In [1]:
```
 #Importing Libraries
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd

from sklearn.preprocessing import LabelEncoder
from sklearn.utils import shuffle
```

In [2]:
```
#Constants

TRAIN_SIZE = 7679
TEST_SIZE = 1920
COLUMNS_TOTAL=12
ACTIVATION_F = 'tanh'
```

In [3]:
```
#Import Training Set
df = pd.read_csv('SeoulBikeData.csv',engine='python')

dummies = pd.get_dummies(df.Seasons)
df= pd.concat([df,dummies],axis='columns')
df= df.drop(['Seasons','Winter'], axis='columns')

le= LabelEncoder()
dfle = df
df.Holiday=le.fit_transform(dfle.Holiday)


dfle = df
df['Functioning Day']=le.fit_transform(dfle['Functioning Day'])

over_set=df.loc[df['Rented Bike Count'] >= 1500]
df= pd.concat([df,over_set], axis='rows')

df=shuffle(df)

df=df[df['Functioning Day'] == 1]
df = df.drop(['Functioning Day'], axis='columns')

df=df.drop([df.columns[7]], axis='columns')

print (df)

training_set_df= df.iloc[:TRAIN_SIZE, 1:]
training_set= df.iloc[:TRAIN_SIZE, 1:].values
y_set= df.iloc[:TRAIN_SIZE, 1].values

df.columns
```

```
            Date  Rented Bike Count  Hour  Temperature(°C)  Humidity(%)  \
3983  15/05/2018                848    23             24.8           60
1266  22/01/2018                170    18              1.1           96
2518  15/03/2018                506    22              9.8           90
1891  17/02/2018                169    19             -1.5           32
5150  03/07/2018               1001    14             31.0           56
...          ...                ...   ...              ...          ...
4645  12/06/2018               1215    13             25.7           46
5706  26/07/2018               2367    18             33.2           59
7583  12/10/2018                940    23              9.8           66
5337  11/07/2018                634     9             25.6           96
3097  09/04/2018                140     1              2.8           87
```

```
      Wind speed (m/s)  Visibility (10m)  Solar Radiation (MJ/m2)  \
3983               1.0               795                     0.00
1266               3.0               187                     0.00
2518               3.7               493                     0.00
1891               2.5              2000                     0.00
5150               1.5              2000                     1.47
...                ...               ...                      ...
4645               0.8              2000                     3.18
5706               1.8              1069                     0.99
7583               0.5              1979                     0.00
5337               0.6               450                     0.41
3097               0.8               462                     0.00

      Rainfall(mm)  Snowfall (cm)  Holiday  Autumn  Spring  Summer
3983           0.0            0.0        1       0       1       0
1266           3.3            1.0        1       0       0       0
2518           0.0            0.0        1       0       1       0
1891           0.0            0.0        0       0       0       0
5150           0.0            0.0        1       0       0       1
...            ...            ...      ...     ...     ...     ...
4645           0.0            0.0        1       0       0       1
5706           0.0            0.0        1       0       0       1
7583           0.0            0.0        1       1       0       0
5337           0.0            0.0        1       0       0       1
3097           0.0            0.0        1       0       1       0

[9599 rows x 14 columns]
```

Out[3]:
```
Index(['Date', 'Rented Bike Count', 'Hour', 'Temperature(°C)', 'Humidity(%)',
       'Wind speed (m/s)', 'Visibility (10m)', 'Solar Radiation (MJ/m2)',
       'Rainfall(mm)', 'Snowfall (cm)', 'Holiday', 'Autumn', 'Spring',
       'Summer'],
      dtype='object')
```

In [4]:
```
#Feature Scaling
from sklearn.preprocessing import MinMaxScaler
sc= MinMaxScaler(feature_range = (0,1))
training_set_scaled = sc.fit_transform(training_set)

sc2= MinMaxScaler(feature_range = (0,1))
y_set=y_set.reshape(-1,1)
y_set_scaled = sc2.fit_transform(y_set)
```

