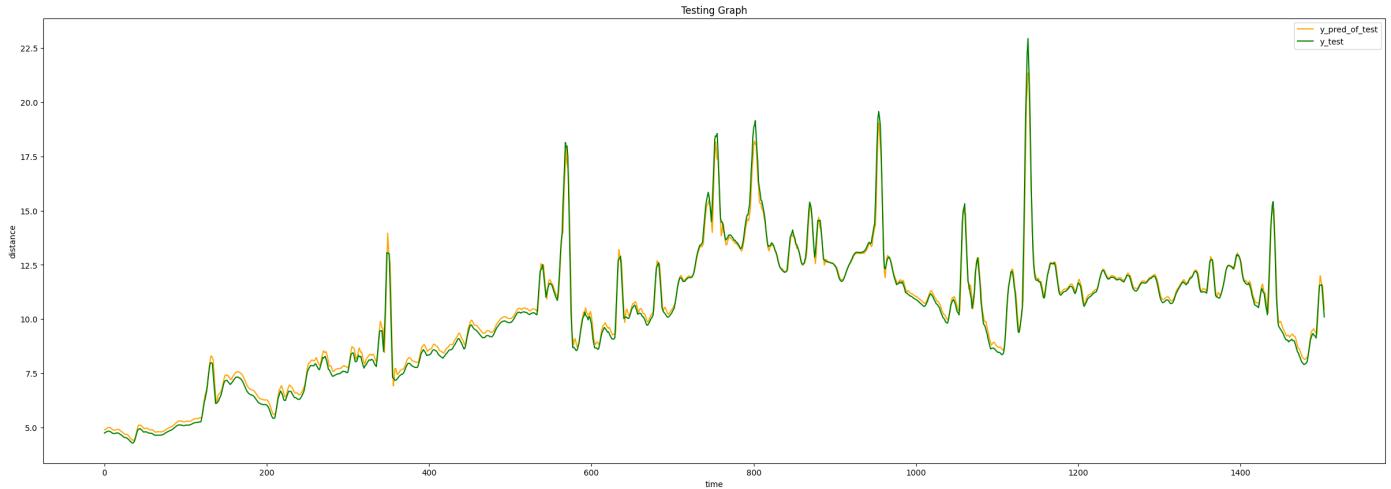
r2_score: 0.9930623455691471
 MAPE: 0.022100255077156503
 MAE: 0.20509134996458042
 RMSE: 0.24596305346408445

```

Epoch 1/35
113/113 [=====] - 8s 43ms/step - loss: 0.0042
Epoch 2/35
113/113 [=====] - 5s 47ms/step - loss: 0.0033
Epoch 3/35
113/113 [=====] - 5s 44ms/step - loss: 0.0026
Epoch 4/35
113/113 [=====] - 5s 43ms/step - loss: 0.0020
Epoch 5/35
113/113 [=====] - 5s 45ms/step - loss: 0.0014

```

Epoch 6/35
113/113 [=====] - 5s 45ms/step - loss: 0.0011
Epoch 7/35
113/113 [=====] - 5s 43ms/step - loss: 8.5274e-04
Epoch 8/35
113/113 [=====] - 5s 44ms/step - loss: 8.3775e-04
Epoch 9/35
113/113 [=====] - 5s 46ms/step - loss: 6.1943e-04
Epoch 10/35
113/113 [=====] - 5s 43ms/step - loss: 5.0956e-04
Epoch 11/35
113/113 [=====] - 5s 43ms/step - loss: 4.5309e-04
Epoch 12/35
113/113 [=====] - 5s 46ms/step - loss: 4.8955e-04
Epoch 13/35
113/113 [=====] - 5s 44ms/step - loss: 4.9743e-04
Epoch 14/35
113/113 [=====] - 5s 44ms/step - loss: 4.8158e-04
Epoch 15/35
113/113 [=====] - 5s 47ms/step - loss: 5.1617e-04
Epoch 16/35
113/113 [=====] - 5s 43ms/step - loss: 3.8173e-04
Epoch 17/35
113/113 [=====] - 5s 43ms/step - loss: 5.0901e-04
Epoch 18/35
113/113 [=====] - 5s 46ms/step - loss: 3.5142e-04
Epoch 19/35
113/113 [=====] - 5s 43ms/step - loss: 3.3726e-04
Epoch 20/35
113/113 [=====] - 5s 43ms/step - loss: 3.5375e-04
Epoch 21/35
113/113 [=====] - 5s 46ms/step - loss: 3.2591e-04
Epoch 22/35
113/113 [=====] - 5s 45ms/step - loss: 3.9883e-04
Epoch 23/35
113/113 [=====] - 5s 45ms/step - loss: 2.8442e-04
Epoch 24/35
113/113 [=====] - 5s 44ms/step - loss: 3.2004e-04
Epoch 25/35
113/113 [=====] - 5s 46ms/step - loss: 2.5953e-04
Epoch 26/35
113/113 [=====] - 5s 44ms/step - loss: 2.5097e-04
Epoch 27/35
113/113 [=====] - 5s 43ms/step - loss: 2.6059e-04
Epoch 28/35
113/113 [=====] - 5s 48ms/step - loss: 2.6510e-04
Epoch 29/35
113/113 [=====] - 5s 43ms/step - loss: 2.8531e-04
Epoch 30/35
113/113 [=====] - 5s 43ms/step - loss: 2.6466e-04
Epoch 31/35
113/113 [=====] - 5s 47ms/step - loss: 1.8643e-04
Epoch 32/35
113/113 [=====] - 5s 43ms/step - loss: 3.3625e-04
Epoch 33/35
113/113 [=====] - 5s 43ms/step - loss: 2.0491e-04
Epoch 34/35
113/113 [=====] - 5s 47ms/step - loss: 2.3682e-04
Epoch 35/35
113/113 [=====] - 5s 43ms/step - loss: 3.2963e-04
113/113 [=====] - 2s 16ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9917024193557704

MAPE: 0.02096344101621942

MAE: 0.19946052927802133

RSME: 0.26899195114246627

['"HDFCBANK_ONGC"', [0.9930623455691471, 0.24596305346408445, 0.20509134996458042, 0.022100255077156503], [0.9917024193557704, 0.26899195114246627, 0.19946052927802133, 0.02096344101621942]]

Pair Number: 9

Epoch 1/35

113/113 [=====] - 6s 32ms/step - loss: 0.0428

Epoch 2/35

113/113 [=====] - 4s 31ms/step - loss: 0.0053

Epoch 3/35

113/113 [=====] - 3s 31ms/step - loss: 0.0033

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0026

Epoch 5/35

113/113 [=====] - 3s 30ms/step - loss: 0.0018

Epoch 6/35

113/113 [=====] - 4s 33ms/step - loss: 0.0015

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0015

Epoch 8/35

113/113 [=====] - 4s 31ms/step - loss: 0.0011

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 0.0011

Epoch 10/35

113/113 [=====] - 4s 32ms/step - loss: 0.0010

Epoch 11/35

113/113 [=====] - 4s 31ms/step - loss: 8.9139e-04

Epoch 12/35

113/113 [=====] - 3s 30ms/step - loss: 8.2098e-04

Epoch 13/35

113/113 [=====] - 3s 30ms/step - loss: 7.5381e-04

Epoch 14/35

113/113 [=====] - 3s 30ms/step - loss: 7.4127e-04

Epoch 15/35

113/113 [=====] - 4s 34ms/step - loss: 6.9138e-04

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 7.6115e-04

Epoch 17/35

113/113 [=====] - 3s 30ms/step - loss: 6.0998e-04

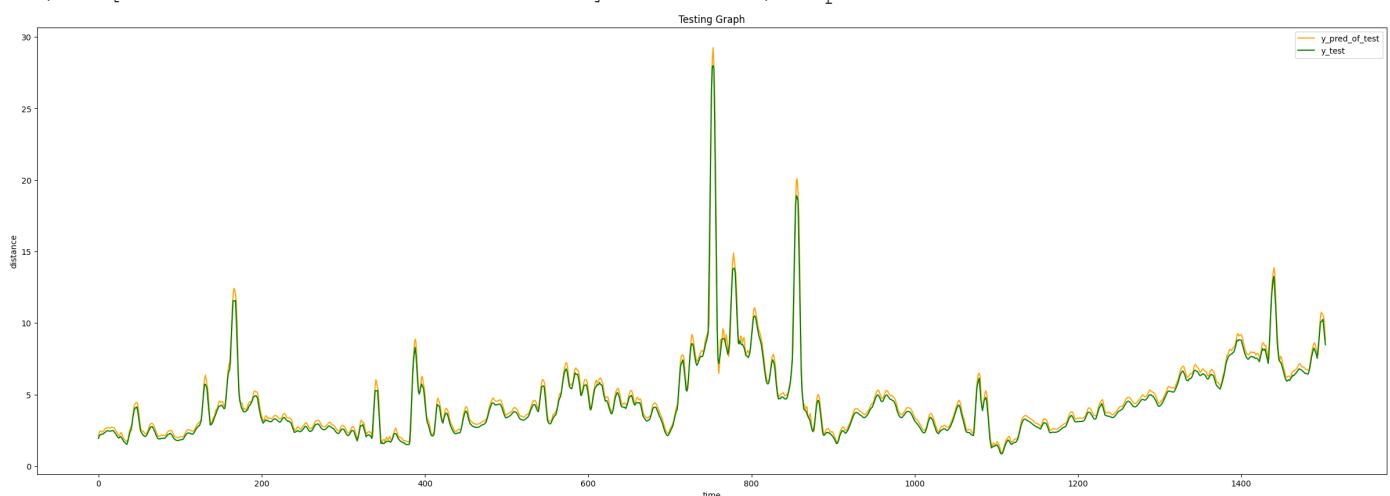
Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 6.7641e-04

Epoch 19/35

113/113 [=====] - 4s 32ms/step - loss: 5.9378e-04

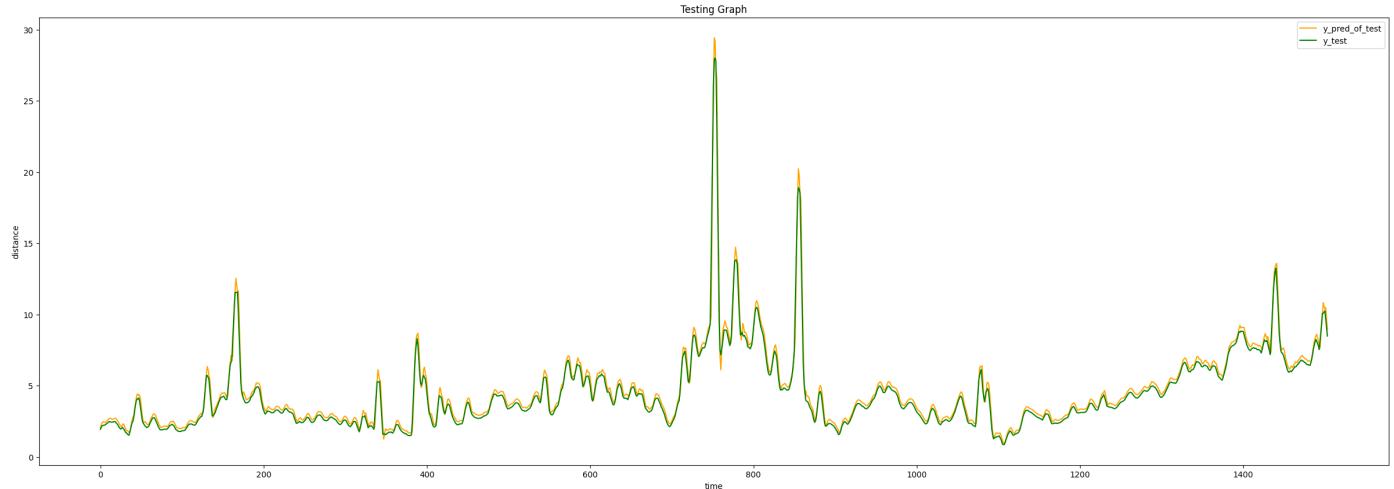
Epoch 20/35
 113/113 [=====] - 4s 32ms/step - loss: 5.8363e-04
 Epoch 21/35
 113/113 [=====] - 3s 30ms/step - loss: 4.9311e-04
 Epoch 22/35
 113/113 [=====] - 3s 30ms/step - loss: 5.4994e-04
 Epoch 23/35
 113/113 [=====] - 3s 31ms/step - loss: 9.9622e-04
 Epoch 24/35
 113/113 [=====] - 4s 33ms/step - loss: 5.1681e-04
 Epoch 25/35
 113/113 [=====] - 3s 31ms/step - loss: 5.0170e-04
 Epoch 26/35
 113/113 [=====] - 3s 30ms/step - loss: 6.3193e-04
 Epoch 27/35
 113/113 [=====] - 3s 31ms/step - loss: 4.3110e-04
 Epoch 28/35
 113/113 [=====] - 4s 31ms/step - loss: 3.8424e-04
 Epoch 29/35
 113/113 [=====] - 4s 33ms/step - loss: 4.7286e-04
 Epoch 30/35
 113/113 [=====] - 3s 30ms/step - loss: 3.6818e-04
 Epoch 31/35
 113/113 [=====] - 3s 30ms/step - loss: 4.1649e-04
 Epoch 32/35
 113/113 [=====] - 3s 30ms/step - loss: 7.0505e-04
 Epoch 33/35
 113/113 [=====] - 4s 35ms/step - loss: 4.4643e-04
 Epoch 34/35
 113/113 [=====] - 4s 31ms/step - loss: 3.8812e-04
 Epoch 35/35
 113/113 [=====] - 3s 30ms/step - loss: 3.6967e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9851200620282875
 MAPE: 0.07083295476733101
 MAE: 0.27927795011210177
 RMSE: 0.33925780009204143

Epoch 1/35
 113/113 [=====] - 9s 49ms/step - loss: 0.0059
 Epoch 2/35
 113/113 [=====] - 5s 44ms/step - loss: 0.0041
 Epoch 3/35
 113/113 [=====] - 9s 77ms/step - loss: 0.0029
 Epoch 4/35
 113/113 [=====] - 6s 54ms/step - loss: 0.0019
 Epoch 5/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0014

Epoch 6/35
113/113 [=====] - 6s 49ms/step - loss: 0.0011
Epoch 7/35
113/113 [=====] - 5s 44ms/step - loss: 9.2905e-04
Epoch 8/35
113/113 [=====] - 5s 44ms/step - loss: 8.7808e-04
Epoch 9/35
113/113 [=====] - 5s 48ms/step - loss: 6.9331e-04
Epoch 10/35
113/113 [=====] - 5s 43ms/step - loss: 9.7877e-04
Epoch 11/35
113/113 [=====] - 5s 43ms/step - loss: 5.6891e-04
Epoch 12/35
113/113 [=====] - 5s 48ms/step - loss: 7.6472e-04
Epoch 13/35
113/113 [=====] - 5s 44ms/step - loss: 4.6841e-04
Epoch 14/35
113/113 [=====] - 6s 55ms/step - loss: 4.6715e-04
Epoch 15/35
113/113 [=====] - 6s 55ms/step - loss: 4.5652e-04
Epoch 16/35
113/113 [=====] - 6s 49ms/step - loss: 3.9342e-04
Epoch 17/35
113/113 [=====] - 5s 44ms/step - loss: 3.9777e-04
Epoch 18/35
113/113 [=====] - 5s 47ms/step - loss: 4.2301e-04
Epoch 19/35
113/113 [=====] - 5s 44ms/step - loss: 3.9646e-04
Epoch 20/35
113/113 [=====] - 5s 44ms/step - loss: 4.3305e-04
Epoch 21/35
113/113 [=====] - 5s 48ms/step - loss: 3.4150e-04
Epoch 22/35
113/113 [=====] - 5s 44ms/step - loss: 3.1172e-04
Epoch 23/35
113/113 [=====] - 5s 44ms/step - loss: 3.4941e-04
Epoch 24/35
113/113 [=====] - 5s 48ms/step - loss: 3.2044e-04
Epoch 25/35
113/113 [=====] - 5s 44ms/step - loss: 3.3790e-04
Epoch 26/35
113/113 [=====] - 5s 44ms/step - loss: 3.4091e-04
Epoch 27/35
113/113 [=====] - 5s 47ms/step - loss: 3.1446e-04
Epoch 28/35
113/113 [=====] - 5s 45ms/step - loss: 3.4339e-04
Epoch 29/35
113/113 [=====] - 5s 44ms/step - loss: 2.8230e-04
Epoch 30/35
113/113 [=====] - 5s 46ms/step - loss: 2.6258e-04
Epoch 31/35
113/113 [=====] - 5s 46ms/step - loss: 2.8926e-04
Epoch 32/35
113/113 [=====] - 5s 44ms/step - loss: 3.1144e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 2.9410e-04
Epoch 34/35
113/113 [=====] - 5s 47ms/step - loss: 3.0369e-04
Epoch 35/35
113/113 [=====] - 5s 44ms/step - loss: 3.5678e-04
113/113 [=====] - 2s 16ms/step
47/47 [=====] - 1s 17ms/step



Prediction results:

r2_score: 0.9830253680176374

MAPE: 0.07249986528418612

MAE: 0.28316150170482873

RSME: 0.36235100054461067

```
['"HDFCBANK_UPL"', [0.9851200620282875, 0.33925780009204143, 0.27927795011210177, 0.07083295476733101], [0.9830253680176374, 0.36235100054461067, 0.28316150170482873, 0.07249986528418612]]
```


Pair Number: 10

Epoch 1/35

113/113 [=====] - 6s 29ms/step - loss: 0.0569

Epoch 2/35

113/113 [=====] - 3s 30ms/step - loss: 0.0074

Epoch 3/35

113/113 [=====] - 4s 31ms/step - loss: 0.0045

Epoch 4/35

113/113 [=====] - 4s 32ms/step - loss: 0.0031

Epoch 5/35

113/113 [=====] - 4s 36ms/step - loss: 0.0021

Epoch 6/35

113/113 [=====] - 4s 34ms/step - loss: 0.0016

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 8/35

113/113 [=====] - 3s 29ms/step - loss: 0.0011

Epoch 9/35

113/113 [=====] - 4s 31ms/step - loss: 9.7670e-04

Epoch 10/35

113/113 [=====] - 4s 31ms/step - loss: 9.3551e-04

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 7.1740e-04

Epoch 12/35

113/113 [=====] - 3s 29ms/step - loss: 8.7113e-04

Epoch 13/35

113/113 [=====] - 3s 29ms/step - loss: 7.3508e-04

Epoch 14/35

113/113 [=====] - 4s 32ms/step - loss: 6.1788e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 5.9886e-04

Epoch 16/35

113/113 [=====] - 3s 29ms/step - loss: 6.4592e-04

Epoch 17/35

113/113 [=====] - 3s 30ms/step - loss: 5.5974e-04

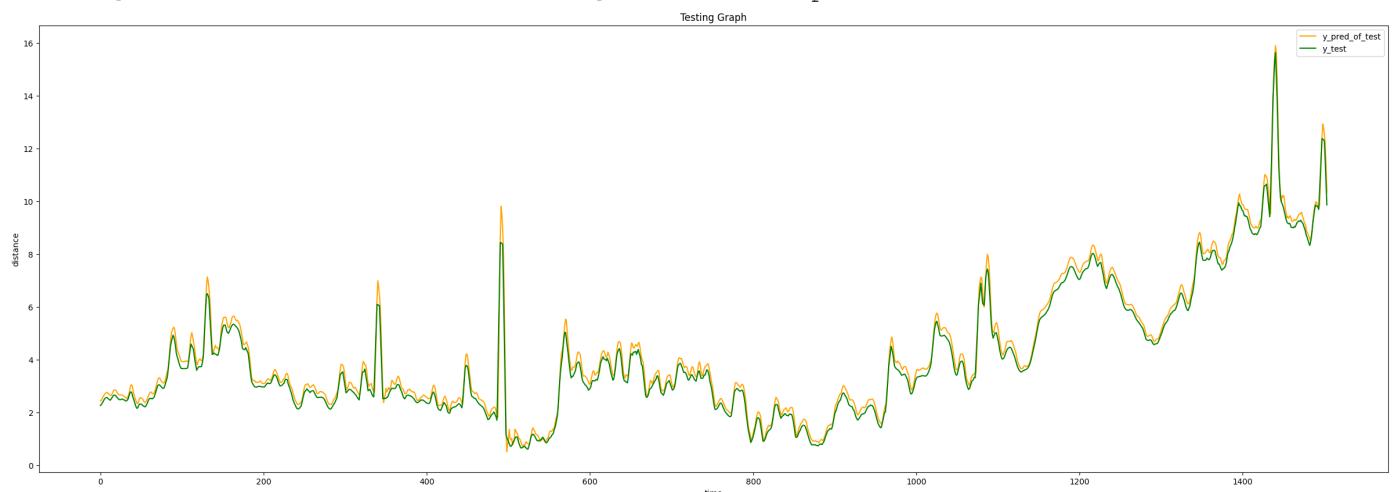
Epoch 18/35

113/113 [=====] - 4s 33ms/step - loss: 5.8970e-04

Epoch 19/35

113/113 [=====] - 4s 32ms/step - loss: 5.0771e-04

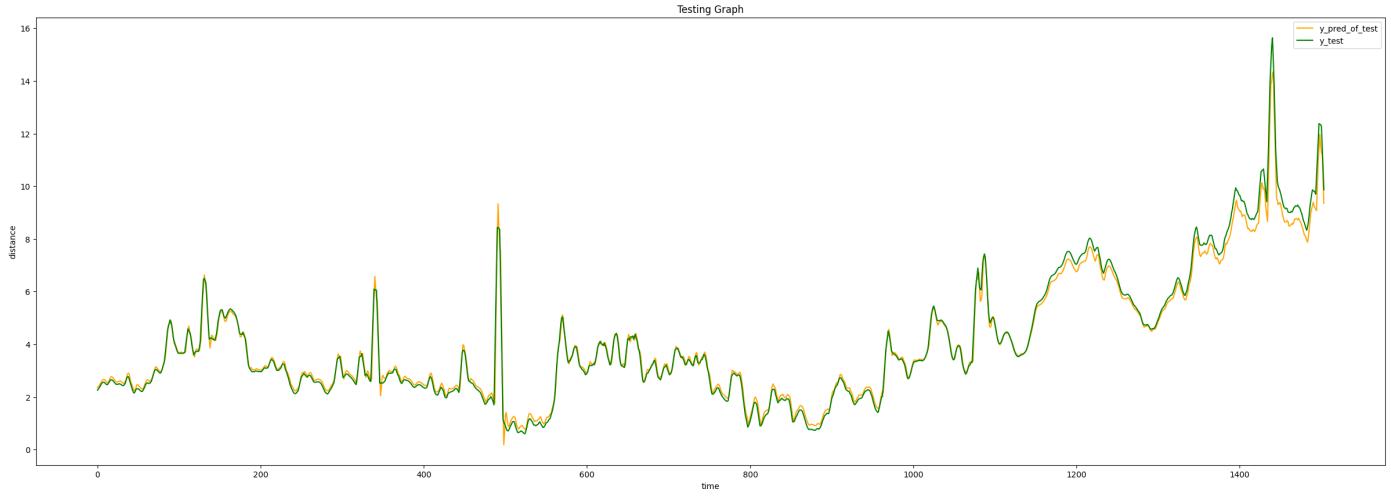
Epoch 20/35
 113/113 [=====] - 3s 30ms/step - loss: 4.9144e-04
 Epoch 21/35
 113/113 [=====] - 3s 30ms/step - loss: 4.9845e-04
 Epoch 22/35
 113/113 [=====] - 3s 30ms/step - loss: 4.3179e-04
 Epoch 23/35
 113/113 [=====] - 4s 32ms/step - loss: 4.1414e-04
 Epoch 24/35
 113/113 [=====] - 4s 31ms/step - loss: 4.1481e-04
 Epoch 25/35
 113/113 [=====] - 3s 29ms/step - loss: 4.2603e-04
 Epoch 26/35
 113/113 [=====] - 3s 30ms/step - loss: 4.0865e-04
 Epoch 27/35
 113/113 [=====] - 3s 29ms/step - loss: 2.9542e-04
 Epoch 28/35
 113/113 [=====] - 4s 33ms/step - loss: 2.9745e-04
 Epoch 29/35
 113/113 [=====] - 3s 30ms/step - loss: 3.6356e-04
 Epoch 30/35
 113/113 [=====] - 3s 30ms/step - loss: 2.9595e-04
 Epoch 31/35
 113/113 [=====] - 3s 29ms/step - loss: 3.2643e-04
 Epoch 32/35
 113/113 [=====] - 3s 30ms/step - loss: 3.6169e-04
 Epoch 33/35
 113/113 [=====] - 4s 32ms/step - loss: 3.5547e-04
 Epoch 34/35
 113/113 [=====] - 3s 30ms/step - loss: 2.3440e-04
 Epoch 35/35
 113/113 [=====] - 3s 30ms/step - loss: 2.7654e-04
 113/113 [=====] - 1s 9ms/step
 47/47 [=====] - 0s 9ms/step



Prediction results:
 r2_score: 0.988515828659669
 MAPE: 0.07274634093065498
 MAE: 0.23220666237108736
 RMSE: 0.2640416705063326

Epoch 1/35
 113/113 [=====] - 9s 47ms/step - loss: 0.0023
 Epoch 2/35
 113/113 [=====] - 5s 45ms/step - loss: 0.0018
 Epoch 3/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0014
 Epoch 4/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0011
 Epoch 5/35
 113/113 [=====] - 5s 45ms/step - loss: 9.1161e-04

Epoch 6/35
113/113 [=====] - 5s 47ms/step - loss: 5.8633e-04
Epoch 7/35
113/113 [=====] - 5s 48ms/step - loss: 4.6343e-04
Epoch 8/35
113/113 [=====] - 5s 45ms/step - loss: 4.3578e-04
Epoch 9/35
113/113 [=====] - 5s 46ms/step - loss: 4.3713e-04
Epoch 10/35
113/113 [=====] - 5s 48ms/step - loss: 3.4398e-04
Epoch 11/35
113/113 [=====] - 5s 45ms/step - loss: 3.0470e-04
Epoch 12/35
113/113 [=====] - 5s 46ms/step - loss: 2.6187e-04
Epoch 13/35
113/113 [=====] - 5s 48ms/step - loss: 2.7947e-04
Epoch 14/35
113/113 [=====] - 5s 45ms/step - loss: 2.5250e-04
Epoch 15/35
113/113 [=====] - 5s 46ms/step - loss: 2.7762e-04
Epoch 16/35
113/113 [=====] - 6s 49ms/step - loss: 3.2467e-04
Epoch 17/35
113/113 [=====] - 5s 45ms/step - loss: 3.0559e-04
Epoch 18/35
113/113 [=====] - 5s 46ms/step - loss: 2.6738e-04
Epoch 19/35
113/113 [=====] - 6s 49ms/step - loss: 2.7845e-04
Epoch 20/35
113/113 [=====] - 5s 46ms/step - loss: 2.0573e-04
Epoch 21/35
113/113 [=====] - 5s 46ms/step - loss: 1.9661e-04
Epoch 22/35
113/113 [=====] - 6s 49ms/step - loss: 1.9487e-04
Epoch 23/35
113/113 [=====] - 5s 48ms/step - loss: 2.2232e-04
Epoch 24/35
113/113 [=====] - 5s 46ms/step - loss: 1.6353e-04
Epoch 25/35
113/113 [=====] - 6s 49ms/step - loss: 1.8083e-04
Epoch 26/35
113/113 [=====] - 5s 45ms/step - loss: 1.7635e-04
Epoch 27/35
113/113 [=====] - 5s 46ms/step - loss: 1.7175e-04
Epoch 28/35
113/113 [=====] - 6s 49ms/step - loss: 1.7776e-04
Epoch 29/35
113/113 [=====] - 5s 45ms/step - loss: 3.0899e-04
Epoch 30/35
113/113 [=====] - 5s 45ms/step - loss: 1.4169e-04
Epoch 31/35
113/113 [=====] - 6s 49ms/step - loss: 1.3721e-04
Epoch 32/35
113/113 [=====] - 5s 46ms/step - loss: 1.6088e-04
Epoch 33/35
113/113 [=====] - 5s 47ms/step - loss: 1.3864e-04
Epoch 34/35
113/113 [=====] - 6s 49ms/step - loss: 1.6952e-04
Epoch 35/35
113/113 [=====] - 5s 46ms/step - loss: 1.4202e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 17ms/step



Prediction results:

r2_score: 0.9901502135003

MAPE: 0.04993912990521244

MAE: 0.16684388595953514

RSME: 0.24453219628208003

```
[["HDFCBANK_ICICIBANK"], [0.988515828659669, 0.2640416705063326, 0.23220666237108736, 0.07274634093065498], [0.9901502135003, 0.24453219628208003, 0.16684388595953514, 0.04993912990521244]]
```


Pair Number: 11

Epoch 1/35

113/113 [=====] - 6s 30ms/step - loss: 0.0781

Epoch 2/35

113/113 [=====] - 3s 30ms/step - loss: 0.0127

Epoch 3/35

113/113 [=====] - 3s 30ms/step - loss: 0.0057

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0044

Epoch 5/35

113/113 [=====] - 4s 33ms/step - loss: 0.0026

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0024

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0020

Epoch 8/35

113/113 [=====] - 3s 30ms/step - loss: 0.0017

Epoch 9/35

113/113 [=====] - 3s 31ms/step - loss: 0.0013

Epoch 10/35

113/113 [=====] - 4s 33ms/step - loss: 0.0013

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 12/35

113/113 [=====] - 3s 31ms/step - loss: 0.0012

Epoch 13/35

113/113 [=====] - 3s 30ms/step - loss: 0.0012

Epoch 14/35

113/113 [=====] - 4s 32ms/step - loss: 8.0807e-04

Epoch 15/35

113/113 [=====] - 4s 31ms/step - loss: 0.0010

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 9.3158e-04

Epoch 17/35

113/113 [=====] - 4s 31ms/step - loss: 8.4008e-04

Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 0.0010

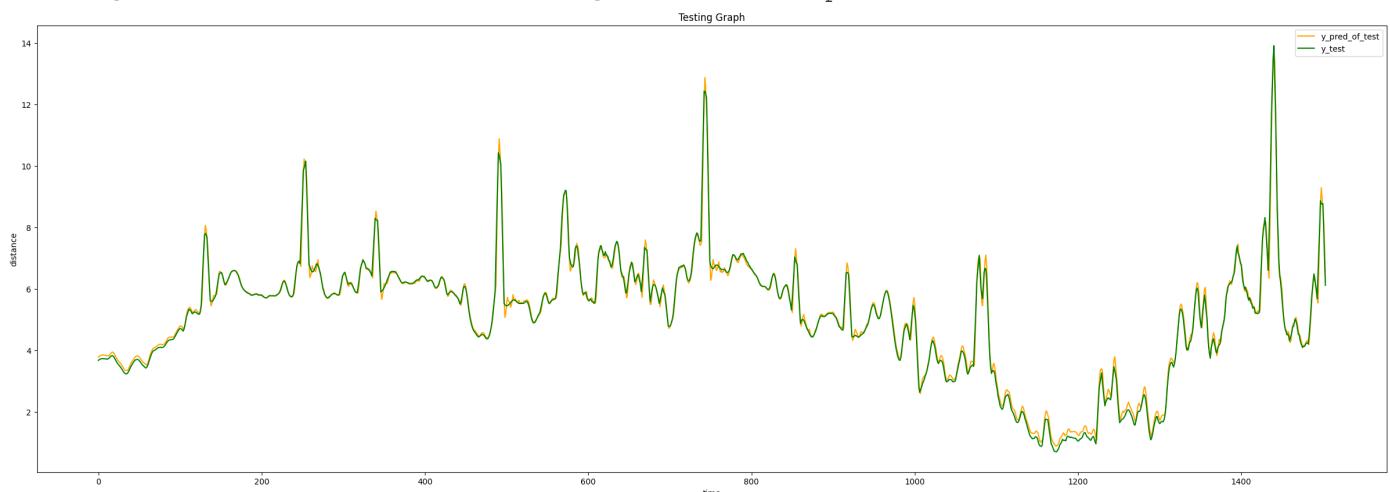
Epoch 19/35

113/113 [=====] - 4s 33ms/step - loss: 6.0292e-04

```

Epoch 20/35
113/113 [=====] - 3s 30ms/step - loss: 6.0835e-04
Epoch 21/35
113/113 [=====] - 3s 30ms/step - loss: 8.7007e-04
Epoch 22/35
113/113 [=====] - 3s 30ms/step - loss: 7.8204e-04
Epoch 23/35
113/113 [=====] - 4s 32ms/step - loss: 6.7142e-04
Epoch 24/35
113/113 [=====] - 4s 32ms/step - loss: 5.7350e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 5.0732e-04
Epoch 26/35
113/113 [=====] - 3s 30ms/step - loss: 6.8678e-04
Epoch 27/35
113/113 [=====] - 3s 30ms/step - loss: 6.0587e-04
Epoch 28/35
113/113 [=====] - 4s 33ms/step - loss: 4.7556e-04
Epoch 29/35
113/113 [=====] - 3s 31ms/step - loss: 4.6483e-04
Epoch 30/35
113/113 [=====] - 3s 30ms/step - loss: 7.0264e-04
Epoch 31/35
113/113 [=====] - 3s 30ms/step - loss: 4.6554e-04
Epoch 32/35
113/113 [=====] - 3s 31ms/step - loss: 5.4847e-04
Epoch 33/35
113/113 [=====] - 4s 33ms/step - loss: 6.1429e-04
Epoch 34/35
113/113 [=====] - 3s 30ms/step - loss: 4.1558e-04
Epoch 35/35
113/113 [=====] - 3s 30ms/step - loss: 4.1147e-04
113/113 [=====] - 1s 10ms/step
47/47 [=====] - 0s 10ms/step

```



Prediction results:

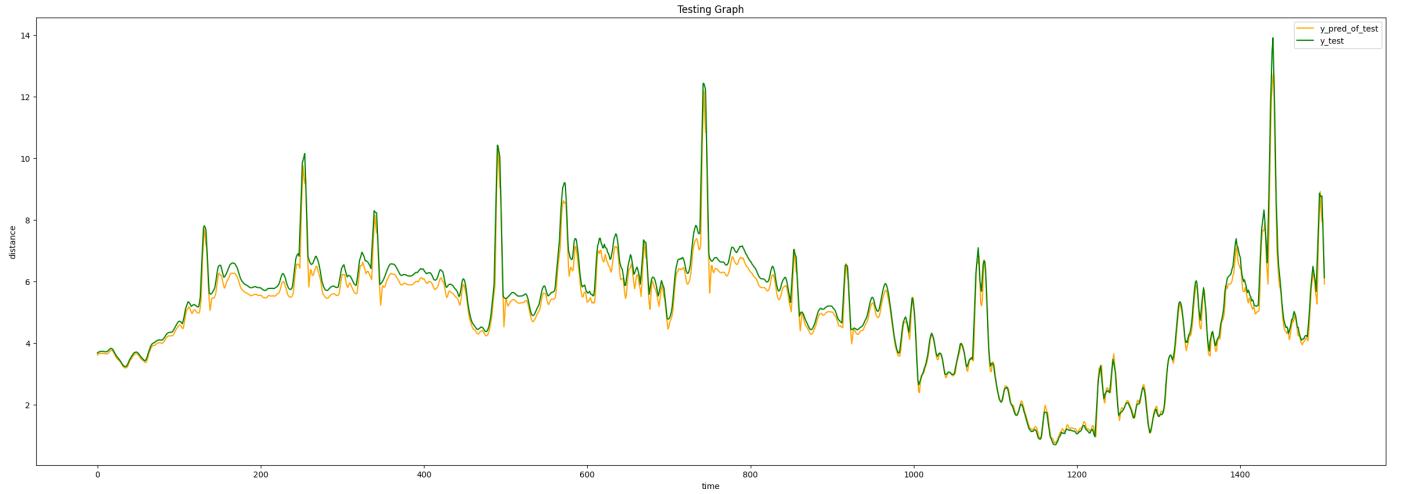
r2_score: 0.9937828441681776
 MAPE: 0.03034134098176739
 MAE: 0.10148481412514301
 RMSE: 0.15225858991911362

```

Epoch 1/35
113/113 [=====] - 8s 44ms/step - loss: 0.0050
Epoch 2/35
113/113 [=====] - 5s 43ms/step - loss: 0.0036
Epoch 3/35
113/113 [=====] - 5s 42ms/step - loss: 0.0027
Epoch 4/35
113/113 [=====] - 5s 45ms/step - loss: 0.0020
Epoch 5/35
113/113 [=====] - 5s 42ms/step - loss: 0.0015

```

Epoch 6/35
113/113 [=====] - 5s 42ms/step - loss: 9.9490e-04
Epoch 7/35
113/113 [=====] - 5s 46ms/step - loss: 0.0010
Epoch 8/35
113/113 [=====] - 5s 42ms/step - loss: 5.6869e-04
Epoch 9/35
113/113 [=====] - 5s 43ms/step - loss: 5.4625e-04
Epoch 10/35
113/113 [=====] - 5s 46ms/step - loss: 4.8717e-04
Epoch 11/35
113/113 [=====] - 5s 42ms/step - loss: 4.9456e-04
Epoch 12/35
113/113 [=====] - 5s 42ms/step - loss: 5.3636e-04
Epoch 13/35
113/113 [=====] - 5s 45ms/step - loss: 4.4983e-04
Epoch 14/35
113/113 [=====] - 5s 45ms/step - loss: 5.1358e-04
Epoch 15/35
113/113 [=====] - 5s 42ms/step - loss: 3.7099e-04
Epoch 16/35
113/113 [=====] - 5s 42ms/step - loss: 3.8066e-04
Epoch 17/35
113/113 [=====] - 5s 45ms/step - loss: 3.4532e-04
Epoch 18/35
113/113 [=====] - 5s 42ms/step - loss: 3.8582e-04
Epoch 19/35
113/113 [=====] - 5s 42ms/step - loss: 3.1576e-04
Epoch 20/35
113/113 [=====] - 5s 46ms/step - loss: 2.6562e-04
Epoch 21/35
113/113 [=====] - 5s 42ms/step - loss: 3.2085e-04
Epoch 22/35
113/113 [=====] - 5s 42ms/step - loss: 3.9162e-04
Epoch 23/35
113/113 [=====] - 5s 45ms/step - loss: 2.5884e-04
Epoch 24/35
113/113 [=====] - 5s 43ms/step - loss: 2.7551e-04
Epoch 25/35
113/113 [=====] - 5s 42ms/step - loss: 2.1841e-04
Epoch 26/35
113/113 [=====] - 5s 43ms/step - loss: 2.2524e-04
Epoch 27/35
113/113 [=====] - 5s 45ms/step - loss: 2.7895e-04
Epoch 28/35
113/113 [=====] - 5s 42ms/step - loss: 2.9170e-04
Epoch 29/35
113/113 [=====] - 5s 42ms/step - loss: 2.6852e-04
Epoch 30/35
113/113 [=====] - 5s 46ms/step - loss: 2.3400e-04
Epoch 31/35
113/113 [=====] - 5s 42ms/step - loss: 3.5679e-04
Epoch 32/35
113/113 [=====] - 5s 42ms/step - loss: 1.6413e-04
Epoch 33/35
113/113 [=====] - 5s 46ms/step - loss: 2.2393e-04
Epoch 34/35
113/113 [=====] - 5s 42ms/step - loss: 2.5696e-04
Epoch 35/35
113/113 [=====] - 5s 42ms/step - loss: 2.6799e-04
113/113 [=====] - 2s 15ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9773253423439

MAPE: 0.04356370618763486

MAE: 0.2282918856641063

RSME: 0.29077448573972836

```
["HDFCBANK_SIEMENS", [0.9937828441681776, 0.15225858991911362, 0.10148481412514301, 0.03034134098176739], [0.9773253423439, 0.29077448573972836, 0.2282918856641063, 0.04356370618763486]]
```


Pair Number: 12

Epoch 1/35

113/113 [=====] - 6s 29ms/step - loss: 0.0616

Epoch 2/35

113/113 [=====] - 3s 29ms/step - loss: 0.0088

Epoch 3/35

113/113 [=====] - 3s 29ms/step - loss: 0.0046

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0027

Epoch 5/35

113/113 [=====] - 4s 32ms/step - loss: 0.0021

Epoch 6/35

113/113 [=====] - 3s 29ms/step - loss: 0.0018

Epoch 7/35

113/113 [=====] - 3s 29ms/step - loss: 0.0014

Epoch 8/35

113/113 [=====] - 3s 29ms/step - loss: 0.0012

Epoch 9/35

113/113 [=====] - 4s 31ms/step - loss: 0.0010

Epoch 10/35

113/113 [=====] - 4s 31ms/step - loss: 9.8025e-04

Epoch 11/35

113/113 [=====] - 3s 29ms/step - loss: 8.0920e-04

Epoch 12/35

113/113 [=====] - 3s 29ms/step - loss: 8.6953e-04

Epoch 13/35

113/113 [=====] - 3s 29ms/step - loss: 7.9227e-04

Epoch 14/35

113/113 [=====] - 4s 34ms/step - loss: 7.3951e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 6.8372e-04

Epoch 16/35

113/113 [=====] - 3s 29ms/step - loss: 6.8459e-04

Epoch 17/35

113/113 [=====] - 3s 29ms/step - loss: 6.2077e-04

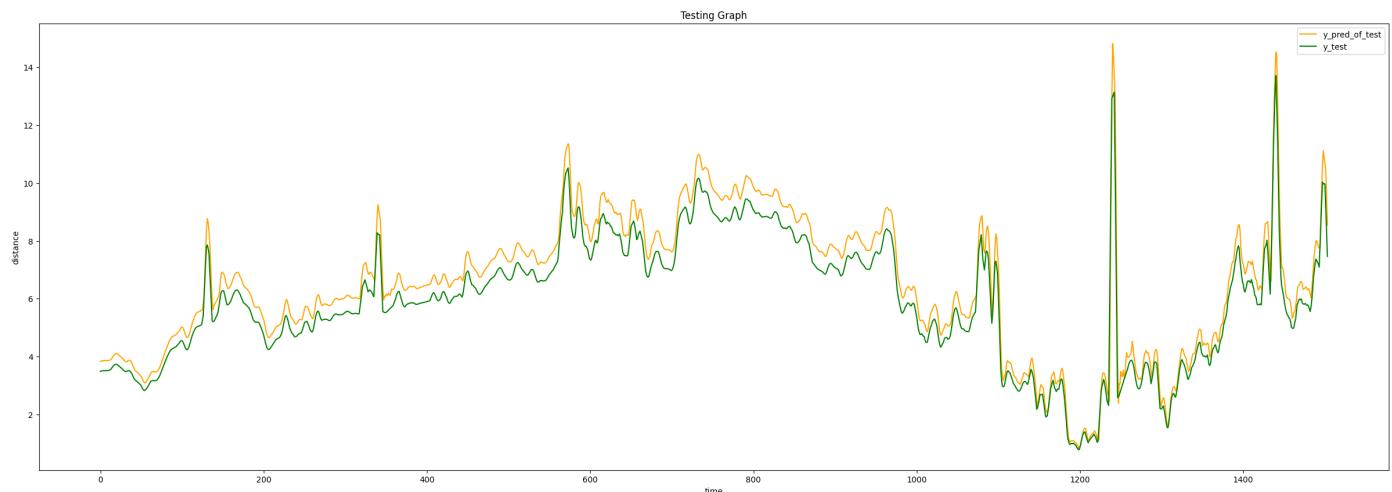
Epoch 18/35

113/113 [=====] - 3s 30ms/step - loss: 5.3294e-04

Epoch 19/35

113/113 [=====] - 4s 33ms/step - loss: 5.7351e-04

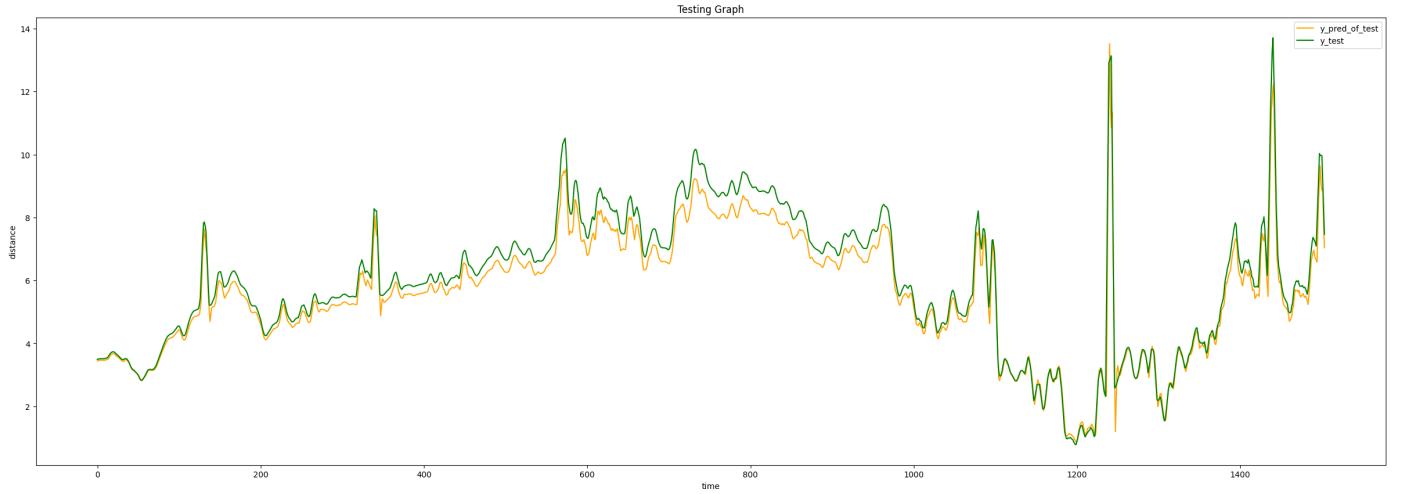
Epoch 20/35
 113/113 [=====] - 3s 29ms/step - loss: 5.0580e-04
 Epoch 21/35
 113/113 [=====] - 3s 29ms/step - loss: 4.6733e-04
 Epoch 22/35
 113/113 [=====] - 3s 29ms/step - loss: 5.0552e-04
 Epoch 23/35
 113/113 [=====] - 4s 31ms/step - loss: 4.3606e-04
 Epoch 24/35
 113/113 [=====] - 4s 31ms/step - loss: 4.2552e-04
 Epoch 25/35
 113/113 [=====] - 3s 29ms/step - loss: 4.2184e-04
 Epoch 26/35
 113/113 [=====] - 3s 29ms/step - loss: 4.6094e-04
 Epoch 27/35
 113/113 [=====] - 3s 30ms/step - loss: 4.5583e-04
 Epoch 28/35
 113/113 [=====] - 4s 32ms/step - loss: 3.4054e-04
 Epoch 29/35
 113/113 [=====] - 3s 30ms/step - loss: 4.0515e-04
 Epoch 30/35
 113/113 [=====] - 3s 30ms/step - loss: 4.3351e-04
 Epoch 31/35
 113/113 [=====] - 3s 29ms/step - loss: 3.5720e-04
 Epoch 32/35
 113/113 [=====] - 3s 29ms/step - loss: 3.5222e-04
 Epoch 33/35
 113/113 [=====] - 4s 38ms/step - loss: 3.1009e-04
 Epoch 34/35
 113/113 [=====] - 6s 49ms/step - loss: 4.7764e-04
 Epoch 35/35
 113/113 [=====] - 4s 39ms/step - loss: 4.3865e-04
 113/113 [=====] - 2s 11ms/step
 47/47 [=====] - 1s 12ms/step