In [5]:
```
X_train=np.array(training_set_scaled[:,1:])
Y_train=np.array(training_set_scaled[:,0])


#reshaping
X_train = np.reshape(X_train, (X_train.shape[0], 1, COLUMNS_TOTAL))
```

In [6]:
```
# Importing the Keras libraries and packages

from keras.models import Sequential
from keras.layers import Dense
from keras.layers import LSTM
from keras.layers import Dropout
from keras import optimizers
from keras import backend as K
import keras
```

In [7]:
```
def coeff_determination(y_true, y_pred):
```

```
    SS_res =  K.sum(K.square( y_true-y_pred ))
    SS_tot = K.sum(K.square( y_true - K.mean(y_true) ) )
    return ( 1 - SS_res/(SS_tot + K.epsilon()) )
```

In [8]:
```
#Initializing the RNN
regressor = Sequential()
```

In [9]:
```
# Adding the first LSTM layer and dropout
regressor.add(LSTM(units = 50, activation=ACTIVATION_F, return_sequences= True, input_s
regressor.add(Dropout(0.1))
```

In [10]:
```
# Adding the second LSTM layer and dropout
regressor.add(LSTM(units = 50, activation=ACTIVATION_F, return_sequences= True))
regressor.add(Dropout(0.1))
```

In [11]:
```
# Adding the third LSTM layer and dropout
regressor.add(LSTM(units = 50, activation=ACTIVATION_F, return_sequences= True))
regressor.add(Dropout(0.1))
```

In [12]:
```
# Adding the fourth LSTM layer and dropout
regressor.add(LSTM(units = 50, activation=ACTIVATION_F))
regressor.add(Dropout(0.1))
```

In [13]:
```
#output layer
regressor.add(Dense(units=1))
```

In [14]:
```
#compiling rnn
optimizer = keras.optimizers.RMSprop(lr=0.001)


regressor.compile(optimizer=optimizer, loss='mean_squared_error', metrics=[coeff_determ
```

In [15]:
```
#fitting rnn to training set
history=regressor.fit(X_train, Y_train, epochs= 450, batch_size=64, validation_split=0.
```

```
Epoch 1/450
96/96 [==============================] - 2s 26ms/step - loss: 0.0370 - coeff_determinati
on: 0.1490 - val_loss: 0.0227 - val_coeff_determination: 0.4669
Epoch 2/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0219 - coeff_determinatio
n: 0.4880 - val_loss: 0.0218 - val_coeff_determination: 0.4740
Epoch 3/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0204 - coeff_determinatio
n: 0.5257 - val_loss: 0.0183 - val_coeff_determination: 0.5648
Epoch 4/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0195 - coeff_determinatio
n: 0.5456 - val_loss: 0.0178 - val_coeff_determination: 0.5778
Epoch 5/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0191 - coeff_determinatio
n: 0.5535 - val_loss: 0.0189 - val_coeff_determination: 0.5561
Epoch 6/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0189 - coeff_determinatio
n: 0.5586 - val_loss: 0.0179 - val_coeff_determination: 0.5799
Epoch 7/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0185 - coeff_determinatio
n: 0.5689 - val_loss: 0.0179 - val_coeff_determination: 0.5802
Epoch 8/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0178 - coeff_determinatio
n: 0.5833 - val_loss: 0.0167 - val_coeff_determination: 0.6021
```

```
Epoch 9/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0176 - coeff_determinatio
n: 0.5896 - val_loss: 0.0165 - val_coeff_determination: 0.6078
Epoch 10/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0176 - coeff_determinatio
n: 0.5871 - val_loss: 0.0169 - val_coeff_determination: 0.6039
Epoch 11/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0177 - coeff_determinatio
n: 0.5856 - val_loss: 0.0163 - val_coeff_determination: 0.6154
Epoch 12/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0170 - coeff_determinatio
n: 0.6011 - val_loss: 0.0159 - val_coeff_determination: 0.6236
Epoch 13/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0171 - coeff_determinatio
n: 0.6002 - val_loss: 0.0159 - val_coeff_determination: 0.6217
Epoch 14/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0167 - coeff_determinatio
n: 0.6102 - val_loss: 0.0159 - val_coeff_determination: 0.6207
Epoch 15/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0168 - coeff_determinatio
n: 0.6097 - val_loss: 0.0154 - val_coeff_determination: 0.6340
Epoch 16/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0164 - coeff_determinatio
n: 0.6169 - val_loss: 0.0159 - val_coeff_determination: 0.6196
Epoch 17/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0165 - coeff_determinatio
n: 0.6112 - val_loss: 0.0153 - val_coeff_determination: 0.6383
Epoch 18/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0161 - coeff_determinatio
n: 0.6232 - val_loss: 0.0165 - val_coeff_determination: 0.6141
Epoch 19/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0160 - coeff_determinatio
n: 0.6278 - val_loss: 0.0160 - val_coeff_determination: 0.6243
Epoch 20/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0159 - coeff_determinatio
n: 0.6306 - val_loss: 0.0149 - val_coeff_determination: 0.6475
Epoch 21/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0157 - coeff_determinatio
n: 0.6318 - val_loss: 0.0147 - val_coeff_determination: 0.6529
Epoch 22/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0158 - coeff_determinatio
n: 0.6341 - val_loss: 0.0147 - val_coeff_determination: 0.6528
Epoch 23/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0156 - coeff_determinatio
n: 0.6366 - val_loss: 0.0145 - val_coeff_determination: 0.6556
Epoch 24/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0154 - coeff_determinatio
n: 0.6397 - val_loss: 0.0160 - val_coeff_determination: 0.6166
Epoch 25/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0153 - coeff_determinatio
n: 0.6411 - val_loss: 0.0143 - val_coeff_determination: 0.6623
Epoch 26/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0150 - coeff_determinatio
n: 0.6474 - val_loss: 0.0141 - val_coeff_determination: 0.6669
Epoch 27/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0149 - coeff_determinatio
n: 0.6525 - val_loss: 0.0141 - val_coeff_determination: 0.6656
Epoch 28/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0148 - coeff_determinatio
n: 0.6532 - val_loss: 0.0139 - val_coeff_determination: 0.6708
Epoch 29/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0147 - coeff_determinatio
n: 0.6569 - val_loss: 0.0163 - val_coeff_determination: 0.6190
Epoch 30/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0149 - coeff_determinatio
```

```
n: 0.6535 - val_loss: 0.0146 - val_coeff_determination: 0.6585
Epoch 31/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0146 - coeff_determinatio
n: 0.6564 - val_loss: 0.0157 - val_coeff_determination: 0.6335
Epoch 32/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0146 - coeff_determinatio
n: 0.6581 - val_loss: 0.0137 - val_coeff_determination: 0.6759
Epoch 33/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0143 - coeff_determinatio
n: 0.6651 - val_loss: 0.0138 - val_coeff_determination: 0.6728
Epoch 34/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0144 - coeff_determinatio
n: 0.6632 - val_loss: 0.0135 - val_coeff_determination: 0.6795
Epoch 35/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0140 - coeff_determinatio