Prediction results:
 r2_score: 0.9213560183702837
 MAPE: 0.0955374554147427
 MAE: 0.5558312957209919
 RMSE: 0.599858354518449

Epoch 1/35
 113/113 [=====] - 9s 45ms/step - loss: 0.0030
 Epoch 2/35
 113/113 [=====] - 5s 45ms/step - loss: 0.0022
 Epoch 3/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0018
 Epoch 4/35
 113/113 [=====] - 6s 54ms/step - loss: 0.0013
 Epoch 5/35
 113/113 [=====] - 6s 49ms/step - loss: 8.6316e-04

Epoch 6/35
113/113 [=====] - 5s 47ms/step - loss: 6.8218e-04
Epoch 7/35
113/113 [=====] - 5s 44ms/step - loss: 5.3501e-04
Epoch 8/35
113/113 [=====] - 5s 47ms/step - loss: 4.9511e-04
Epoch 9/35
113/113 [=====] - 5s 47ms/step - loss: 4.3957e-04
Epoch 10/35
113/113 [=====] - 5s 44ms/step - loss: 4.2375e-04
Epoch 11/35
113/113 [=====] - 5s 46ms/step - loss: 3.2761e-04
Epoch 12/35
113/113 [=====] - 5s 48ms/step - loss: 3.3455e-04
Epoch 13/35
113/113 [=====] - 5s 45ms/step - loss: 3.6627e-04
Epoch 14/35
113/113 [=====] - 5s 45ms/step - loss: 5.0542e-04
Epoch 15/35
113/113 [=====] - 5s 48ms/step - loss: 3.2062e-04
Epoch 16/35
113/113 [=====] - 5s 45ms/step - loss: 2.8582e-04
Epoch 17/35
113/113 [=====] - 5s 44ms/step - loss: 2.5429e-04
Epoch 18/35
113/113 [=====] - 6s 50ms/step - loss: 2.9796e-04
Epoch 19/35
113/113 [=====] - 5s 44ms/step - loss: 3.7246e-04
Epoch 20/35
113/113 [=====] - 5s 45ms/step - loss: 3.9063e-04
Epoch 21/35
113/113 [=====] - 6s 49ms/step - loss: 2.5928e-04
Epoch 22/35
113/113 [=====] - 5s 44ms/step - loss: 2.1759e-04
Epoch 23/35
113/113 [=====] - 5s 45ms/step - loss: 2.1503e-04
Epoch 24/35
113/113 [=====] - 6s 49ms/step - loss: 2.0593e-04
Epoch 25/35
113/113 [=====] - 5s 45ms/step - loss: 2.3988e-04
Epoch 26/35
113/113 [=====] - 5s 44ms/step - loss: 2.3788e-04
Epoch 27/35
113/113 [=====] - 6s 49ms/step - loss: 1.8617e-04
Epoch 28/35
113/113 [=====] - 5s 46ms/step - loss: 2.0402e-04
Epoch 29/35
113/113 [=====] - 5s 45ms/step - loss: 2.1475e-04
Epoch 30/35
113/113 [=====] - 6s 50ms/step - loss: 1.8140e-04
Epoch 31/35
113/113 [=====] - 5s 48ms/step - loss: 2.1199e-04
Epoch 32/35
113/113 [=====] - 6s 50ms/step - loss: 1.8046e-04
Epoch 33/35
113/113 [=====] - 6s 50ms/step - loss: 2.3979e-04
Epoch 34/35
113/113 [=====] - 5s 45ms/step - loss: 2.1644e-04
Epoch 35/35
113/113 [=====] - 5s 45ms/step - loss: 1.8611e-04
113/113 [=====] - 3s 19ms/step
47/47 [=====] - 1s 18ms/step



Prediction results:

r2_score: 0.9585325012073252

MAPE: 0.05377210829777202

MAE: 0.3483363947216197

RSME: 0.4355819608913507

```
[["HDFCBANK_ABB", [0.9213560183702837, 0.599858354518449, 0.5558312957209919, 0.0955374554147427], [0.9585325012073252, 0.4355819608913507, 0.3483363947216197, 0.0537721082977202]]
```


Pair Number: 13

Epoch 1/35

113/113 [=====] - 5s 29ms/step - loss: 0.0810

Epoch 2/35

113/113 [=====] - 3s 30ms/step - loss: 0.0163

Epoch 3/35

113/113 [=====] - 3s 30ms/step - loss: 0.0065

Epoch 4/35

113/113 [=====] - 4s 33ms/step - loss: 0.0041

Epoch 5/35

113/113 [=====] - 3s 30ms/step - loss: 0.0028

Epoch 6/35

113/113 [=====] - 3s 30ms/step - loss: 0.0022

Epoch 7/35

113/113 [=====] - 3s 30ms/step - loss: 0.0019

Epoch 8/35

113/113 [=====] - 4s 31ms/step - loss: 0.0015

Epoch 9/35

113/113 [=====] - 4s 32ms/step - loss: 0.0014

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 0.0011

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 0.0012

Epoch 12/35

113/113 [=====] - 3s 30ms/step - loss: 0.0012

Epoch 13/35

113/113 [=====] - 4s 33ms/step - loss: 8.7883e-04

Epoch 14/35

113/113 [=====] - 3s 30ms/step - loss: 8.2583e-04

Epoch 15/35

113/113 [=====] - 3s 30ms/step - loss: 9.8066e-04

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 7.0526e-04

Epoch 17/35

113/113 [=====] - 3s 30ms/step - loss: 7.3458e-04

Epoch 18/35

113/113 [=====] - 4s 33ms/step - loss: 6.6452e-04

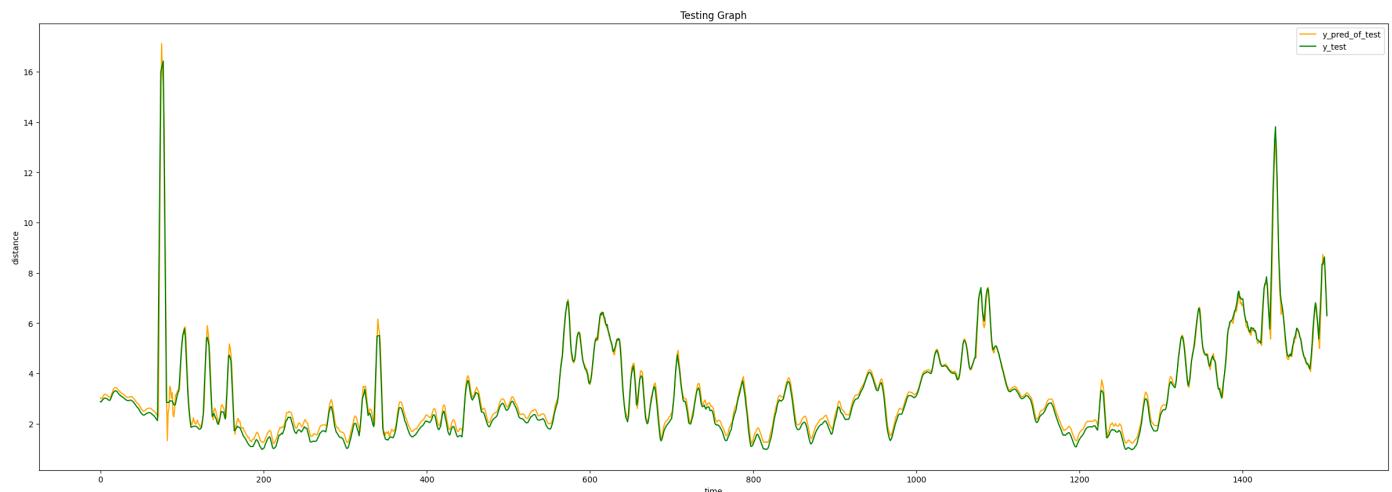
Epoch 19/35

113/113 [=====] - 3s 30ms/step - loss: 6.1677e-04

```

Epoch 20/35
113/113 [=====] - 3s 30ms/step - loss: 6.4306e-04
Epoch 21/35
113/113 [=====] - 3s 30ms/step - loss: 6.7271e-04
Epoch 22/35
113/113 [=====] - 4s 32ms/step - loss: 5.2053e-04
Epoch 23/35
113/113 [=====] - 4s 32ms/step - loss: 5.6532e-04
Epoch 24/35
113/113 [=====] - 3s 31ms/step - loss: 5.2997e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 6.0020e-04
Epoch 26/35
113/113 [=====] - 3s 30ms/step - loss: 4.6851e-04
Epoch 27/35
113/113 [=====] - 4s 33ms/step - loss: 4.6136e-04
Epoch 28/35
113/113 [=====] - 3s 30ms/step - loss: 4.3608e-04
Epoch 29/35
113/113 [=====] - 3s 30ms/step - loss: 5.7314e-04
Epoch 30/35
113/113 [=====] - 3s 30ms/step - loss: 4.7117e-04
Epoch 31/35
113/113 [=====] - 4s 32ms/step - loss: 4.0487e-04
Epoch 32/35
113/113 [=====] - 4s 32ms/step - loss: 3.6495e-04
Epoch 33/35
113/113 [=====] - 3s 30ms/step - loss: 5.5535e-04
Epoch 34/35
113/113 [=====] - 3s 30ms/step - loss: 6.3793e-04
Epoch 35/35
113/113 [=====] - 3s 30ms/step - loss: 3.7004e-04
113/113 [=====] - 1s 10ms/step
47/47 [=====] - 1s 11ms/step

```



Prediction results:

```

r2_score: 0.982358062637046
MAPE: 0.0814463614080419
MAE: 0.18704672232533057
RMSE: 0.24548373196327464

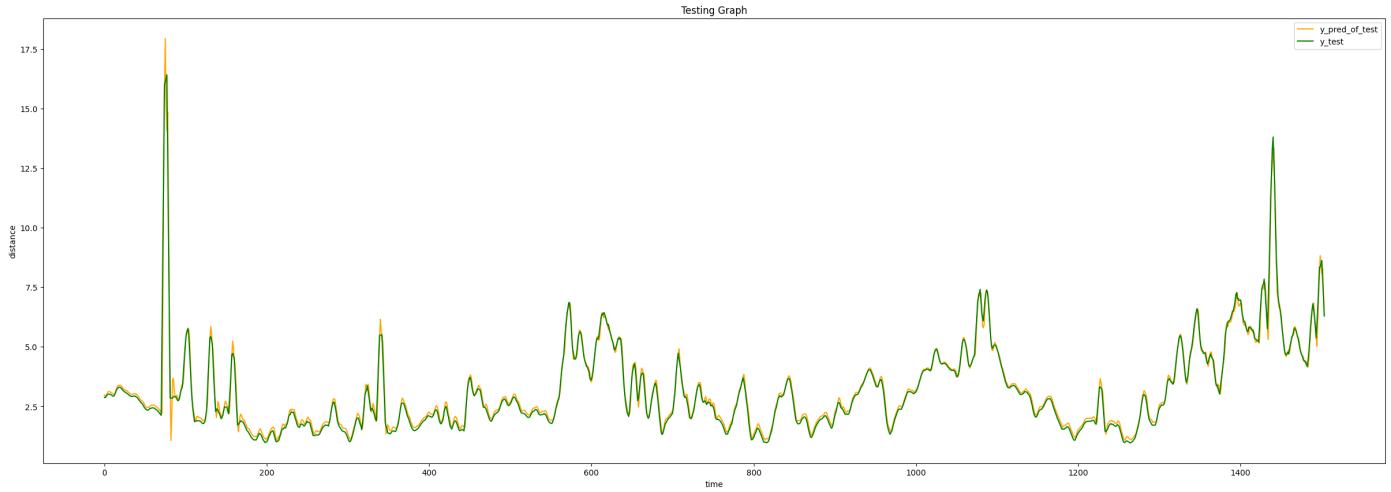
```

```

Epoch 1/35
113/113 [=====] - 8s 43ms/step - loss: 0.0042
Epoch 2/35
113/113 [=====] - 5s 43ms/step - loss: 0.0028
Epoch 3/35
113/113 [=====] - 5s 47ms/step - loss: 0.0021
Epoch 4/35
113/113 [=====] - 5s 42ms/step - loss: 0.0017
Epoch 5/35
113/113 [=====] - 5s 42ms/step - loss: 0.0012

```

Epoch 6/35
113/113 [=====] - 5s 47ms/step - loss: 8.4341e-04
Epoch 7/35
113/113 [=====] - 5s 47ms/step - loss: 0.0010
Epoch 8/35
113/113 [=====] - 5s 43ms/step - loss: 5.8488e-04
Epoch 9/35
113/113 [=====] - 5s 47ms/step - loss: 5.6839e-04
Epoch 10/35
113/113 [=====] - 5s 42ms/step - loss: 5.1930e-04
Epoch 11/35
113/113 [=====] - 5s 42ms/step - loss: 4.8031e-04
Epoch 12/35
113/113 [=====] - 5s 44ms/step - loss: 4.7679e-04
Epoch 13/35
113/113 [=====] - 5s 45ms/step - loss: 4.8749e-04
Epoch 14/35
113/113 [=====] - 5s 43ms/step - loss: 4.3961e-04
Epoch 15/35
113/113 [=====] - 5s 44ms/step - loss: 3.4077e-04
Epoch 16/35
113/113 [=====] - 5s 46ms/step - loss: 3.5236e-04
Epoch 17/35
113/113 [=====] - 5s 42ms/step - loss: 4.0654e-04
Epoch 18/35
113/113 [=====] - 5s 43ms/step - loss: 3.0100e-04
Epoch 19/35
113/113 [=====] - 5s 46ms/step - loss: 3.3288e-04
Epoch 20/35
113/113 [=====] - 5s 42ms/step - loss: 2.6559e-04
Epoch 21/35
113/113 [=====] - 5s 43ms/step - loss: 2.9052e-04
Epoch 22/35
113/113 [=====] - 5s 46ms/step - loss: 2.8574e-04
Epoch 23/35
113/113 [=====] - 5s 42ms/step - loss: 4.0292e-04
Epoch 24/35
113/113 [=====] - 5s 42ms/step - loss: 2.7592e-04
Epoch 25/35
113/113 [=====] - 5s 45ms/step - loss: 2.6529e-04
Epoch 26/35
113/113 [=====] - 5s 43ms/step - loss: 2.9154e-04
Epoch 27/35
113/113 [=====] - 5s 43ms/step - loss: 2.3459e-04
Epoch 28/35
113/113 [=====] - 5s 44ms/step - loss: 2.2275e-04
Epoch 29/35
113/113 [=====] - 5s 45ms/step - loss: 2.4222e-04
Epoch 30/35
113/113 [=====] - 5s 43ms/step - loss: 2.5292e-04
Epoch 31/35
113/113 [=====] - 5s 43ms/step - loss: 2.1952e-04
Epoch 32/35
113/113 [=====] - 5s 46ms/step - loss: 2.5383e-04
Epoch 33/35
113/113 [=====] - 5s 43ms/step - loss: 3.4895e-04
Epoch 34/35
113/113 [=====] - 5s 43ms/step - loss: 2.2135e-04
Epoch 35/35
113/113 [=====] - 5s 47ms/step - loss: 2.0196e-04
113/113 [=====] - 2s 16ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9851730230911558

MAPE: 0.05466326915061246

MAE: 0.14055759366340492

RSME: 0.22504837672605518

["HDFCBANK_TCS", [0.982358062637046, 0.24548373196327464, 0.18704672232533057, 0.0814463614080419], [0.9851730230911558, 0.22504837672605518, 0.14055759366340492, 0.05466326915061246]]

Pair Number: 14

Epoch 1/35

113/113 [=====] - 6s 31ms/step - loss: 0.0794

Epoch 2/35

113/113 [=====] - 4s 33ms/step - loss: 0.0165

Epoch 3/35

113/113 [=====] - 4s 33ms/step - loss: 0.0068

Epoch 4/35

113/113 [=====] - 3s 31ms/step - loss: 0.0044

Epoch 5/35

113/113 [=====] - 3s 31ms/step - loss: 0.0031

Epoch 6/35

113/113 [=====] - 4s 31ms/step - loss: 0.0025

Epoch 7/35

113/113 [=====] - 4s 34ms/step - loss: 0.0021

Epoch 8/35

113/113 [=====] - 4s 31ms/step - loss: 0.0019

Epoch 9/35

113/113 [=====] - 4s 31ms/step - loss: 0.0015

Epoch 10/35

113/113 [=====] - 3s 31ms/step - loss: 0.0013

Epoch 11/35

113/113 [=====] - 4s 33ms/step - loss: 0.0011

Epoch 12/35

113/113 [=====] - 4s 32ms/step - loss: 0.0012

Epoch 13/35

113/113 [=====] - 4s 31ms/step - loss: 0.0013

Epoch 14/35

113/113 [=====] - 4s 31ms/step - loss: 0.0011

Epoch 15/35

113/113 [=====] - 3s 31ms/step - loss: 0.0010

Epoch 16/35

113/113 [=====] - 4s 34ms/step - loss: 0.0010

Epoch 17/35

113/113 [=====] - 4s 31ms/step - loss: 8.6692e-04

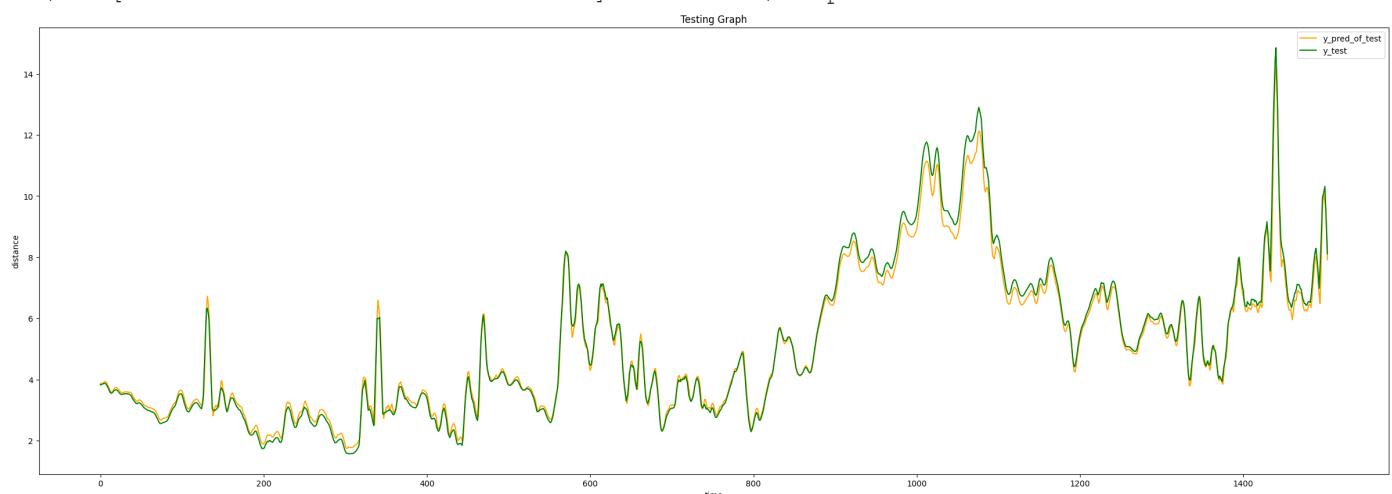
Epoch 18/35

113/113 [=====] - 4s 31ms/step - loss: 8.4998e-04

Epoch 19/35

113/113 [=====] - 4s 31ms/step - loss: 8.4865e-04

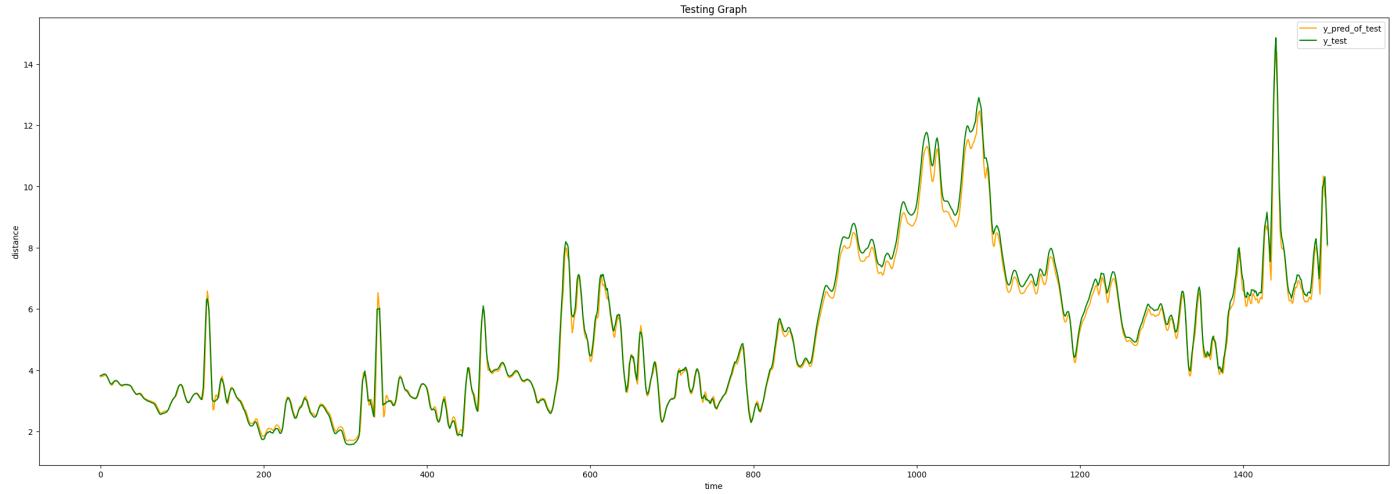
Epoch 20/35
 113/113 [=====] - 4s 33ms/step - loss: 8.5606e-04
 Epoch 21/35
 113/113 [=====] - 4s 32ms/step - loss: 7.7944e-04
 Epoch 22/35
 113/113 [=====] - 4s 31ms/step - loss: 6.7444e-04
 Epoch 23/35
 113/113 [=====] - 3s 31ms/step - loss: 7.2929e-04
 Epoch 24/35
 113/113 [=====] - 4s 31ms/step - loss: 8.0035e-04
 Epoch 25/35
 113/113 [=====] - 4s 34ms/step - loss: 6.0293e-04
 Epoch 26/35
 113/113 [=====] - 4s 31ms/step - loss: 5.3437e-04
 Epoch 27/35
 113/113 [=====] - 4s 31ms/step - loss: 5.6838e-04
 Epoch 28/35
 113/113 [=====] - 4s 31ms/step - loss: 4.5981e-04
 Epoch 29/35
 113/113 [=====] - 4s 34ms/step - loss: 5.2865e-04
 Epoch 30/35
 113/113 [=====] - 4s 32ms/step - loss: 6.5751e-04
 Epoch 31/35
 113/113 [=====] - 3s 31ms/step - loss: 5.3488e-04
 Epoch 32/35
 113/113 [=====] - 3s 31ms/step - loss: 5.6990e-04
 Epoch 33/35
 113/113 [=====] - 4s 32ms/step - loss: 6.1012e-04
 Epoch 34/35
 113/113 [=====] - 4s 34ms/step - loss: 4.9392e-04
 Epoch 35/35
 113/113 [=====] - 4s 31ms/step - loss: 4.8056e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9905699005469192
 MAPE: 0.03608221149369388
 MAE: 0.18116777372329204
 RMSE: 0.24271691346802082

Epoch 1/35
 113/113 [=====] - 9s 50ms/step - loss: 0.0089
 Epoch 2/35
 113/113 [=====] - 5s 45ms/step - loss: 0.0042
 Epoch 3/35
 113/113 [=====] - 5s 44ms/step - loss: 0.0033
 Epoch 4/35
 113/113 [=====] - 6s 49ms/step - loss: 0.0027
 Epoch 5/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0022

Epoch 6/35
113/113 [=====] - 5s 45ms/step - loss: 0.0018
Epoch 7/35
113/113 [=====] - 5s 49ms/step - loss: 0.0015
Epoch 8/35
113/113 [=====] - 5s 45ms/step - loss: 0.0012
Epoch 9/35
113/113 [=====] - 5s 44ms/step - loss: 9.4958e-04
Epoch 10/35
113/113 [=====] - 6s 49ms/step - loss: 8.6752e-04
Epoch 11/35
113/113 [=====] - 5s 45ms/step - loss: 8.1419e-04
Epoch 12/35
113/113 [=====] - 5s 45ms/step - loss: 6.8189e-04
Epoch 13/35
113/113 [=====] - 6s 49ms/step - loss: 6.4735e-04
Epoch 14/35
113/113 [=====] - 5s 45ms/step - loss: 5.6981e-04
Epoch 15/35
113/113 [=====] - 5s 45ms/step - loss: 7.2990e-04
Epoch 16/35
113/113 [=====] - 6s 49ms/step - loss: 5.9477e-04
Epoch 17/35
113/113 [=====] - 5s 45ms/step - loss: 5.7701e-04
Epoch 18/35
113/113 [=====] - 5s 45ms/step - loss: 5.0356e-04
Epoch 19/35
113/113 [=====] - 5s 48ms/step - loss: 5.2136e-04
Epoch 20/35
113/113 [=====] - 5s 45ms/step - loss: 5.2617e-04
Epoch 21/35
113/113 [=====] - 5s 45ms/step - loss: 5.0262e-04
Epoch 22/35
113/113 [=====] - 5s 48ms/step - loss: 3.8871e-04
Epoch 23/35
113/113 [=====] - 5s 47ms/step - loss: 4.7457e-04
Epoch 24/35
113/113 [=====] - 5s 45ms/step - loss: 4.6144e-04
Epoch 25/35
113/113 [=====] - 5s 47ms/step - loss: 4.2262e-04
Epoch 26/35
113/113 [=====] - 5s 46ms/step - loss: 4.0584e-04
Epoch 27/35
113/113 [=====] - 5s 45ms/step - loss: 3.8002e-04
Epoch 28/35
113/113 [=====] - 5s 47ms/step - loss: 3.5622e-04
Epoch 29/35
113/113 [=====] - 5s 48ms/step - loss: 3.9406e-04
Epoch 30/35
113/113 [=====] - 5s 45ms/step - loss: 3.2928e-04
Epoch 31/35
113/113 [=====] - 5s 46ms/step - loss: 3.6583e-04
Epoch 32/35
113/113 [=====] - 5s 48ms/step - loss: 3.3839e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 3.6608e-04
Epoch 34/35
113/113 [=====] - 5s 46ms/step - loss: 3.2760e-04
Epoch 35/35
113/113 [=====] - 6s 49ms/step - loss: 3.0476e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9915775591204611

MAPE: 0.03084923610832124

MAE: 0.16782197009543226

RSME: 0.22938282118319167

```
[!"HDFCBANK_INFY", [0.9905699005469192, 0.24271691346802082, 0.18116777372329204, 0.036
08221149369388], [0.9915775591204611, 0.22938282118319167, 0.16782197009543226, 0.030849
23610832124]]
```


Pair Number: 15

Epoch 1/35

113/113 [=====] - 5s 30ms/step - loss: 0.1291

Epoch 2/35

113/113 [=====] - 4s 33ms/step - loss: 0.0241

Epoch 3/35

113/113 [=====] - 3s 30ms/step - loss: 0.0107

Epoch 4/35

113/113 [=====] - 3s 30ms/step - loss: 0.0059

Epoch 5/35

113/113 [=====] - 3s 30ms/step - loss: 0.0041

Epoch 6/35

113/113 [=====] - 4s 32ms/step - loss: 0.0036

Epoch 7/35

113/113 [=====] - 4s 32ms/step - loss: 0.0027

Epoch 8/35

113/113 [=====] - 3s 30ms/step - loss: 0.0025

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 0.0021

Epoch 10/35

113/113 [=====] - 3s 30ms/step - loss: 0.0019

Epoch 11/35

113/113 [=====] - 4s 34ms/step - loss: 0.0015

Epoch 12/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 13/35

113/113 [=====] - 3s 30ms/step - loss: 0.0013

Epoch 14/35

113/113 [=====] - 3s 31ms/step - loss: 0.0011

Epoch 15/35

113/113 [=====] - 4s 31ms/step - loss: 9.8460e-04

Epoch 16/35

113/113 [=====] - 4s 33ms/step - loss: 0.0011

Epoch 17/35

113/113 [=====] - 3s 30ms/step - loss: 0.0012

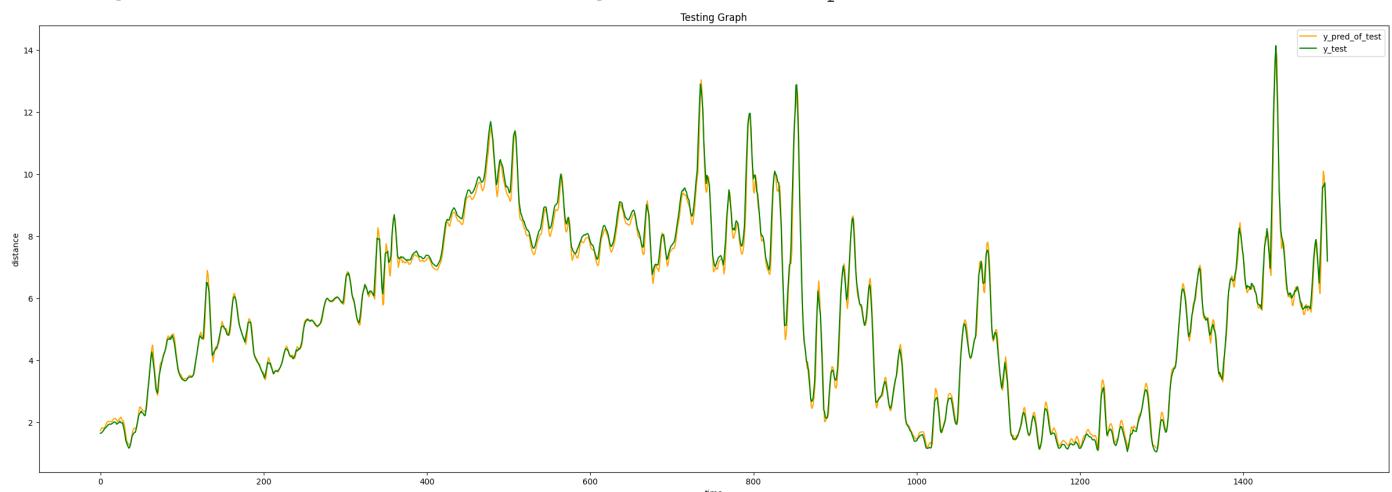
Epoch 18/35

113/113 [=====] - 4s 32ms/step - loss: 8.6299e-04

Epoch 19/35

113/113 [=====] - 4s 32ms/step - loss: 7.9191e-04

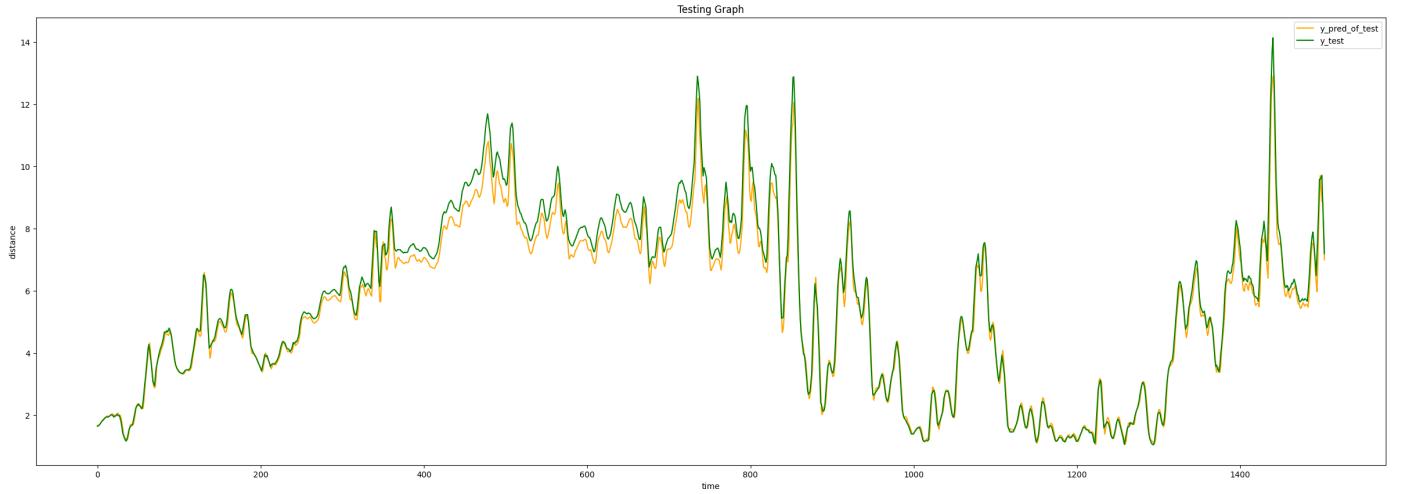
Epoch 20/35
 113/113 [=====] - 4s 34ms/step - loss: 8.3176e-04
 Epoch 21/35
 113/113 [=====] - 3s 30ms/step - loss: 7.9265e-04
 Epoch 22/35
 113/113 [=====] - 5s 46ms/step - loss: 6.6040e-04
 Epoch 23/35
 113/113 [=====] - 6s 52ms/step - loss: 6.9059e-04
 Epoch 24/35
 113/113 [=====] - 4s 36ms/step - loss: 7.3043e-04
 Epoch 25/35
 113/113 [=====] - 4s 34ms/step - loss: 6.6942e-04
 Epoch 26/35
 113/113 [=====] - 4s 33ms/step - loss: 7.7881e-04
 Epoch 27/35
 113/113 [=====] - 4s 32ms/step - loss: 7.3667e-04
 Epoch 28/35
 113/113 [=====] - 4s 32ms/step - loss: 9.5779e-04
 Epoch 29/35
 113/113 [=====] - 3s 30ms/step - loss: 6.0930e-04
 Epoch 30/35
 113/113 [=====] - 3s 31ms/step - loss: 6.5555e-04
 Epoch 31/35
 113/113 [=====] - 3s 30ms/step - loss: 6.9300e-04
 Epoch 32/35
 113/113 [=====] - 4s 34ms/step - loss: 5.8947e-04
 Epoch 33/35
 113/113 [=====] - 3s 31ms/step - loss: 6.2044e-04
 Epoch 34/35
 113/113 [=====] - 3s 30ms/step - loss: 5.3536e-04
 Epoch 35/35
 113/113 [=====] - 3s 31ms/step - loss: 5.0588e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9947782995879426
 MAPE: 0.03358140211852397
 MAE: 0.14982166992856652
 RMSE: 0.20380260121578064

Epoch 1/35
 113/113 [=====] - 9s 48ms/step - loss: 0.0067
 Epoch 2/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0038
 Epoch 3/35
 113/113 [=====] - 6s 51ms/step - loss: 0.0026
 Epoch 4/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0022
 Epoch 5/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0018

Epoch 6/35
113/113 [=====] - 6s 51ms/step - loss: 0.0016
Epoch 7/35
113/113 [=====] - 5s 48ms/step - loss: 0.0012
Epoch 8/35
113/113 [=====] - 5s 47ms/step - loss: 0.0011
Epoch 9/35
113/113 [=====] - 6s 51ms/step - loss: 8.3875e-04
Epoch 10/35
113/113 [=====] - 5s 47ms/step - loss: 6.4052e-04
Epoch 11/35
113/113 [=====] - 5s 48ms/step - loss: 6.2997e-04
Epoch 12/35
113/113 [=====] - 6s 50ms/step - loss: 5.5459e-04
Epoch 13/35
113/113 [=====] - 5s 47ms/step - loss: 5.2370e-04
Epoch 14/35
113/113 [=====] - 5s 49ms/step - loss: 5.4205e-04
Epoch 15/35
113/113 [=====] - 6s 49ms/step - loss: 4.6893e-04
Epoch 16/35
113/113 [=====] - 6s 50ms/step - loss: 4.4581e-04
Epoch 17/35
113/113 [=====] - 6s 50ms/step - loss: 5.8226e-04
Epoch 18/35
113/113 [=====] - 5s 48ms/step - loss: 3.4450e-04
Epoch 19/35
113/113 [=====] - 5s 46ms/step - loss: 3.7615e-04
Epoch 20/35
113/113 [=====] - 6s 50ms/step - loss: 4.8624e-04
Epoch 21/35
113/113 [=====] - 5s 48ms/step - loss: 3.2578e-04
Epoch 22/35
113/113 [=====] - 5s 46ms/step - loss: 3.1541e-04
Epoch 23/35
113/113 [=====] - 6s 50ms/step - loss: 3.5605e-04
Epoch 24/35
113/113 [=====] - 5s 47ms/step - loss: 2.6625e-04
Epoch 25/35
113/113 [=====] - 5s 47ms/step - loss: 2.8348e-04
Epoch 26/35
113/113 [=====] - 6s 51ms/step - loss: 3.1749e-04
Epoch 27/35
113/113 [=====] - 5s 47ms/step - loss: 3.2117e-04
Epoch 28/35
113/113 [=====] - 5s 47ms/step - loss: 4.3427e-04
Epoch 29/35
113/113 [=====] - 6s 52ms/step - loss: 2.5180e-04
Epoch 30/35
113/113 [=====] - 5s 47ms/step - loss: 2.5117e-04
Epoch 31/35
113/113 [=====] - 5s 46ms/step - loss: 2.3051e-04
Epoch 32/35
113/113 [=====] - 6s 51ms/step - loss: 2.6713e-04
Epoch 33/35
113/113 [=====] - 5s 47ms/step - loss: 2.2810e-04
Epoch 34/35
113/113 [=====] - 5s 47ms/step - loss: 2.1401e-04
Epoch 35/35
113/113 [=====] - 6s 51ms/step - loss: 2.8561e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 18ms/step



Prediction results:

r2_score: 0.982599345023208

MAPE: 0.046109411018506664

MAE: 0.2784230806403279

RSME: 0.3720373524571346

```
["HDFCBANK_TATASTEEL", [0.9947782995879426, 0.20380260121578064, 0.14982166992856652, 0.03358140211852397], [0.982599345023208, 0.3720373524571346, 0.2784230806403279, 0.046109411018506664]]
```


Pair Number: 16

Epoch 1/35

113/113 [=====] - 6s 30ms/step - loss: 0.0262

Epoch 2/35

113/113 [=====] - 4s 32ms/step - loss: 0.0038

Epoch 3/35

113/113 [=====] - 4s 32ms/step - loss: 0.0022

Epoch 4/35

113/113 [=====] - 3s 31ms/step - loss: 0.0015

Epoch 5/35

113/113 [=====] - 4s 31ms/step - loss: 0.0013

Epoch 6/35

113/113 [=====] - 4s 31ms/step - loss: 8.9090e-04

Epoch 7/35

113/113 [=====] - 4s 34ms/step - loss: 8.3632e-04

Epoch 8/35

113/113 [=====] - 3s 31ms/step - loss: 6.5995e-04

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 7.3483e-04

Epoch 10/35

113/113 [=====] - 3s 31ms/step - loss: 5.0974e-04

Epoch 11/35

113/113 [=====] - 4s 32ms/step - loss: 5.8721e-04

Epoch 12/35

113/113 [=====] - 4s 32ms/step - loss: 5.4478e-04

Epoch 13/35

113/113 [=====] - 3s 31ms/step - loss: 4.2124e-04

Epoch 14/35

113/113 [=====] - 3s 31ms/step - loss: 6.1097e-04

Epoch 15/35

113/113 [=====] - 3s 31ms/step - loss: 5.2653e-04

Epoch 16/35

113/113 [=====] - 4s 34ms/step - loss: 5.1787e-04

Epoch 17/35

113/113 [=====] - 3s 31ms/step - loss: 3.7863e-04

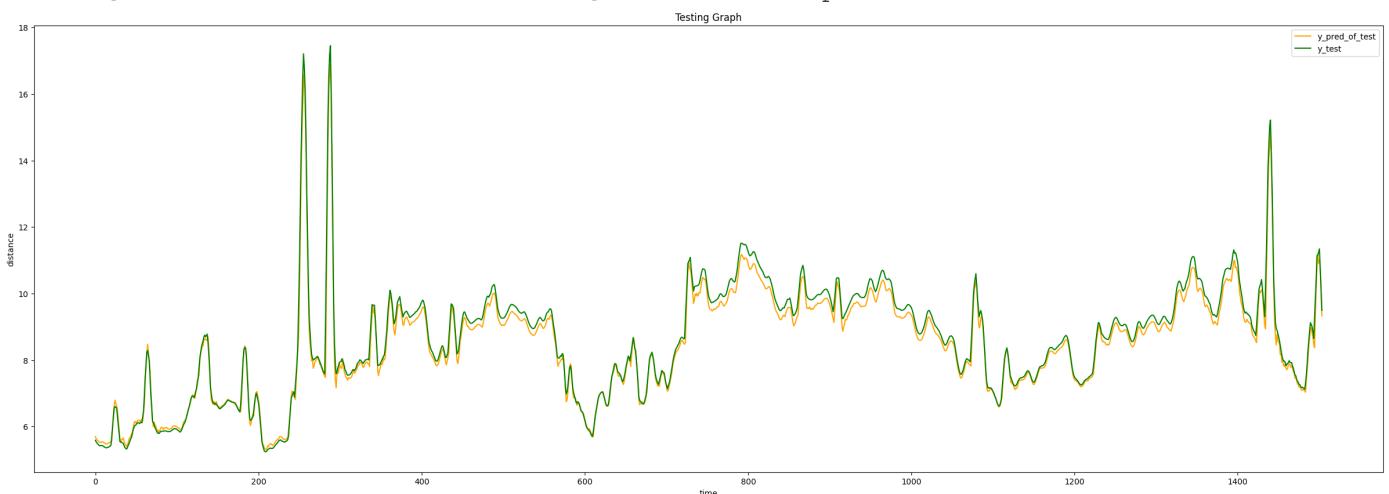
Epoch 18/35

113/113 [=====] - 3s 31ms/step - loss: 4.5154e-04

Epoch 19/35

113/113 [=====] - 4s 31ms/step - loss: 3.9882e-04

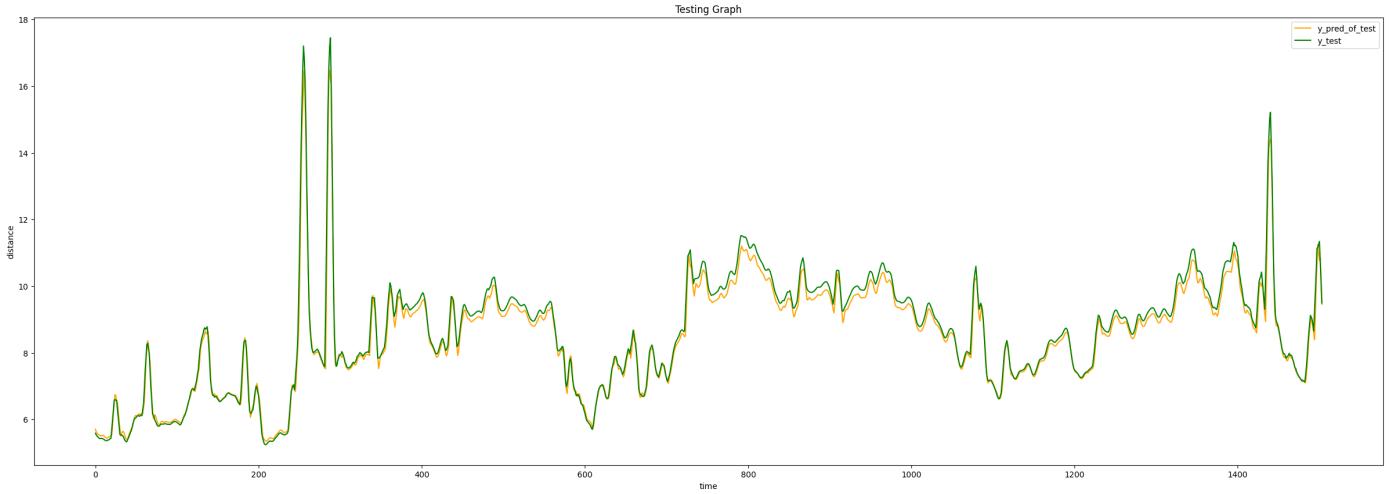
Epoch 20/35
 113/113 [=====] - 4s 32ms/step - loss: 3.0782e-04
 Epoch 21/35
 113/113 [=====] - 4s 32ms/step - loss: 3.5632e-04
 Epoch 22/35
 113/113 [=====] - 3s 31ms/step - loss: 3.5258e-04
 Epoch 23/35
 113/113 [=====] - 3s 31ms/step - loss: 3.3665e-04
 Epoch 24/35
 113/113 [=====] - 3s 31ms/step - loss: 3.2380e-04
 Epoch 25/35
 113/113 [=====] - 4s 34ms/step - loss: 2.4408e-04
 Epoch 26/35
 113/113 [=====] - 3s 31ms/step - loss: 2.4692e-04
 Epoch 27/35
 113/113 [=====] - 3s 31ms/step - loss: 2.4354e-04
 Epoch 28/35
 113/113 [=====] - 3s 31ms/step - loss: 3.2268e-04
 Epoch 29/35
 113/113 [=====] - 4s 33ms/step - loss: 1.9470e-04
 Epoch 30/35
 113/113 [=====] - 4s 32ms/step - loss: 2.2900e-04
 Epoch 31/35
 113/113 [=====] - 4s 31ms/step - loss: 3.1095e-04
 Epoch 32/35
 113/113 [=====] - 3s 31ms/step - loss: 5.6503e-04
 Epoch 33/35
 113/113 [=====] - 3s 31ms/step - loss: 4.6524e-04
 Epoch 34/35
 113/113 [=====] - 4s 34ms/step - loss: 2.8283e-04
 Epoch 35/35
 113/113 [=====] - 3s 31ms/step - loss: 3.2722e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9829828921944415
 MAPE: 0.019431747070368956
 MAE: 0.17808870437153268
 RMSE: 0.22149295698752217

Epoch 1/35
 113/113 [=====] - 9s 48ms/step - loss: 0.0025
 Epoch 2/35
 113/113 [=====] - 5s 44ms/step - loss: 0.0017
 Epoch 3/35
 113/113 [=====] - 5s 44ms/step - loss: 0.0014
 Epoch 4/35
 113/113 [=====] - 5s 47ms/step - loss: 0.0012
 Epoch 5/35
 113/113 [=====] - 5s 45ms/step - loss: 9.1096e-04

Epoch 6/35
113/113 [=====] - 5s 44ms/step - loss: 5.4586e-04
Epoch 7/35
113/113 [=====] - 5s 46ms/step - loss: 4.3412e-04
Epoch 8/35
113/113 [=====] - 5s 47ms/step - loss: 3.6988e-04
Epoch 9/35
113/113 [=====] - 5s 44ms/step - loss: 4.0244e-04
Epoch 10/35
113/113 [=====] - 5s 45ms/step - loss: 3.5316e-04
Epoch 11/35
113/113 [=====] - 5s 47ms/step - loss: 2.4986e-04
Epoch 12/35
113/113 [=====] - 5s 44ms/step - loss: 2.5321e-04
Epoch 13/35
113/113 [=====] - 5s 45ms/step - loss: 2.5605e-04
Epoch 14/35
113/113 [=====] - 6s 49ms/step - loss: 2.7689e-04
Epoch 15/35
113/113 [=====] - 5s 44ms/step - loss: 2.9326e-04
Epoch 16/35
113/113 [=====] - 5s 44ms/step - loss: 2.3262e-04
Epoch 17/35
113/113 [=====] - 5s 49ms/step - loss: 2.1629e-04
Epoch 18/35
113/113 [=====] - 5s 44ms/step - loss: 2.8152e-04
Epoch 19/35
113/113 [=====] - 5s 45ms/step - loss: 2.0983e-04
Epoch 20/35
113/113 [=====] - 6s 49ms/step - loss: 2.2069e-04
Epoch 21/35
113/113 [=====] - 5s 44ms/step - loss: 2.2275e-04
Epoch 22/35
113/113 [=====] - 5s 44ms/step - loss: 2.3422e-04
Epoch 23/35
113/113 [=====] - 5s 48ms/step - loss: 2.2916e-04
Epoch 24/35
113/113 [=====] - 5s 44ms/step - loss: 2.1172e-04
Epoch 25/35
113/113 [=====] - 5s 44ms/step - loss: 1.5464e-04
Epoch 26/35
113/113 [=====] - 5s 48ms/step - loss: 4.0330e-04
Epoch 27/35
113/113 [=====] - 5s 44ms/step - loss: 3.3994e-04
Epoch 28/35
113/113 [=====] - 5s 44ms/step - loss: 1.9298e-04
Epoch 29/35
113/113 [=====] - 5s 48ms/step - loss: 1.8188e-04
Epoch 30/35
113/113 [=====] - 5s 44ms/step - loss: 2.1708e-04
Epoch 31/35
113/113 [=====] - 5s 44ms/step - loss: 1.3944e-04
Epoch 32/35
113/113 [=====] - 5s 47ms/step - loss: 1.6233e-04
Epoch 33/35
113/113 [=====] - 5s 45ms/step - loss: 1.9648e-04
Epoch 34/35
113/113 [=====] - 5s 44ms/step - loss: 1.5863e-04
Epoch 35/35
113/113 [=====] - 5s 47ms/step - loss: 1.7765e-04
113/113 [=====] - 3s 18ms/step
47/47 [=====] - 1s 18ms/step



Prediction results:

r2_score: 0.9826145584651231

MAPE: 0.01800217611160087

MAE: 0.16600193827411525

RSME: 0.22387722157495007

```
["HDFCBANK_SUNPHARMA", [0.9829828921944415, 0.22149295698752217, 0.17808870437153268, 0.019431747070368956], [0.9826145584651231, 0.22387722157495007, 0.16600193827411525, 0.01800217611160087]]
```


Pair Number: 17

Epoch 1/35

113/113 [=====] - 6s 31ms/step - loss: 0.0751

Epoch 2/35

113/113 [=====] - 4s 31ms/step - loss: 0.0091

Epoch 3/35

113/113 [=====] - 4s 34ms/step - loss: 0.0051

Epoch 4/35

113/113 [=====] - 4s 31ms/step - loss: 0.0034

Epoch 5/35

113/113 [=====] - 4s 31ms/step - loss: 0.0023

Epoch 6/35

113/113 [=====] - 4s 31ms/step - loss: 0.0020

Epoch 7/35

113/113 [=====] - 4s 33ms/step - loss: 0.0019

Epoch 8/35

113/113 [=====] - 4s 33ms/step - loss: 0.0014

Epoch 9/35

113/113 [=====] - 4s 34ms/step - loss: 0.0016

Epoch 10/35

113/113 [=====] - 4s 33ms/step - loss: 0.0011

Epoch 11/35

113/113 [=====] - 4s 35ms/step - loss: 0.0011

Epoch 12/35

113/113 [=====] - 4s 37ms/step - loss: 8.5474e-04

Epoch 13/35

113/113 [=====] - 4s 34ms/step - loss: 9.9027e-04

Epoch 14/35

113/113 [=====] - 4s 35ms/step - loss: 9.7413e-04

Epoch 15/35

113/113 [=====] - 4s 35ms/step - loss: 7.2947e-04

Epoch 16/35

113/113 [=====] - 4s 38ms/step - loss: 7.5357e-04

Epoch 17/35

113/113 [=====] - 4s 35ms/step - loss: 8.6150e-04

Epoch 18/35

113/113 [=====] - 4s 35ms/step - loss: 6.5171e-04

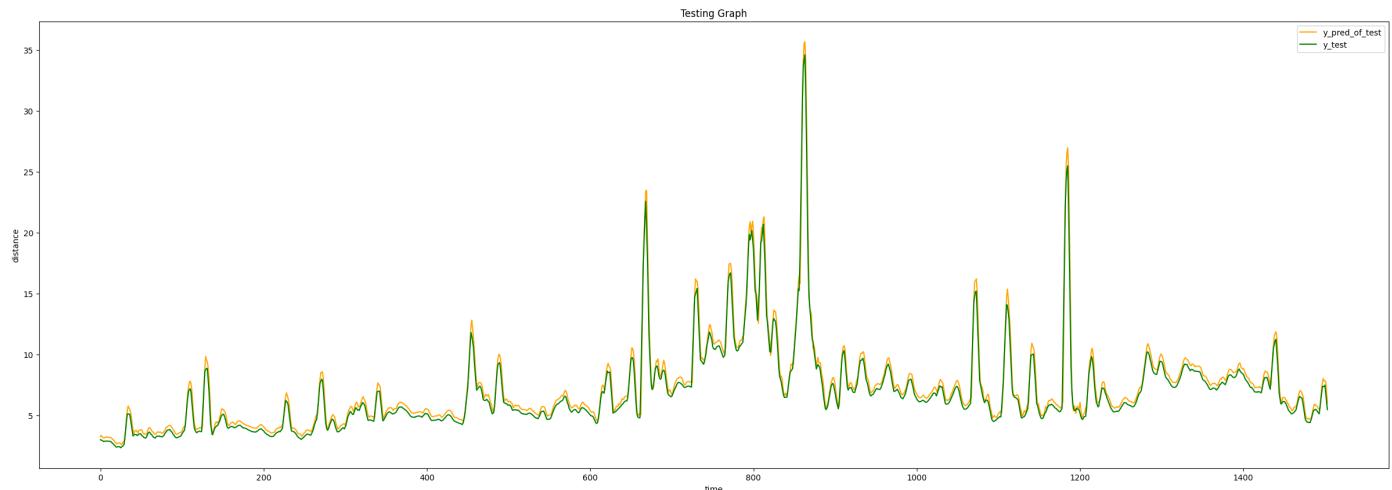
Epoch 19/35

113/113 [=====] - 4s 36ms/step - loss: 6.8650e-04

```

Epoch 20/35
113/113 [=====] - 4s 37ms/step - loss: 6.9079e-04
Epoch 21/35
113/113 [=====] - 4s 35ms/step - loss: 6.9842e-04
Epoch 22/35
113/113 [=====] - 4s 36ms/step - loss: 6.4624e-04
Epoch 23/35
113/113 [=====] - 5s 48ms/step - loss: 6.0846e-04
Epoch 24/35
113/113 [=====] - 5s 43ms/step - loss: 7.1252e-04
Epoch 25/35
113/113 [=====] - 4s 39ms/step - loss: 5.9351e-04
Epoch 26/35
113/113 [=====] - 4s 39ms/step - loss: 5.4248e-04
Epoch 27/35
113/113 [=====] - 5s 42ms/step - loss: 5.8652e-04
Epoch 28/35
113/113 [=====] - 4s 39ms/step - loss: 5.8498e-04
Epoch 29/35
113/113 [=====] - 4s 38ms/step - loss: 5.6972e-04
Epoch 30/35
113/113 [=====] - 5s 41ms/step - loss: 4.8589e-04
Epoch 31/35
113/113 [=====] - 4s 39ms/step - loss: 4.1035e-04
Epoch 32/35
113/113 [=====] - 4s 36ms/step - loss: 5.6428e-04
Epoch 33/35
113/113 [=====] - 4s 37ms/step - loss: 5.0725e-04
Epoch 34/35
113/113 [=====] - 5s 41ms/step - loss: 4.2153e-04
Epoch 35/35
113/113 [=====] - 4s 38ms/step - loss: 4.1637e-04
113/113 [=====] - 2s 12ms/step
47/47 [=====] - 1s 12ms/step

```



Prediction results:

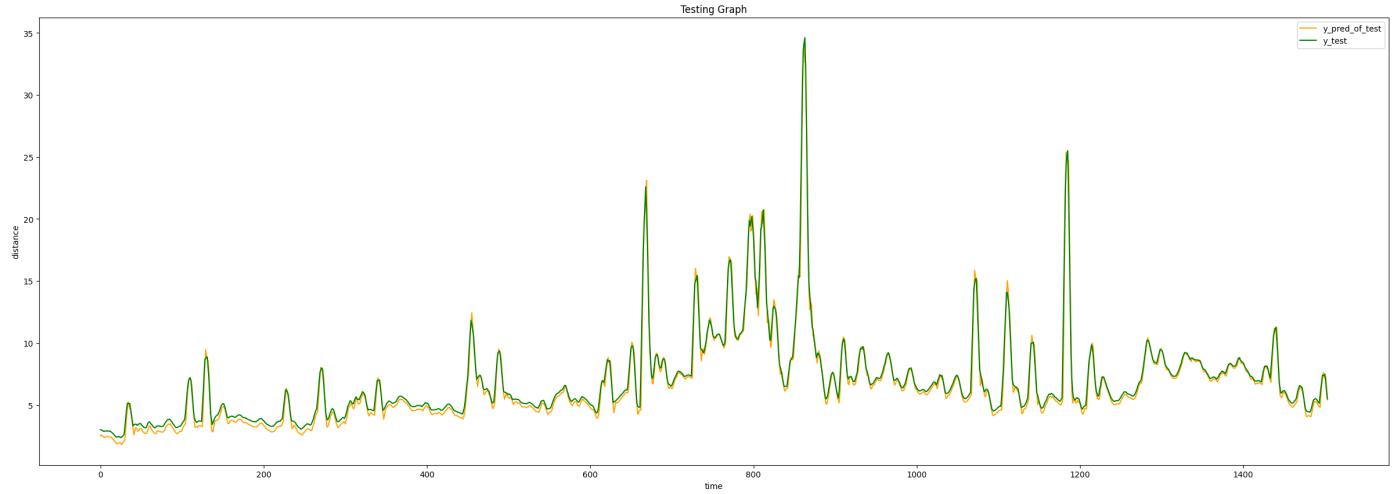
r2_score: 0.9779134740489489
 MAPE: 0.0654907901470393
 MAE: 0.4320839307900218
 RMSE: 0.5330156786823546

```

Epoch 1/35
113/113 [=====] - 11s 61ms/step - loss: 0.0043
Epoch 2/35
113/113 [=====] - 6s 57ms/step - loss: 0.0030
Epoch 3/35
113/113 [=====] - 7s 62ms/step - loss: 0.0021
Epoch 4/35
113/113 [=====] - 7s 58ms/step - loss: 0.0015
Epoch 5/35
113/113 [=====] - 7s 59ms/step - loss: 0.0011

```

Epoch 6/35
113/113 [=====] - 7s 59ms/step - loss: 8.7454e-04
Epoch 7/35
113/113 [=====] - 6s 57ms/step - loss: 7.5590e-04
Epoch 8/35
113/113 [=====] - 7s 62ms/step - loss: 6.2516e-04
Epoch 9/35
113/113 [=====] - 6s 57ms/step - loss: 5.8743e-04
Epoch 10/35
113/113 [=====] - 7s 61ms/step - loss: 5.7471e-04
Epoch 11/35
113/113 [=====] - 7s 58ms/step - loss: 5.1532e-04
Epoch 12/35
113/113 [=====] - 7s 58ms/step - loss: 5.1335e-04
Epoch 13/35
113/113 [=====] - 7s 60ms/step - loss: 4.8166e-04
Epoch 14/35
113/113 [=====] - 7s 59ms/step - loss: 4.6499e-04
Epoch 15/35
113/113 [=====] - 7s 62ms/step - loss: 3.9576e-04
Epoch 16/35
113/113 [=====] - 7s 59ms/step - loss: 4.3472e-04
Epoch 17/35
113/113 [=====] - 6s 56ms/step - loss: 4.2950e-04
Epoch 18/35
113/113 [=====] - 6s 54ms/step - loss: 3.6848e-04
Epoch 19/35
113/113 [=====] - 6s 57ms/step - loss: 4.4089e-04
Epoch 20/35
113/113 [=====] - 7s 60ms/step - loss: 3.6591e-04
Epoch 21/35
113/113 [=====] - 6s 57ms/step - loss: 3.3839e-04
Epoch 22/35
113/113 [=====] - 7s 59ms/step - loss: 3.5499e-04
Epoch 23/35
113/113 [=====] - 7s 58ms/step - loss: 3.2824e-04
Epoch 24/35
113/113 [=====] - 6s 54ms/step - loss: 2.9832e-04
Epoch 25/35
113/113 [=====] - 7s 60ms/step - loss: 2.6850e-04
Epoch 26/35
113/113 [=====] - 6s 57ms/step - loss: 2.8383e-04
Epoch 27/35
113/113 [=====] - 7s 59ms/step - loss: 3.5043e-04
Epoch 28/35
113/113 [=====] - 7s 57ms/step - loss: 3.1650e-04
Epoch 29/35
113/113 [=====] - 6s 57ms/step - loss: 2.6768e-04
Epoch 30/35
113/113 [=====] - 9s 78ms/step - loss: 3.2403e-04
Epoch 31/35
113/113 [=====] - 8s 72ms/step - loss: 2.6976e-04
Epoch 32/35
113/113 [=====] - 8s 66ms/step - loss: 2.7766e-04
Epoch 33/35
113/113 [=====] - 6s 57ms/step - loss: 2.8156e-04
Epoch 34/35
113/113 [=====] - 7s 60ms/step - loss: 3.4093e-04
Epoch 35/35
113/113 [=====] - 6s 56ms/step - loss: 3.0954e-04
113/113 [=====] - 3s 20ms/step
47/47 [=====] - 1s 22ms/step



Prediction results:

r2_score: 0.9832503425502457

MAPE: 0.05765804629911652

MAE: 0.34226159341657836

RSME: 0.46417232563836286

```
[["HDFCBANK_CONCOR"], [0.9779134740489489, 0.5330156786823546, 0.4320839307900218, 0.0654907901470393], [0.9832503425502457, 0.46417232563836286, 0.34226159341657836, 0.05765804629911652]]
```


Pair Number: 18

Epoch 1/35

113/113 [=====] - 7s 35ms/step - loss: 0.1436

Epoch 2/35

113/113 [=====] - 4s 36ms/step - loss: 0.0237

Epoch 3/35

113/113 [=====] - 4s 36ms/step - loss: 0.0096

Epoch 4/35

113/113 [=====] - 4s 39ms/step - loss: 0.0056

Epoch 5/35

113/113 [=====] - 4s 36ms/step - loss: 0.0041

Epoch 6/35

113/113 [=====] - 4s 38ms/step - loss: 0.0032

Epoch 7/35

113/113 [=====] - 4s 38ms/step - loss: 0.0028

Epoch 8/35

113/113 [=====] - 4s 38ms/step - loss: 0.0020

Epoch 9/35

113/113 [=====] - 4s 36ms/step - loss: 0.0020

Epoch 10/35

113/113 [=====] - 4s 36ms/step - loss: 0.0015

Epoch 11/35

113/113 [=====] - 4s 38ms/step - loss: 0.0016

Epoch 12/35

113/113 [=====] - 4s 37ms/step - loss: 0.0014

Epoch 13/35

113/113 [=====] - 4s 36ms/step - loss: 0.0012

Epoch 14/35

113/113 [=====] - 4s 36ms/step - loss: 0.0013

Epoch 15/35

113/113 [=====] - 4s 38ms/step - loss: 0.0011

Epoch 16/35

113/113 [=====] - 4s 36ms/step - loss: 0.0010

Epoch 17/35

113/113 [=====] - 4s 35ms/step - loss: 8.9292e-04

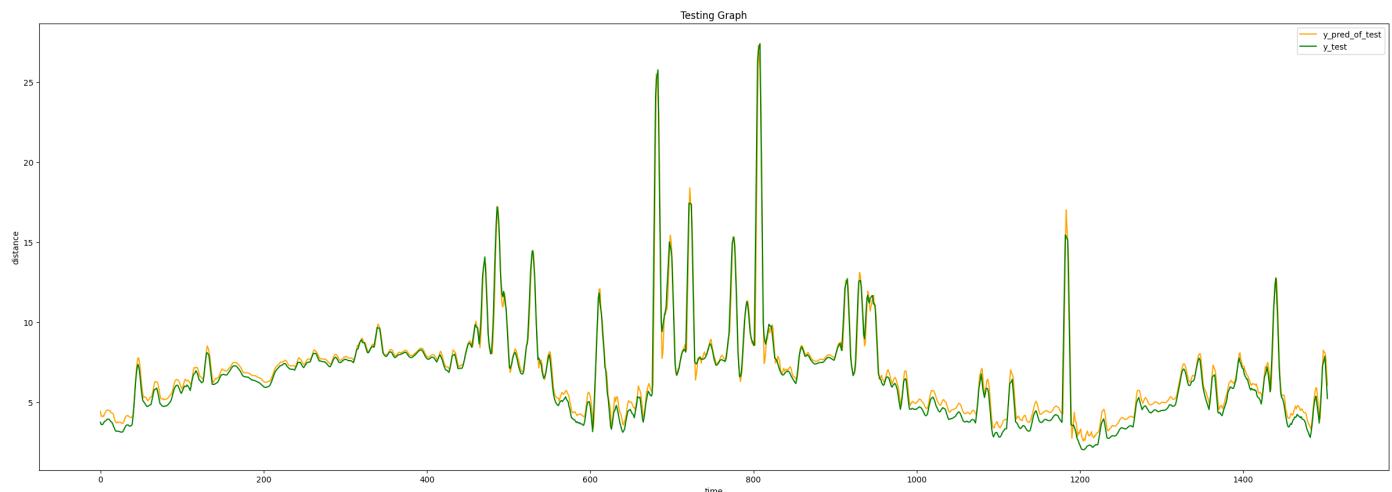
Epoch 18/35

113/113 [=====] - 4s 35ms/step - loss: 8.5442e-04

Epoch 19/35

113/113 [=====] - 4s 38ms/step - loss: 9.0667e-04

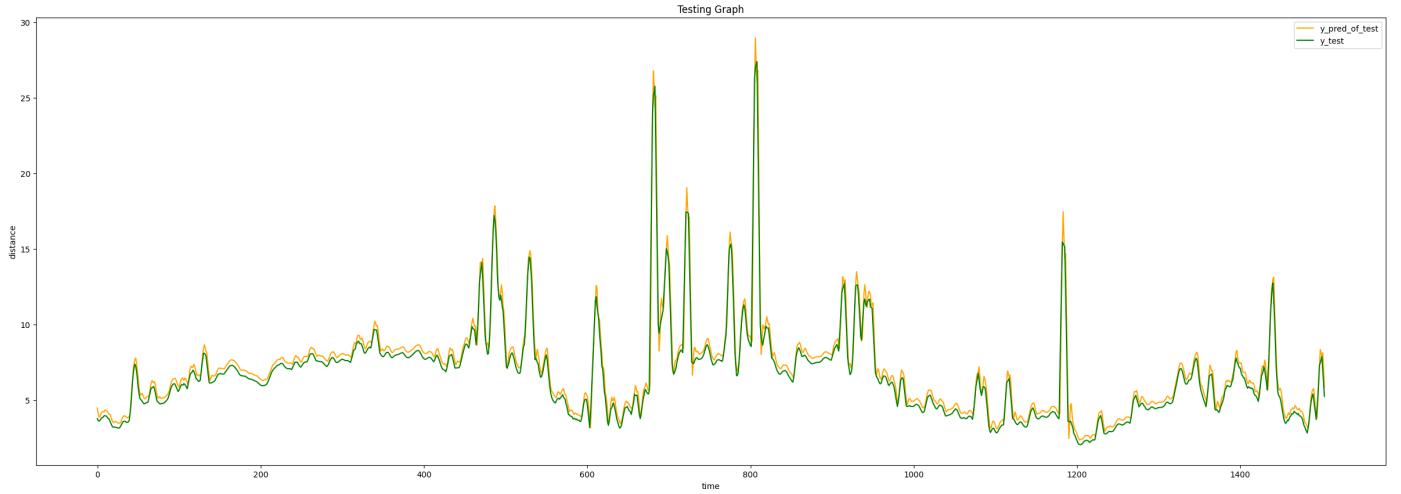
Epoch 20/35
 113/113 [=====] - 4s 36ms/step - loss: 8.9516e-04
 Epoch 21/35
 113/113 [=====] - 4s 35ms/step - loss: 7.2553e-04
 Epoch 22/35
 113/113 [=====] - 4s 36ms/step - loss: 7.3038e-04
 Epoch 23/35
 113/113 [=====] - 4s 39ms/step - loss: 6.9271e-04
 Epoch 24/35
 113/113 [=====] - 4s 35ms/step - loss: 6.5174e-04
 Epoch 25/35
 113/113 [=====] - 4s 35ms/step - loss: 6.3486e-04
 Epoch 26/35
 113/113 [=====] - 4s 36ms/step - loss: 4.9588e-04
 Epoch 27/35
 113/113 [=====] - 4s 39ms/step - loss: 5.6353e-04
 Epoch 28/35
 113/113 [=====] - 4s 34ms/step - loss: 5.9290e-04
 Epoch 29/35
 113/113 [=====] - 4s 35ms/step - loss: 5.3553e-04
 Epoch 30/35
 113/113 [=====] - 4s 34ms/step - loss: 5.9057e-04
 Epoch 31/35
 113/113 [=====] - 4s 37ms/step - loss: 4.5101e-04
 Epoch 32/35
 113/113 [=====] - 4s 34ms/step - loss: 5.0973e-04
 Epoch 33/35
 113/113 [=====] - 4s 34ms/step - loss: 5.6744e-04
 Epoch 34/35
 113/113 [=====] - 4s 35ms/step - loss: 4.3682e-04
 Epoch 35/35
 113/113 [=====] - 4s 38ms/step - loss: 5.2701e-04
 113/113 [=====] - 2s 11ms/step
 47/47 [=====] - 1s 11ms/step



Prediction results:
 r2_score: 0.9708026482341059
 MAPE: 0.07380119069405218
 MAE: 0.3948311091918801
 RMSE: 0.5251578526753673

Epoch 1/35
 113/113 [=====] - 11s 60ms/step - loss: 0.0032
 Epoch 2/35
 113/113 [=====] - 6s 57ms/step - loss: 0.0025
 Epoch 3/35
 113/113 [=====] - 6s 57ms/step - loss: 0.0019
 Epoch 4/35
 113/113 [=====] - 7s 60ms/step - loss: 0.0015
 Epoch 5/35
 113/113 [=====] - 6s 56ms/step - loss: 0.0011

Epoch 6/35
113/113 [=====] - 7s 60ms/step - loss: 8.3156e-04
Epoch 7/35
113/113 [=====] - 6s 57ms/step - loss: 6.9080e-04
Epoch 8/35
113/113 [=====] - 7s 58ms/step - loss: 5.1421e-04
Epoch 9/35
113/113 [=====] - 7s 59ms/step - loss: 4.4783e-04
Epoch 10/35
113/113 [=====] - 6s 56ms/step - loss: 4.1556e-04
Epoch 11/35
113/113 [=====] - 7s 60ms/step - loss: 3.7723e-04
Epoch 12/35
113/113 [=====] - 6s 57ms/step - loss: 3.6211e-04
Epoch 13/35
113/113 [=====] - 7s 60ms/step - loss: 3.4943e-04
Epoch 14/35
113/113 [=====] - 7s 59ms/step - loss: 3.4568e-04
Epoch 15/35
113/113 [=====] - 6s 57ms/step - loss: 2.8839e-04
Epoch 16/35
113/113 [=====] - 7s 62ms/step - loss: 2.8709e-04
Epoch 17/35
113/113 [=====] - 6s 57ms/step - loss: 2.4014e-04
Epoch 18/35
113/113 [=====] - 6s 53ms/step - loss: 2.9190e-04
Epoch 19/35
113/113 [=====] - 6s 52ms/step - loss: 2.7884e-04
Epoch 20/35
113/113 [=====] - 5s 47ms/step - loss: 2.3232e-04
Epoch 21/35
113/113 [=====] - 6s 52ms/step - loss: 2.4845e-04
Epoch 22/35
113/113 [=====] - 5s 48ms/step - loss: 2.6864e-04
Epoch 23/35
113/113 [=====] - 5s 48ms/step - loss: 2.4424e-04
Epoch 24/35
113/113 [=====] - 6s 52ms/step - loss: 2.4638e-04
Epoch 25/35
113/113 [=====] - 5s 47ms/step - loss: 2.7631e-04
Epoch 26/35
113/113 [=====] - 5s 48ms/step - loss: 2.8103e-04
Epoch 27/35
113/113 [=====] - 6s 52ms/step - loss: 2.0881e-04
Epoch 28/35
113/113 [=====] - 5s 48ms/step - loss: 1.8936e-04
Epoch 29/35
113/113 [=====] - 5s 48ms/step - loss: 2.1203e-04
Epoch 30/35
113/113 [=====] - 7s 65ms/step - loss: 2.0347e-04
Epoch 31/35
113/113 [=====] - 7s 58ms/step - loss: 2.3044e-04
Epoch 32/35
113/113 [=====] - 6s 56ms/step - loss: 1.8230e-04
Epoch 33/35
113/113 [=====] - 6s 51ms/step - loss: 1.9720e-04
Epoch 34/35
113/113 [=====] - 6s 51ms/step - loss: 1.6060e-04
Epoch 35/35
113/113 [=====] - 6s 56ms/step - loss: 1.8221e-04
113/113 [=====] - 3s 19ms/step
47/47 [=====] - 1s 19ms/step



Prediction results:

r2_score: 0.9705623050749637

MAPE: 0.06904681960757748

MAE: 0.4211145391943851

RSME: 0.5273148875896155

["HDFCBANK_BHARTIARTL", [0.9708026482341059, 0.5251578526753673, 0.3948311091918801, 0.07380119069405218], [0.9705623050749637, 0.5273148875896155, 0.4211145391943851, 0.06904681960757748]]

Pair Number: 19

Epoch 1/35

113/113 [=====] - 6s 34ms/step - loss: 0.0642

Epoch 2/35

113/113 [=====] - 4s 37ms/step - loss: 0.0094

Epoch 3/35

113/113 [=====] - 4s 33ms/step - loss: 0.0052

Epoch 4/35

113/113 [=====] - 4s 33ms/step - loss: 0.0026

Epoch 5/35

113/113 [=====] - 4s 33ms/step - loss: 0.0021

Epoch 6/35

113/113 [=====] - 4s 36ms/step - loss: 0.0016

Epoch 7/35

113/113 [=====] - 4s 34ms/step - loss: 0.0013

Epoch 8/35

113/113 [=====] - 4s 33ms/step - loss: 0.0013

Epoch 9/35

113/113 [=====] - 4s 33ms/step - loss: 0.0011

Epoch 10/35

113/113 [=====] - 4s 36ms/step - loss: 0.0010

Epoch 11/35

113/113 [=====] - 4s 33ms/step - loss: 9.1454e-04

Epoch 12/35

113/113 [=====] - 4s 33ms/step - loss: 8.1744e-04

Epoch 13/35

113/113 [=====] - 4s 32ms/step - loss: 7.5936e-04

Epoch 14/35

113/113 [=====] - 4s 35ms/step - loss: 7.3736e-04

Epoch 15/35

113/113 [=====] - 4s 38ms/step - loss: 6.9368e-04

Epoch 16/35

113/113 [=====] - 4s 37ms/step - loss: 5.8281e-04

Epoch 17/35

113/113 [=====] - 4s 36ms/step - loss: 6.1577e-04

Epoch 18/35

113/113 [=====] - 5s 41ms/step - loss: 6.7904e-04

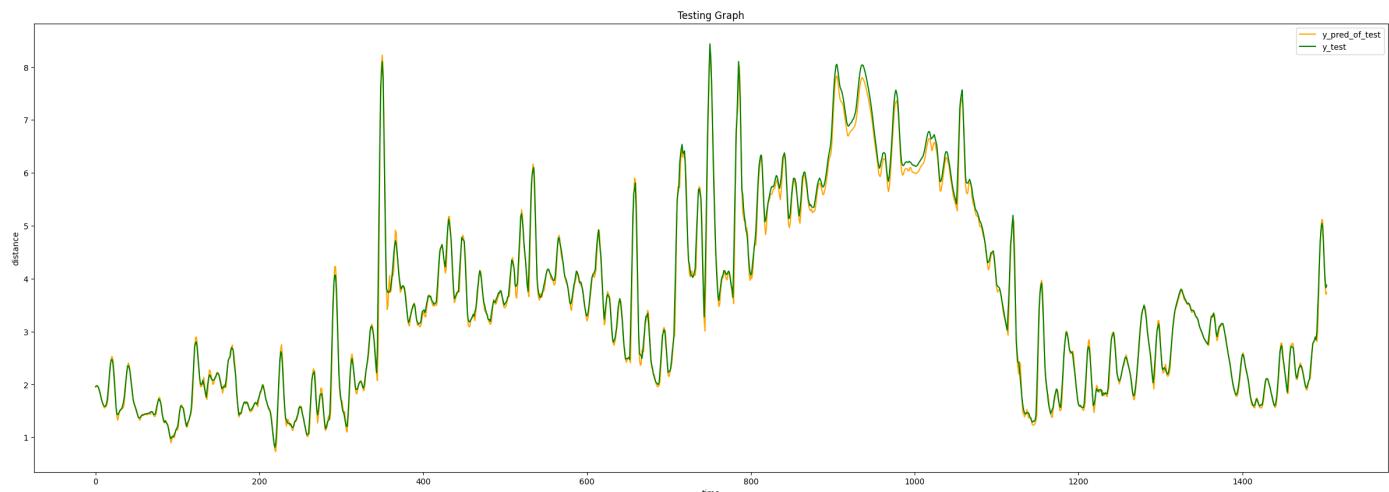
Epoch 19/35

113/113 [=====] - 4s 35ms/step - loss: 6.7748e-04

```

Epoch 20/35
113/113 [=====] - 4s 34ms/step - loss: 4.8161e-04
Epoch 21/35
113/113 [=====] - 4s 32ms/step - loss: 4.9399e-04
Epoch 22/35
113/113 [=====] - 4s 33ms/step - loss: 5.2725e-04
Epoch 23/35
113/113 [=====] - 3s 30ms/step - loss: 4.1960e-04
Epoch 24/35
113/113 [=====] - 3s 30ms/step - loss: 4.2828e-04
Epoch 25/35
113/113 [=====] - 3s 30ms/step - loss: 3.9131e-04
Epoch 26/35
113/113 [=====] - 3s 31ms/step - loss: 4.0504e-04
Epoch 27/35
113/113 [=====] - 4s 33ms/step - loss: 4.2104e-04
Epoch 28/35
113/113 [=====] - 4s 35ms/step - loss: 5.1954e-04
Epoch 29/35
113/113 [=====] - 4s 33ms/step - loss: 4.1090e-04
Epoch 30/35
113/113 [=====] - 4s 38ms/step - loss: 4.0246e-04
Epoch 31/35
113/113 [=====] - 5s 41ms/step - loss: 4.4952e-04
Epoch 32/35
113/113 [=====] - 4s 37ms/step - loss: 2.5947e-04
Epoch 33/35
113/113 [=====] - 4s 36ms/step - loss: 4.3816e-04
Epoch 34/35
113/113 [=====] - 4s 38ms/step - loss: 4.5361e-04
Epoch 35/35
113/113 [=====] - 4s 39ms/step - loss: 4.4459e-04
113/113 [=====] - 2s 12ms/step
47/47 [=====] - 1s 11ms/step

```



Prediction results:

```

r2_score: 0.9952428839049017
MAPE: 0.024104232284842167
MAE: 0.08202365215494686
RMSE: 0.12300994526621478

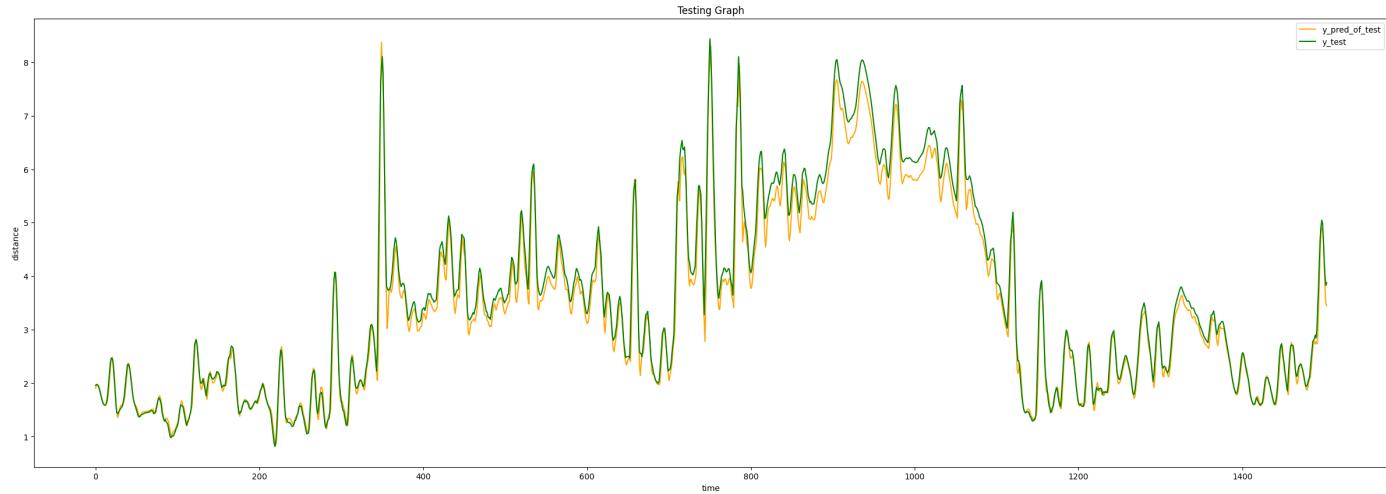
```

```

Epoch 1/35
113/113 [=====] - 11s 53ms/step - loss: 0.0026
Epoch 2/35
113/113 [=====] - 5s 46ms/step - loss: 0.0025
Epoch 3/35
113/113 [=====] - 5s 47ms/step - loss: 0.0022
Epoch 4/35
113/113 [=====] - 6s 51ms/step - loss: 0.0018
Epoch 5/35
113/113 [=====] - 6s 53ms/step - loss: 0.0016

```

Epoch 6/35
113/113 [=====] - 7s 62ms/step - loss: 0.0014
Epoch 7/35
113/113 [=====] - 7s 64ms/step - loss: 0.0011
Epoch 8/35
113/113 [=====] - 6s 53ms/step - loss: 9.2600e-04
Epoch 9/35
113/113 [=====] - 6s 55ms/step - loss: 6.5093e-04
Epoch 10/35
113/113 [=====] - 5s 47ms/step - loss: 5.4445e-04
Epoch 11/35
113/113 [=====] - 5s 46ms/step - loss: 5.4771e-04
Epoch 12/35
113/113 [=====] - 6s 50ms/step - loss: 4.1920e-04
Epoch 13/35
113/113 [=====] - 5s 46ms/step - loss: 5.0670e-04
Epoch 14/35
113/113 [=====] - 6s 56ms/step - loss: 5.2224e-04
Epoch 15/35
113/113 [=====] - 8s 69ms/step - loss: 3.6304e-04
Epoch 16/35
113/113 [=====] - 8s 72ms/step - loss: 4.5743e-04
Epoch 17/35
113/113 [=====] - 9s 80ms/step - loss: 2.9643e-04
Epoch 18/35
113/113 [=====] - 10s 92ms/step - loss: 3.4450e-04
Epoch 19/35
113/113 [=====] - 11s 97ms/step - loss: 3.3981e-04
Epoch 20/35
113/113 [=====] - 15s 129ms/step - loss: 2.9476e-04
Epoch 21/35
113/113 [=====] - 16s 144ms/step - loss: 2.8640e-04
Epoch 22/35
113/113 [=====] - 21s 183ms/step - loss: 4.3125e-04
Epoch 23/35
113/113 [=====] - 19s 172ms/step - loss: 2.3722e-04
Epoch 24/35
113/113 [=====] - 17s 148ms/step - loss: 2.4981e-04
Epoch 25/35
113/113 [=====] - 20s 177ms/step - loss: 2.4608e-04
Epoch 26/35
113/113 [=====] - 23s 202ms/step - loss: 2.4801e-04
Epoch 27/35
113/113 [=====] - 20s 178ms/step - loss: 3.5109e-04
Epoch 28/35
113/113 [=====] - 24s 210ms/step - loss: 2.2485e-04
Epoch 29/35
113/113 [=====] - 24s 212ms/step - loss: 2.3412e-04
Epoch 30/35
113/113 [=====] - 21s 189ms/step - loss: 2.9748e-04
Epoch 31/35
113/113 [=====] - 30s 270ms/step - loss: 2.3344e-04
Epoch 32/35
113/113 [=====] - 23s 207ms/step - loss: 2.4320e-04
Epoch 33/35
113/113 [=====] - 19s 171ms/step - loss: 2.0203e-04
Epoch 34/35
113/113 [=====] - 9s 82ms/step - loss: 1.8843e-04
Epoch 35/35
113/113 [=====] - 5s 42ms/step - loss: 1.9060e-04
113/113 [=====] - 2s 14ms/step
47/47 [=====] - 1s 14ms/step



Prediction results:

r2_score: 0.9835341389815987

MAPE: 0.04526814601984922

MAE: 0.17141476680373413

RSME: 0.22885508827480455

```
['"M&M_ULTRACEMCO"', [0.9952428839049017, 0.12300994526621478, 0.08202365215494686, 0.024104232284842167], [0.9835341389815987, 0.22885508827480455, 0.17141476680373413, 0.04526814601984922]]
```


Pair Number: 20

Epoch 1/35

113/113 [=====] - 5s 24ms/step - loss: 0.1676

Epoch 2/35

113/113 [=====] - 3s 24ms/step - loss: 0.0165

Epoch 3/35

113/113 [=====] - 3s 25ms/step - loss: 0.0080

Epoch 4/35

113/113 [=====] - 3s 28ms/step - loss: 0.0050

Epoch 5/35

113/113 [=====] - 3s 25ms/step - loss: 0.0036

Epoch 6/35

113/113 [=====] - 3s 28ms/step - loss: 0.0029

Epoch 7/35

113/113 [=====] - 3s 29ms/step - loss: 0.0025

Epoch 8/35

113/113 [=====] - 3s 30ms/step - loss: 0.0021

Epoch 9/35

113/113 [=====] - 4s 31ms/step - loss: 0.0019

Epoch 10/35

113/113 [=====] - 3s 28ms/step - loss: 0.0016

Epoch 11/35

113/113 [=====] - 3s 28ms/step - loss: 0.0015

Epoch 12/35

113/113 [=====] - 3s 28ms/step - loss: 0.0013

Epoch 13/35

113/113 [=====] - 3s 29ms/step - loss: 0.0013

Epoch 14/35

113/113 [=====] - 4s 31ms/step - loss: 0.0012

Epoch 15/35

113/113 [=====] - 3s 29ms/step - loss: 9.6781e-04

Epoch 16/35

113/113 [=====] - 3s 30ms/step - loss: 9.3420e-04

Epoch 17/35

113/113 [=====] - 3s 30ms/step - loss: 0.0010

Epoch 18/35

113/113 [=====] - 4s 32ms/step - loss: 8.7471e-04

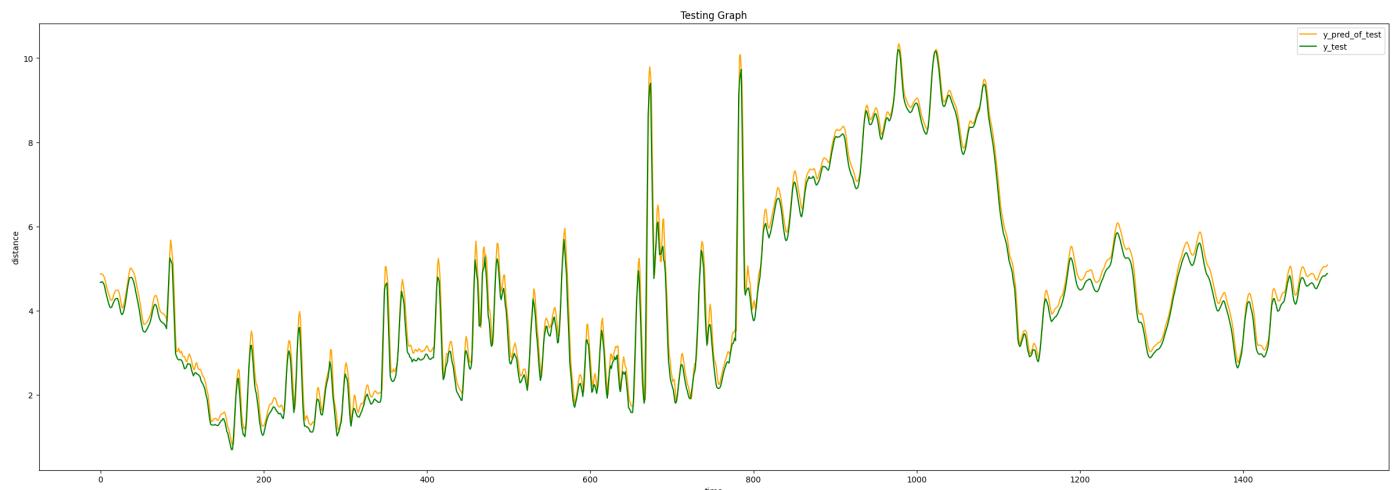
Epoch 19/35

113/113 [=====] - 4s 33ms/step - loss: 6.8436e-04

```

Epoch 20/35
113/113 [=====] - 3s 31ms/step - loss: 8.4057e-04
Epoch 21/35
113/113 [=====] - 3s 31ms/step - loss: 8.0202e-04
Epoch 22/35
113/113 [=====] - 4s 31ms/step - loss: 7.1104e-04
Epoch 23/35
113/113 [=====] - 4s 35ms/step - loss: 6.6207e-04
Epoch 24/35
113/113 [=====] - 4s 32ms/step - loss: 7.1468e-04
Epoch 25/35
113/113 [=====] - 4s 31ms/step - loss: 5.8813e-04
Epoch 26/35
113/113 [=====] - 3s 31ms/step - loss: 5.9934e-04
Epoch 27/35
113/113 [=====] - 4s 34ms/step - loss: 5.2784e-04
Epoch 28/35
113/113 [=====] - 4s 35ms/step - loss: 6.0685e-04
Epoch 29/35
113/113 [=====] - 4s 31ms/step - loss: 4.8190e-04
Epoch 30/35
113/113 [=====] - 3s 30ms/step - loss: 6.0141e-04
Epoch 31/35
113/113 [=====] - 4s 31ms/step - loss: 4.6266e-04
Epoch 32/35
113/113 [=====] - 4s 33ms/step - loss: 6.1030e-04
Epoch 33/35
113/113 [=====] - 3s 30ms/step - loss: 4.6982e-04
Epoch 34/35
113/113 [=====] - 3s 30ms/step - loss: 4.4537e-04
Epoch 35/35
113/113 [=====] - 3s 30ms/step - loss: 4.5075e-04
113/113 [=====] - 1s 10ms/step
47/47 [=====] - 1s 11ms/step

```



Prediction results:

```

r2_score: 0.9870416133544678
MAPE: 0.06399570562033759
MAE: 0.21261303231301593
RMSE: 0.25191007950267635

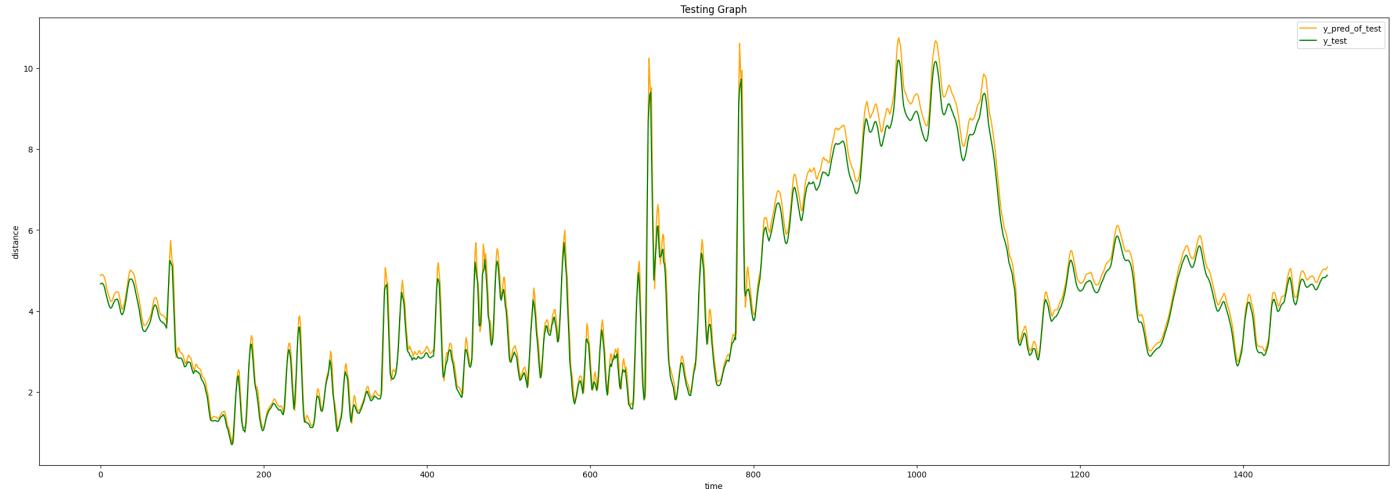
```

```

Epoch 1/35
113/113 [=====] - 11s 59ms/step - loss: 0.0044
Epoch 2/35
113/113 [=====] - 7s 64ms/step - loss: 0.0028
Epoch 3/35
113/113 [=====] - 7s 60ms/step - loss: 0.0024
Epoch 4/35
113/113 [=====] - 7s 58ms/step - loss: 0.0019
Epoch 5/35
113/113 [=====] - 7s 60ms/step - loss: 0.0015

```

Epoch 6/35
113/113 [=====] - 7s 60ms/step - loss: 0.0012
Epoch 7/35
113/113 [=====] - 6s 57ms/step - loss: 9.6708e-04
Epoch 8/35
113/113 [=====] - 7s 59ms/step - loss: 7.2407e-04
Epoch 9/35
113/113 [=====] - 6s 57ms/step - loss: 5.8978e-04
Epoch 10/35
113/113 [=====] - 6s 50ms/step - loss: 6.1275e-04
Epoch 11/35
113/113 [=====] - 6s 49ms/step - loss: 5.4276e-04
Epoch 12/35
113/113 [=====] - 6s 53ms/step - loss: 5.0318e-04
Epoch 13/35
113/113 [=====] - 5s 47ms/step - loss: 4.7499e-04
Epoch 14/35
113/113 [=====] - 5s 43ms/step - loss: 4.6977e-04
Epoch 15/35
113/113 [=====] - 6s 49ms/step - loss: 3.9203e-04
Epoch 16/35
113/113 [=====] - 5s 43ms/step - loss: 3.4924e-04
Epoch 17/35
113/113 [=====] - 5s 44ms/step - loss: 3.6904e-04
Epoch 18/35
113/113 [=====] - 6s 51ms/step - loss: 3.4871e-04
Epoch 19/35
113/113 [=====] - 5s 48ms/step - loss: 3.2006e-04
Epoch 20/35
113/113 [=====] - 5s 43ms/step - loss: 3.2508e-04
Epoch 21/35
113/113 [=====] - 5s 48ms/step - loss: 3.0671e-04
Epoch 22/35
113/113 [=====] - 5s 44ms/step - loss: 2.7500e-04
Epoch 23/35
113/113 [=====] - 6s 51ms/step - loss: 2.4739e-04
Epoch 24/35
113/113 [=====] - 6s 50ms/step - loss: 2.5481e-04
Epoch 25/35
113/113 [=====] - 5s 48ms/step - loss: 2.8709e-04
Epoch 26/35
113/113 [=====] - 6s 51ms/step - loss: 2.5973e-04
Epoch 27/35
113/113 [=====] - 7s 60ms/step - loss: 2.8625e-04
Epoch 28/35
113/113 [=====] - 6s 49ms/step - loss: 2.7053e-04
Epoch 29/35
113/113 [=====] - 6s 49ms/step - loss: 2.6380e-04
Epoch 30/35
113/113 [=====] - 7s 60ms/step - loss: 2.1374e-04
Epoch 31/35
113/113 [=====] - 6s 57ms/step - loss: 2.3327e-04
Epoch 32/35
113/113 [=====] - 7s 58ms/step - loss: 2.1157e-04
Epoch 33/35
113/113 [=====] - 6s 56ms/step - loss: 1.9172e-04
Epoch 34/35
113/113 [=====] - 6s 53ms/step - loss: 2.0230e-04
Epoch 35/35
113/113 [=====] - 6s 49ms/step - loss: 2.7889e-04
113/113 [=====] - 3s 16ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9853804053380447

MAPE: 0.05454703497907867

MAE: 0.22081061257452422

RSME: 0.2675702003194314

```
[!"M&M_GRASIM", [0.9870416133544678, 0.25191007950267635, 0.21261303231301593, 0.06399570562033759], [0.9853804053380447, 0.2675702003194314, 0.22081061257452422, 0.05454703497907867]]
```


Pair Number: 21

Epoch 1/35

113/113 [=====] - 6s 33ms/step - loss: 0.1024

Epoch 2/35

113/113 [=====] - 4s 34ms/step - loss: 0.0171

Epoch 3/35

113/113 [=====] - 3s 31ms/step - loss: 0.0088

Epoch 4/35

113/113 [=====] - 3s 31ms/step - loss: 0.0057

Epoch 5/35

113/113 [=====] - 4s 35ms/step - loss: 0.0040

Epoch 6/35

113/113 [=====] - 5s 40ms/step - loss: 0.0037

Epoch 7/35

113/113 [=====] - 4s 39ms/step - loss: 0.0030

Epoch 8/35

113/113 [=====] - 4s 37ms/step - loss: 0.0026

Epoch 9/35

113/113 [=====] - 4s 40ms/step - loss: 0.0021

Epoch 10/35

113/113 [=====] - 5s 42ms/step - loss: 0.0021

Epoch 11/35

113/113 [=====] - 4s 39ms/step - loss: 0.0018

Epoch 12/35

113/113 [=====] - 4s 38ms/step - loss: 0.0016

Epoch 13/35

113/113 [=====] - 4s 39ms/step - loss: 0.0017

Epoch 14/35

113/113 [=====] - 4s 35ms/step - loss: 0.0014

Epoch 15/35

113/113 [=====] - 4s 35ms/step - loss: 0.0013

Epoch 16/35

113/113 [=====] - 4s 37ms/step - loss: 0.0012

Epoch 17/35

113/113 [=====] - 4s 39ms/step - loss: 0.0012

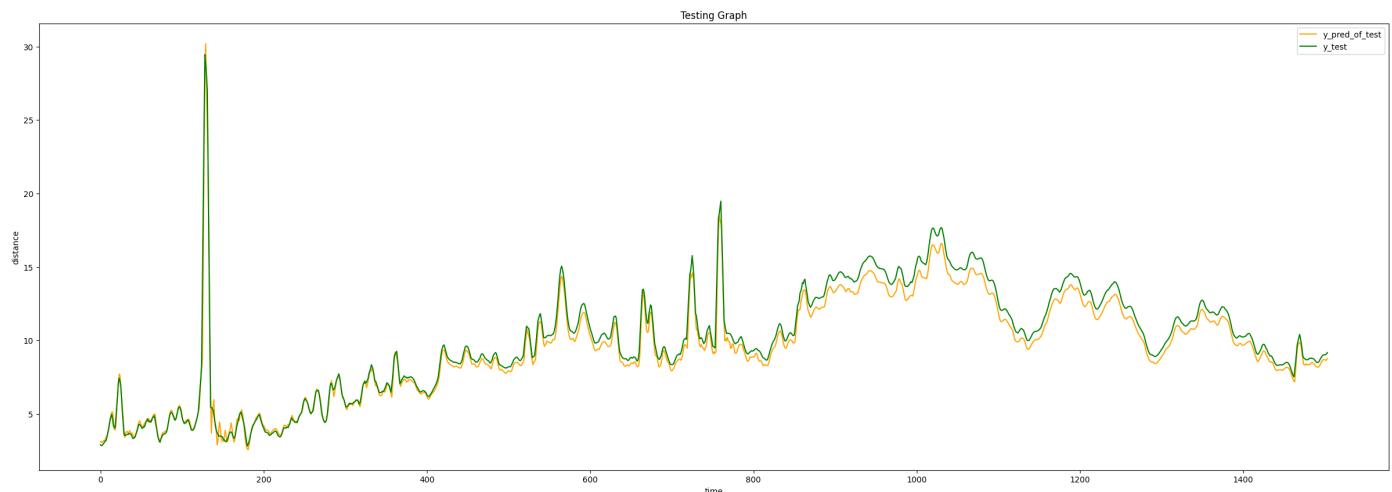
Epoch 18/35

113/113 [=====] - 4s 36ms/step - loss: 0.0011

Epoch 19/35

113/113 [=====] - 4s 34ms/step - loss: 9.7849e-04

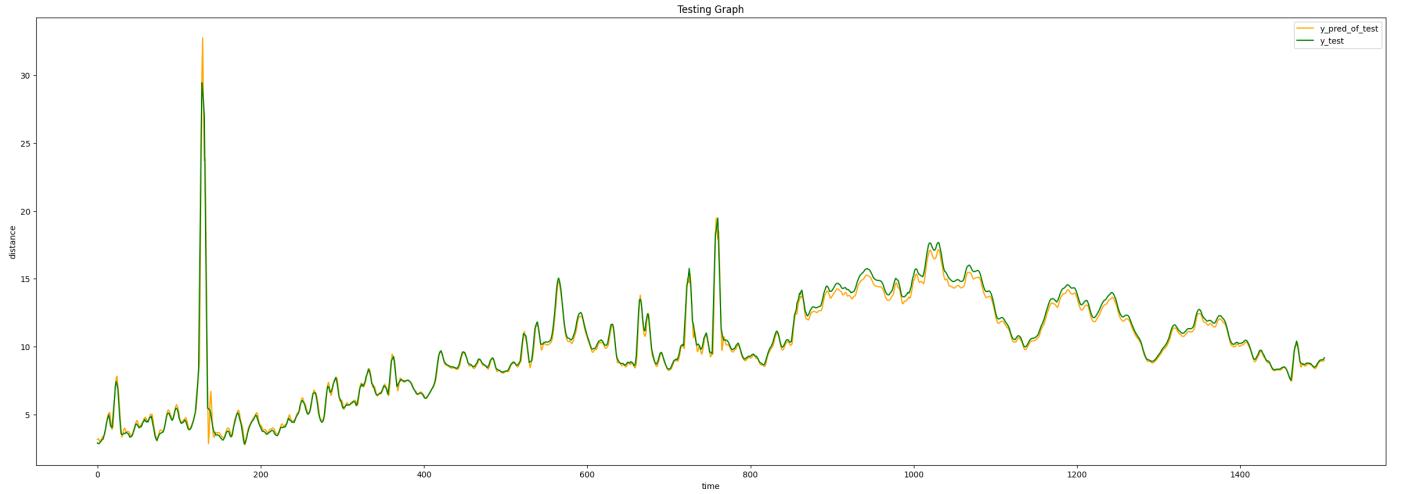
Epoch 20/35
 113/113 [=====] - 4s 33ms/step - loss: 0.0010
 Epoch 21/35
 113/113 [=====] - 4s 34ms/step - loss: 9.0669e-04
 Epoch 22/35
 113/113 [=====] - 4s 32ms/step - loss: 0.0010
 Epoch 23/35
 113/113 [=====] - 4s 34ms/step - loss: 8.6320e-04
 Epoch 24/35
 113/113 [=====] - 4s 37ms/step - loss: 8.7331e-04
 Epoch 25/35
 113/113 [=====] - 4s 32ms/step - loss: 9.3769e-04
 Epoch 26/35
 113/113 [=====] - 4s 33ms/step - loss: 8.1574e-04
 Epoch 27/35
 113/113 [=====] - 4s 31ms/step - loss: 8.0213e-04
 Epoch 28/35
 113/113 [=====] - 3s 31ms/step - loss: 6.9683e-04
 Epoch 29/35
 113/113 [=====] - 4s 37ms/step - loss: 7.8249e-04
 Epoch 30/35
 113/113 [=====] - 4s 35ms/step - loss: 6.8675e-04
 Epoch 31/35
 113/113 [=====] - 4s 36ms/step - loss: 6.1382e-04
 Epoch 32/35
 113/113 [=====] - 4s 36ms/step - loss: 7.1114e-04
 Epoch 33/35
 113/113 [=====] - 4s 37ms/step - loss: 6.5764e-04
 Epoch 34/35
 113/113 [=====] - 4s 37ms/step - loss: 7.3195e-04
 Epoch 35/35
 113/113 [=====] - 4s 36ms/step - loss: 5.7591e-04
 113/113 [=====] - 2s 11ms/step
 47/47 [=====] - 1s 11ms/step



Prediction results:
 r2_score: 0.9739187225233894
 MAPE: 0.04699417027208298
 MAE: 0.49665992314077934
 RMSE: 0.6010149010891904

Epoch 1/35
 113/113 [=====] - 11s 49ms/step - loss: 0.0086
 Epoch 2/35
 113/113 [=====] - 5s 45ms/step - loss: 0.0064
 Epoch 3/35
 113/113 [=====] - 5s 49ms/step - loss: 0.0054
 Epoch 4/35
 113/113 [=====] - 7s 61ms/step - loss: 0.0044
 Epoch 5/35
 113/113 [=====] - 7s 65ms/step - loss: 0.0040

Epoch 6/35
113/113 [=====] - 8s 75ms/step - loss: 0.0032
Epoch 7/35
113/113 [=====] - 9s 80ms/step - loss: 0.0027
Epoch 8/35
113/113 [=====] - 10s 85ms/step - loss: 0.0023
Epoch 9/35
113/113 [=====] - 11s 97ms/step - loss: 0.0018
Epoch 10/35
113/113 [=====] - 11s 100ms/step - loss: 0.0014
Epoch 11/35
113/113 [=====] - 14s 126ms/step - loss: 0.0013
Epoch 12/35
113/113 [=====] - 14s 127ms/step - loss: 0.0010
Epoch 13/35
113/113 [=====] - 15s 133ms/step - loss: 9.1503e-04
Epoch 14/35
113/113 [=====] - 15s 137ms/step - loss: 7.6141e-04
Epoch 15/35
113/113 [=====] - 18s 158ms/step - loss: 7.5867e-04
Epoch 16/35
113/113 [=====] - 15s 136ms/step - loss: 6.8873e-04
Epoch 17/35
113/113 [=====] - 15s 137ms/step - loss: 6.3251e-04
Epoch 18/35
113/113 [=====] - 16s 141ms/step - loss: 6.1774e-04
Epoch 19/35
113/113 [=====] - 15s 137ms/step - loss: 5.9572e-04
Epoch 20/35
113/113 [=====] - 17s 153ms/step - loss: 5.7656e-04
Epoch 21/35
113/113 [=====] - 17s 150ms/step - loss: 5.7733e-04
Epoch 22/35
113/113 [=====] - 15s 134ms/step - loss: 5.3461e-04
Epoch 23/35
113/113 [=====] - 22s 197ms/step - loss: 5.0982e-04
Epoch 24/35
113/113 [=====] - 15s 136ms/step - loss: 5.2621e-04
Epoch 25/35
113/113 [=====] - 16s 142ms/step - loss: 5.0415e-04
Epoch 26/35
113/113 [=====] - 17s 154ms/step - loss: 4.5157e-04
Epoch 27/35
113/113 [=====] - 17s 147ms/step - loss: 4.7465e-04
Epoch 28/35
113/113 [=====] - 19s 171ms/step - loss: 4.4989e-04
Epoch 29/35
113/113 [=====] - 18s 155ms/step - loss: 4.9218e-04
Epoch 30/35
113/113 [=====] - 19s 170ms/step - loss: 4.5441e-04
Epoch 31/35
113/113 [=====] - 5s 48ms/step - loss: 4.6855e-04
Epoch 32/35
113/113 [=====] - 4s 40ms/step - loss: 4.1592e-04
Epoch 33/35
113/113 [=====] - 4s 37ms/step - loss: 3.9012e-04
Epoch 34/35
113/113 [=====] - 5s 45ms/step - loss: 4.3347e-04
Epoch 35/35
113/113 [=====] - 4s 39ms/step - loss: 3.8573e-04
113/113 [=====] - 2s 15ms/step
47/47 [=====] - 1s 16ms/step



Prediction results:

r2_score: 0.9890922798721227

MAPE: 0.025790887395180026

MAE: 0.25073298050819476

RSME: 0.38867607016395467

```
[!"M&M_PIDILITIND", [0.9739187225233894, 0.6010149010891904, 0.49665992314077934, 0.04699417027208298], [0.9890922798721227, 0.38867607016395467, 0.25073298050819476, 0.025790887395180026]]
```


Pair Number: 22

Epoch 1/35

113/113 [=====] - 5s 26ms/step - loss: 0.1412

Epoch 2/35

113/113 [=====] - 3s 29ms/step - loss: 0.0226

Epoch 3/35

113/113 [=====] - 3s 28ms/step - loss: 0.0120

Epoch 4/35

113/113 [=====] - 3s 28ms/step - loss: 0.0073

Epoch 5/35

113/113 [=====] - 3s 27ms/step - loss: 0.0049

Epoch 6/35

113/113 [=====] - 3s 28ms/step - loss: 0.0044

Epoch 7/35

113/113 [=====] - 3s 31ms/step - loss: 0.0037

Epoch 8/35

113/113 [=====] - 3s 29ms/step - loss: 0.0028

Epoch 9/35

113/113 [=====] - 3s 30ms/step - loss: 0.0025

Epoch 10/35

113/113 [=====] - 3s 29ms/step - loss: 0.0024

Epoch 11/35

113/113 [=====] - 3s 30ms/step - loss: 0.0023

Epoch 12/35

113/113 [=====] - 4s 33ms/step - loss: 0.0021

Epoch 13/35

113/113 [=====] - 4s 32ms/step - loss: 0.0019

Epoch 14/35

113/113 [=====] - 4s 33ms/step - loss: 0.0019

Epoch 15/35

113/113 [=====] - 4s 31ms/step - loss: 0.0015

Epoch 16/35

113/113 [=====] - 4s 36ms/step - loss: 0.0014

Epoch 17/35

113/113 [=====] - 4s 32ms/step - loss: 0.0012

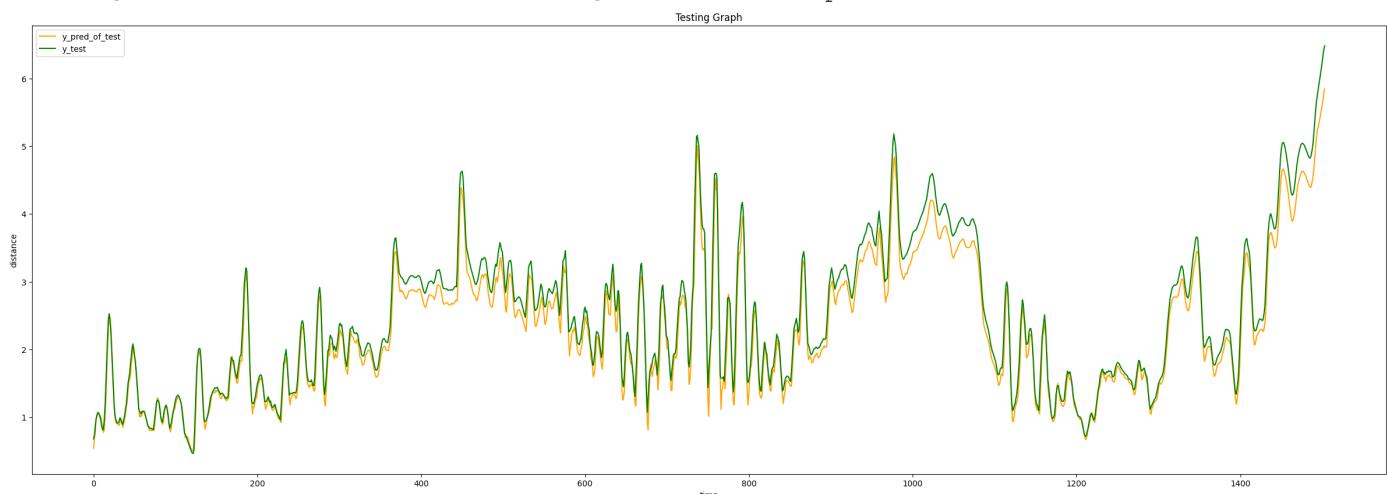
Epoch 18/35

113/113 [=====] - 4s 31ms/step - loss: 0.0013

Epoch 19/35

113/113 [=====] - 3s 31ms/step - loss: 0.0013

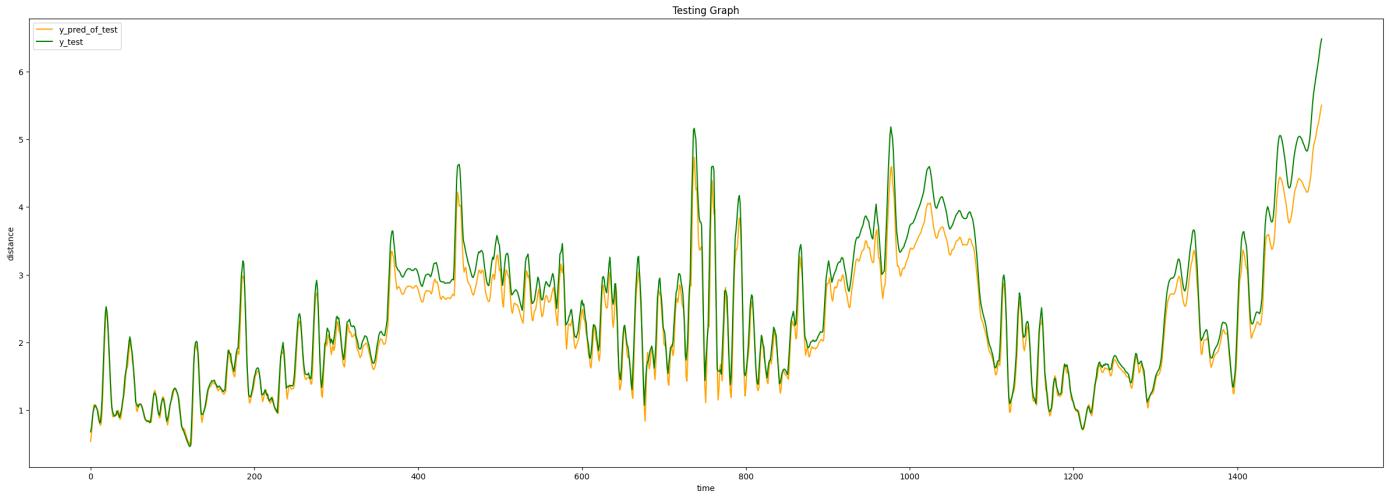
Epoch 20/35
 113/113 [=====] - 4s 31ms/step - loss: 0.0014
 Epoch 21/35
 113/113 [=====] - 4s 34ms/step - loss: 0.0011
 Epoch 22/35
 113/113 [=====] - 3s 31ms/step - loss: 0.0012
 Epoch 23/35
 113/113 [=====] - 3s 30ms/step - loss: 0.0011
 Epoch 24/35
 113/113 [=====] - 3s 30ms/step - loss: 9.7219e-04
 Epoch 25/35
 113/113 [=====] - 4s 33ms/step - loss: 9.7372e-04
 Epoch 26/35
 113/113 [=====] - 4s 32ms/step - loss: 9.1471e-04
 Epoch 27/35
 113/113 [=====] - 3s 31ms/step - loss: 9.2394e-04
 Epoch 28/35
 113/113 [=====] - 3s 31ms/step - loss: 9.8701e-04
 Epoch 29/35
 113/113 [=====] - 4s 31ms/step - loss: 9.4409e-04
 Epoch 30/35
 113/113 [=====] - 4s 34ms/step - loss: 8.2183e-04
 Epoch 31/35
 113/113 [=====] - 4s 31ms/step - loss: 9.5843e-04
 Epoch 32/35
 113/113 [=====] - 4s 31ms/step - loss: 7.5953e-04
 Epoch 33/35
 113/113 [=====] - 3s 31ms/step - loss: 7.7053e-04
 Epoch 34/35
 113/113 [=====] - 4s 34ms/step - loss: 7.8089e-04
 Epoch 35/35
 113/113 [=====] - 4s 32ms/step - loss: 7.0659e-04
 113/113 [=====] - 1s 10ms/step
 47/47 [=====] - 0s 10ms/step



Prediction results:
 r2_score: 0.9619645183467791
 MAPE: 0.06496835744348897
 MAE: 0.16924315058361522
 RMSE: 0.20881708438840876

Epoch 1/35
 113/113 [=====] - 10s 53ms/step - loss: 0.0078
 Epoch 2/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0071
 Epoch 3/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0047
 Epoch 4/35
 113/113 [=====] - 6s 52ms/step - loss: 0.0036
 Epoch 5/35
 113/113 [=====] - 5s 48ms/step - loss: 0.0029

Epoch 6/35
113/113 [=====] - 5s 47ms/step - loss: 0.0027
Epoch 7/35
113/113 [=====] - 6s 52ms/step - loss: 0.0021
Epoch 8/35
113/113 [=====] - 5s 47ms/step - loss: 0.0019
Epoch 9/35
113/113 [=====] - 7s 61ms/step - loss: 0.0016
Epoch 10/35
113/113 [=====] - 6s 52ms/step - loss: 0.0013
Epoch 11/35
113/113 [=====] - 6s 49ms/step - loss: 0.0011
Epoch 12/35
113/113 [=====] - 6s 50ms/step - loss: 9.1457e-04
Epoch 13/35
113/113 [=====] - 6s 50ms/step - loss: 7.9469e-04
Epoch 14/35
113/113 [=====] - 5s 48ms/step - loss: 7.4132e-04
Epoch 15/35
113/113 [=====] - 6s 55ms/step - loss: 7.3148e-04
Epoch 16/35
113/113 [=====] - 6s 51ms/step - loss: 6.5113e-04
Epoch 17/35
113/113 [=====] - 5s 48ms/step - loss: 5.5081e-04
Epoch 18/35
113/113 [=====] - 6s 56ms/step - loss: 5.6415e-04
Epoch 19/35
113/113 [=====] - 6s 52ms/step - loss: 5.6235e-04
Epoch 20/35
113/113 [=====] - 7s 60ms/step - loss: 5.9843e-04
Epoch 21/35
113/113 [=====] - 7s 58ms/step - loss: 5.2423e-04
Epoch 22/35
113/113 [=====] - 5s 48ms/step - loss: 4.3999e-04
Epoch 23/35
113/113 [=====] - 6s 52ms/step - loss: 4.6914e-04
Epoch 24/35
113/113 [=====] - 7s 59ms/step - loss: 4.5712e-04
Epoch 25/35
113/113 [=====] - 6s 55ms/step - loss: 4.4964e-04
Epoch 26/35
113/113 [=====] - 7s 62ms/step - loss: 4.5075e-04
Epoch 27/35
113/113 [=====] - 7s 60ms/step - loss: 5.0357e-04
Epoch 28/35
113/113 [=====] - 9s 78ms/step - loss: 4.2061e-04
Epoch 29/35
113/113 [=====] - 8s 68ms/step - loss: 4.2015e-04
Epoch 30/35
113/113 [=====] - 7s 59ms/step - loss: 4.5462e-04
Epoch 31/35
113/113 [=====] - 7s 60ms/step - loss: 4.1295e-04
Epoch 32/35
113/113 [=====] - 7s 63ms/step - loss: 3.8797e-04
Epoch 33/35
113/113 [=====] - 7s 60ms/step - loss: 3.9630e-04
Epoch 34/35
113/113 [=====] - 7s 65ms/step - loss: 3.8836e-04
Epoch 35/35
113/113 [=====] - 7s 58ms/step - loss: 3.9895e-04
113/113 [=====] - 3s 17ms/step
47/47 [=====] - 1s 18ms/step



Prediction results:

r2_score: 0.9432263277765532

MAPE: 0.06982560206434835

MAE: 0.19412611742416758

RSME: 0.25512032563191345

```
['"M&M_LT"', [0.9619645183467791, 0.20881708438840876, 0.16924315058361522, 0.0649683574
4348897], [0.9432263277765532, 0.25512032563191345, 0.19412611742416758, 0.0698256020643
4835]]
```


Pair Number: 23

Epoch 1/35

113/113 [=====] - 6s 36ms/step - loss: 0.1375

Epoch 2/35

113/113 [=====] - 4s 33ms/step - loss: 0.0298

Epoch 3/35

113/113 [=====] - 4s 37ms/step - loss: 0.0124

Epoch 4/35

113/113 [=====] - 4s 37ms/step - loss: 0.0072

Epoch 5/35

113/113 [=====] - 5s 40ms/step - loss: 0.0055

Epoch 6/35

113/113 [=====] - 4s 37ms/step - loss: 0.0042

Epoch 7/35

113/113 [=====] - 4s 35ms/step - loss: 0.0034

Epoch 8/35

113/113 [=====] - 4s 36ms/step - loss: 0.0032

Epoch 9/35

113/113 [=====] - 4s 38ms/step - loss: 0.0025

Epoch 10/35

113/113 [=====] - 4s 36ms/step - loss: 0.0023

Epoch 11/35

113/113 [=====] - 4s 35ms/step - loss: 0.0022

Epoch 12/35

113/113 [=====] - 4s 37ms/step - loss: 0.0019

Epoch 13/35

113/113 [=====] - 5s 42ms/step - loss: 0.0016

Epoch 14/35

113/113 [=====] - 4s 40ms/step - loss: 0.0018

Epoch 15/35

113/113 [=====] - 4s 35ms/step - loss: 0.0015

Epoch 16/35

113/113 [=====] - 4s 33ms/step - loss: 0.0014

Epoch 17/35

113/113 [=====] - 4s 34ms/step - loss: 0.0014

Epoch 18/35

113/113 [=====] - 4s 31ms/step - loss: 0.0014

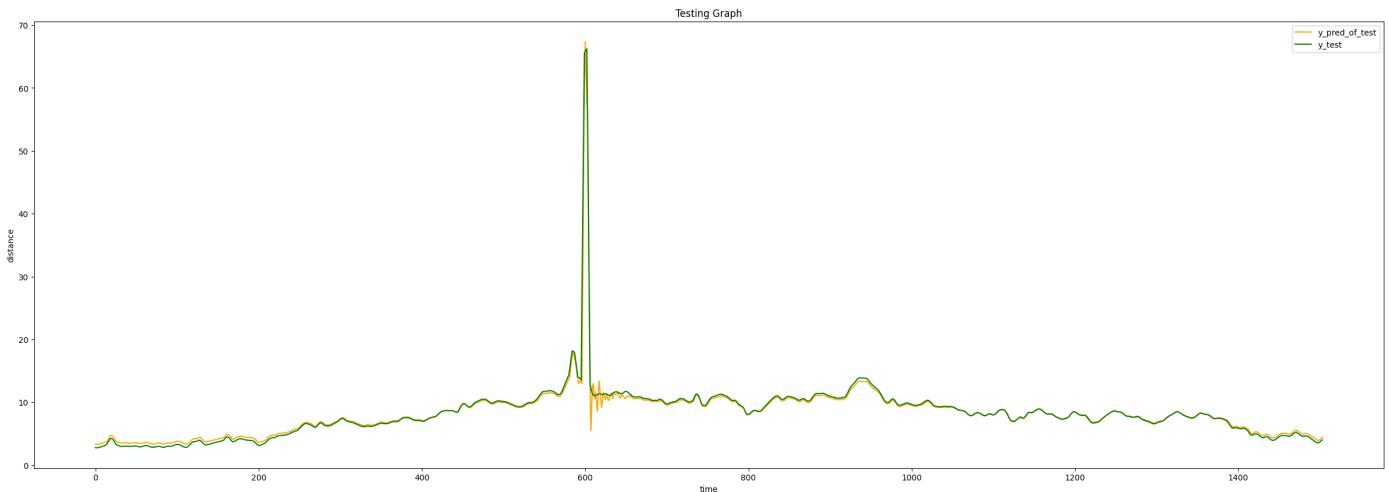
Epoch 19/35

113/113 [=====] - 4s 32ms/step - loss: 0.0011

```

Epoch 20/35
113/113 [=====] - 4s 32ms/step - loss: 0.0011
Epoch 21/35
113/113 [=====] - 4s 38ms/step - loss: 0.0010
Epoch 22/35
113/113 [=====] - 4s 32ms/step - loss: 0.0011
Epoch 23/35
113/113 [=====] - 4s 31ms/step - loss: 0.0011
Epoch 24/35
113/113 [=====] - 4s 31ms/step - loss: 0.0012
Epoch 25/35
113/113 [=====] - 4s 35ms/step - loss: 9.9442e-04
Epoch 26/35
113/113 [=====] - 4s 38ms/step - loss: 0.0012
Epoch 27/35
113/113 [=====] - 4s 34ms/step - loss: 9.9387e-04
Epoch 28/35
113/113 [=====] - 4s 37ms/step - loss: 8.4757e-04
Epoch 29/35
113/113 [=====] - 5s 41ms/step - loss: 8.4088e-04
Epoch 30/35
113/113 [=====] - 5s 42ms/step - loss: 9.4426e-04
Epoch 31/35
113/113 [=====] - 4s 38ms/step - loss: 9.1107e-04
Epoch 32/35
113/113 [=====] - 4s 35ms/step - loss: 8.2881e-04
Epoch 33/35
113/113 [=====] - 4s 35ms/step - loss: 7.6041e-04
Epoch 34/35
113/113 [=====] - 4s 35ms/step - loss: 8.2511e-04
Epoch 35/35
113/113 [=====] - 4s 35ms/step - loss: 7.5097e-04
113/113 [=====] - 2s 12ms/step
47/47 [=====] - 1s 11ms/step

```



Prediction results:

```

r2_score: 0.9790862501924417
MAPE: 0.0433757800727334
MAE: 0.2835531561086146
RMSE: 0.6685931851293937

```

```

Epoch 1/35
113/113 [=====] - 12s 55ms/step - loss: 0.0086
Epoch 2/35
113/113 [=====] - 5s 45ms/step - loss: 0.0065
Epoch 3/35
113/113 [=====] - 5s 47ms/step - loss: 0.0050
Epoch 4/35
113/113 [=====] - 5s 45ms/step - loss: 0.0040
Epoch 5/35
113/113 [=====] - 5s 45ms/step - loss: 0.0032

```

```
Epoch 6/35
113/113 [=====] - 5s 49ms/step - loss: 0.0026
Epoch 7/35
113/113 [=====] - 5s 44ms/step - loss: 0.0021
Epoch 8/35
113/113 [=====] - 6s 54ms/step - loss: 0.0018
Epoch 9/35
113/113 [=====] - 7s 63ms/step - loss: 0.0014
Epoch 10/35
113/113 [=====] - 7s 60ms/step - loss: 0.0011
Epoch 11/35
113/113 [=====] - 7s 64ms/step - loss: 0.0011
Epoch 12/35
113/113 [=====] - 7s 60ms/step - loss: 8.0389e-04
Epoch 13/35
113/113 [=====] - 7s 60ms/step - loss: 7.7291e-04
Epoch 14/35
113/113 [=====] - 6s 56ms/step - loss: 7.3687e-04
Epoch 15/35
113/113 [=====] - 6s 54ms/step - loss: 5.8541e-04
Epoch 16/35
113/113 [=====] - 6s 53ms/step - loss: 7.1065e-04
Epoch 17/35
113/113 [=====] - 5s 46ms/step - loss: 5.2144e-04
Epoch 18/35
113/113 [=====] - 5s 46ms/step - loss: 5.2349e-04
Epoch 19/35
113/113 [=====] - 6s 51ms/step - loss: 5.8188e-04
Epoch 20/35
113/113 [=====] - 5s 47ms/step - loss: 5.2981e-04
Epoch 21/35
113/113 [=====] - 5s 48ms/step - loss: 5.1339e-04
Epoch 22/35
113/113 [=====] - 5s 48ms/step - loss: 5.3897e-04
Epoch 23/35
```

```
In [ ]: # Version number (increment manually if needed)
version = 1

# Save the RNN results with the version number
df = pd.DataFrame(predicted_series_rnn)
df.columns = names
df.to_csv(f"predicted_series_rnn_block10_w50_v{version}.csv")

# Save the LSTM results with the version number
df = pd.DataFrame(predicted_series_lstm)
df.columns = names
df.to_csv(f"predicted_series_lstm_block10_w50_v{version}.csv")
```

```
In [ ]:
```

```
In [ ]: rnn_r2 = []
rnn_rmse = []
rnn_mae = []
rnn_mape = []
lstm_r2 = []
lstm_rmse = []
lstm_mae = []
lstm_mape = []

results_rows = []
for i in range(len(rows)):
    row = rows[i]
    rnn = row[1]
    rnn_r2.append(rnn[0])
```

```

rnn_rmse.append(rnn[1])
rnn_mae.append(rnn[2])
rnn_mape.append(rnn[3])

lstm = row[2]

lstm_r2.append(lstm[0])
lstm_rmse.append(lstm[1])
lstm_mae.append(lstm[2])
lstm_mape.append(lstm[3])

results_rows = [rnn_r2,rnn_rmse,rnn_mae,
                lstm_r2,lstm_rmse,lstm_mae,]

```

```

In [ ]: high_acc = []
good = []
mid = []
bad = []
for i in range(len(rnn_mape)):
    if lstm_mape[i]<=0.10:
        high_acc.append(lstm_mape[i])
    elif lstm_mape[i]<=0.20 and lstm_mape[i]>0.10:
        good.append(lstm_mape[i])
    elif lstm_mape[i]<=0.50 and lstm_mape[i]>0.20:
        mid.append(lstm_mape[i])
    elif lstm_mape[i]>0.50:
        bad.append(lstm_mape[i])

```

```

In [ ]: print(len(rnn_mape))
print(len(lstm_mape))

```

```

In [ ]: from statistics import mean

print("Highly accurate MAPE count: ", len(high_acc), "-> avg = ",mean(high_acc))
print("Good accurate MAPE count: ", len(good), "-> avg = ",mean(good))
print("Reasonably good accurate MAPE count: ", len(mid), "-> avg = ",mean(mid))
print("Inaccurate MAPE count: ", len(bad))

```

```

In [ ]: high_acc = []
good = []
mid = []
bad = []
for i in range(len(rnn_mape)):
    if rnn_mape[i]<=0.10:
        high_acc.append(rnn_mape[i])
    elif rnn_mape[i]<=0.20 and rnn_mape[i]>0.10:
        good.append(rnn_mape[i])
    elif rnn_mape[i]<=0.50 and rnn_mape[i]>0.20:
        mid.append(rnn_mape[i])
    elif rnn_mape[i]>0.50:
        bad.append(rnn_mape[i])

```

```

In [ ]: from statistics import mean

print("Highly accurate MAPE count: ", len(high_acc), "-> avg = ",mean(high_acc))
print("Good accurate MAPE count: ", len(good), "-> avg = ",mean(good))
print("Reasonably good accurate MAPE count: ", len(mid), "-> avg = ",mean(mid))
print("Inaccurate MAPE count: ", len(bad))

```

```

In [ ]: fields = ['Name', 'RNN results', 'LSTM results']
filename = 'PriceVolBlock_Results_block10_w50_v1.csv'
#RNN, LSTM Results look like: [[r2score, rsme, mae, accuracy1, f1_1, f1_indiv[0]_1,f1_in

```

```
with open(filename, 'w') as csvfile:  
    # creating a csv writer object  
    csvwriter = csv.writer(csvfile)  
  
    # writing the fields  
    csvwriter.writerow(fields)  
  
    # writing the data rows  
    csvwriter.writerows(rows)
```

```
In [ ]: print(len(rows))
```

```
In [ ]: rnn_r2 = []  
rnn_rmse = []  
rnn_mae = []  
rnn_mape = []  
  
rnn_f1_1_e1 = []  
rnn_f1_e1 = []  
rnn_acc_e1 = []  
rnn_per_e1 = []  
  
rnn_f1_1_e2 = []  
rnn_f1_e2 = []  
rnn_acc_e2 = []  
rnn_per_e2 = []  
  
rnn_f1_1_e3 = []  
rnn_f1_e3 = []  
rnn_acc_e3 = []  
rnn_per_e3 = []  
  
rnn_f1_1_e4 = []  
rnn_f1_e4 = []  
rnn_acc_e4 = []  
rnn_per_e4 = []  
  
lstm_r2 = []  
lstm_rmse = []  
lstm_mae = []  
lstm_mape = []  
  
lstm_f1_1_e1 = []  
lstm_f1_e1 = []  
lstm_acc_e1 = []  
lstm_per_e1 = []  
  
lstm_f1_1_e2 = []  
lstm_f1_e2 = []  
lstm_acc_e2 = []  
lstm_per_e2 = []  
  
lstm_f1_1_e3 = []  
lstm_f1_e3 = []  
lstm_acc_e3 = []  
lstm_per_e3 = []  
  
lstm_f1_1_e4 = []  
lstm_f1_e4 = []  
lstm_acc_e4 = []  
lstm_per_e4 = []  
  
results_rows = []  
for i in range(len(rows)):  
    row = rows[i]
```

```

rnn = row[1]
rnn_r2.append(rnn[0])
rnn_rmse.append(rnn[1])
rnn_mae.append(rnn[2])
rnn_mape.append(rnn[3])

rnn_acc_e1.append(rnn[4][0])
rnn_f1_e1.append(rnn[4][1])
rnn_f1_1_e1.append(rnn[4][2])
rnn_per_e1.append(rnn[4][3])

rnn_acc_e2.append(rnn[5][0])
rnn_f1_e2.append(rnn[5][1])
rnn_f1_1_e2.append(rnn[5][2])
rnn_per_e2.append(rnn[5][3])

rnn_acc_e3.append(rnn[6][0])
rnn_f1_e3.append(rnn[6][1])
rnn_f1_1_e3.append(rnn[6][2])
rnn_per_e3.append(rnn[6][3])

rnn_acc_e4.append(rnn[7][0])
rnn_f1_e4.append(rnn[7][1])
rnn_f1_1_e4.append(rnn[7][2])
rnn_per_e4.append(rnn[7][3])

lstm = row[2]

lstm_r2.append(lstm[0])
lstm_rmse.append(lstm[1])
lstm_mae.append(lstm[2])
lstm_mape.append(lstm[3])

lstm_acc_e1.append(lstm[4][0])
lstm_f1_e1.append(lstm[4][1])
lstm_f1_1_e1.append(lstm[4][2])
lstm_per_e1.append(lstm[4][3])

lstm_acc_e2.append(lstm[5][0])
lstm_f1_e2.append(lstm[5][1])
lstm_f1_1_e2.append(lstm[5][2])
lstm_per_e2.append(lstm[5][3])

lstm_acc_e3.append(lstm[6][0])
lstm_f1_e3.append(lstm[6][1])
lstm_f1_1_e3.append(lstm[6][2])
lstm_per_e3.append(lstm[6][3])

lstm_acc_e4.append(lstm[7][0])
lstm_f1_e4.append(lstm[7][1])
lstm_f1_1_e4.append(lstm[7][2])
lstm_per_e4.append(lstm[7][3])

results_rows = [rnn_r2,rnn_rmse,rnn_mae,
                rnn_f1_1_e1,rnn_f1_e1,rnn_acc_e1,rnn_per_e1,
                rnn_f1_1_e2,rnn_f1_e2,rnn_acc_e2,rnn_per_e2,
                rnn_f1_1_e3,rnn_f1_e3,rnn_acc_e3,rnn_per_e3,
                rnn_f1_1_e4,rnn_f1_e4,rnn_acc_e4,rnn_per_e4,
                lstm_r2,lstm_rmse,lstm_mae,
                lstm_f1_1_e1,lstm_f1_e1,lstm_acc_e1,lstm_per_e1,
                lstm_f1_1_e2,lstm_f1_e2,lstm_acc_e2,lstm_per_e2,
                lstm_f1_1_e3,lstm_f1_e3,lstm_acc_e3,lstm_per_e3,
                lstm_f1_1_e4,lstm_f1_e4,lstm_acc_e4,lstm_per_e4]

```

In []: filename = 'ResultsRows1.csv'

```
with open(filename, 'w') as csvfile:  
    # creating a csv writer object  
    csvwriter = csv.writer(csvfile)  
  
    # writing the data rows  
    csvwriter.writerows(results_rows)
```

```
In [ ]: high_acc = []  
good = []  
mid = []  
bad = []  
for i in range(len(rnn_mape)):  
    if lstm_mape[i]<=0.10:  
        high_acc.append(lstm_mape[i])  
    elif lstm_mape[i]<=0.20 and lstm_mape[i]>0.10:  
        good.append(lstm_mape[i])  
    elif lstm_mape[i]<=0.50 and lstm_mape[i]>0.20:  
        mid.append(lstm_mape[i])  
    elif lstm_mape[i]>0.50:  
        bad.append(lstm_mape[i])
```

```
In [ ]: print("Highly accurate MAPE count: ", len(high_acc), "-> avg = ", mean(high_acc))  
print("Good accurate MAPE count: ", len(good), "-> avg = ", mean(good))  
print("Reasonably good accurate MAPE count: ", len(mid), "-> avg = ", mean(mid))  
print("Inaccurate MAPE count: ", len(bad))
```

```
In [ ]: for i in range(len(rnn_mape)):  
    if lstm_mape[i]>0.50:  
        print(i)
```

```
In [ ]: high_acc = []  
good = []  
mid = []  
bad = []  
for i in range(len(rnn_mape)):  
    if rnn_mape[i]<=0.10:  
        high_acc.append(rnn_mape[i])  
    elif rnn_mape[i]<=0.20 and rnn_mape[i]>0.10:  
        good.append(rnn_mape[i])  
    elif rnn_mape[i]<=0.50 and rnn_mape[i]>0.20:  
        mid.append(rnn_mape[i])  
    elif rnn_mape[i]>0.50:  
        bad.append(rnn_mape[i])
```

```
In [ ]: print("Highly accurate MAPE count: ", len(high_acc), "-> avg = ", mean(high_acc))  
print("Good accurate MAPE count: ", len(good), "-> avg = ", mean(good))  
print("Reasonably good accurate MAPE count: ", len(mid), "-> avg = ", mean(mid))  
print("Inaccurate MAPE count: ", len(bad))
```

```
In [ ]: ticker = ['HDFCBANK', 'MARUTI', 'M&M', 'ULTRACEMCO', 'GRASIM', 'PIDILITIND', 'LT', 'DLF',  
'ABB', 'TCS', 'INFY', 'COALINDIA', 'TATASTEEL', 'SUNPHARMA', 'DIVISLAB', 'ADANIPORTS']
```

```
In [ ]:
```