n: 0.6716 - val_loss: 0.0135 - val_coeff_determination: 0.6802
Epoch 36/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0141 - coeff_determinatio
n: 0.6725 - val_loss: 0.0134 - val_coeff_determination: 0.6821
Epoch 37/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0139 - coeff_determinatio
n: 0.6743 - val_loss: 0.0136 - val_coeff_determination: 0.6750
Epoch 38/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0139 - coeff_determinatio
n: 0.6707 - val_loss: 0.0133 - val_coeff_determination: 0.6851
Epoch 39/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0138 - coeff_determinatio
n: 0.6767 - val_loss: 0.0140 - val_coeff_determination: 0.6718
Epoch 40/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0138 - coeff_determinatio
n: 0.6782 - val_loss: 0.0131 - val_coeff_determination: 0.6895
Epoch 41/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0137 - coeff_determinatio
n: 0.6783 - val_loss: 0.0134 - val_coeff_determination: 0.6845
Epoch 42/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0135 - coeff_determinatio
n: 0.6830 - val_loss: 0.0129 - val_coeff_determination: 0.6955
Epoch 43/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0135 - coeff_determinatio
n: 0.6822 - val_loss: 0.0133 - val_coeff_determination: 0.6825
Epoch 44/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0133 - coeff_determinatio
n: 0.6866 - val_loss: 0.0132 - val_coeff_determination: 0.6862
Epoch 45/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0133 - coeff_determinatio
n: 0.6878 - val_loss: 0.0135 - val_coeff_determination: 0.6807
Epoch 46/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0133 - coeff_determinatio
n: 0.6879 - val_loss: 0.0127 - val_coeff_determination: 0.6976
Epoch 47/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0131 - coeff_determinatio
n: 0.6931 - val_loss: 0.0129 - val_coeff_determination: 0.6938
Epoch 48/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0132 - coeff_determinatio
n: 0.6918 - val_loss: 0.0127 - val_coeff_determination: 0.7010
Epoch 49/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0131 - coeff_determinatio
n: 0.6931 - val_loss: 0.0127 - val_coeff_determination: 0.6998
Epoch 50/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0129 - coeff_determinatio
n: 0.6981 - val_loss: 0.0126 - val_coeff_determination: 0.7029
Epoch 51/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0131 - coeff_determinatio
n: 0.6923 - val_loss: 0.0125 - val_coeff_determination: 0.7030
Epoch 52/450
```

```
96/96 [==============================] - 1s 6ms/step - loss: 0.0130 - coeff_determinatio
n: 0.6957 - val_loss: 0.0129 - val_coeff_determination: 0.6933
Epoch 53/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0129 - coeff_determinatio
n: 0.6984 - val_loss: 0.0130 - val_coeff_determination: 0.6922
Epoch 54/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0130 - coeff_determinatio
n: 0.6966 - val_loss: 0.0130 - val_coeff_determination: 0.6916
Epoch 55/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0128 - coeff_determinatio
n: 0.6994 - val_loss: 0.0123 - val_coeff_determination: 0.7077
Epoch 56/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0128 - coeff_determinatio
n: 0.7009 - val_loss: 0.0123 - val_coeff_determination: 0.7084
Epoch 57/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0126 - coeff_determinatio
n: 0.7034 - val_loss: 0.0130 - val_coeff_determination: 0.6907
Epoch 58/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0127 - coeff_determinatio
n: 0.7017 - val_loss: 0.0123 - val_coeff_determination: 0.7083
Epoch 59/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0126 - coeff_determinatio
n: 0.7025 - val_loss: 0.0123 - val_coeff_determination: 0.7083
Epoch 60/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0126 - coeff_determinatio
n: 0.7032 - val_loss: 0.0126 - val_coeff_determination: 0.7006
Epoch 61/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0125 - coeff_determinatio
n: 0.7017 - val_loss: 0.0126 - val_coeff_determination: 0.7034
Epoch 62/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0125 - coeff_determinatio
n: 0.7085 - val_loss: 0.0121 - val_coeff_determination: 0.7131
Epoch 63/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0125 - coeff_determinatio
n: 0.7085 - val_loss: 0.0121 - val_coeff_determination: 0.7126
Epoch 64/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0123 - coeff_determinatio
n: 0.7087 - val_loss: 0.0121 - val_coeff_determination: 0.7133
Epoch 65/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0124 - coeff_determinatio
n: 0.7089 - val_loss: 0.0118 - val_coeff_determination: 0.7210
Epoch 66/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0122 - coeff_determinatio
n: 0.7145 - val_loss: 0.0119 - val_coeff_determination: 0.7189
Epoch 67/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0122 - coeff_determinatio
n: 0.7129 - val_loss: 0.0119 - val_coeff_determination: 0.7181
Epoch 68/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0120 - coeff_determinatio
n: 0.7179 - val_loss: 0.0116 - val_coeff_determination: 0.7238
Epoch 69/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0121 - coeff_determinatio
n: 0.7147 - val_loss: 0.0115 - val_coeff_determination: 0.7269
Epoch 70/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0118 - coeff_determinatio
n: 0.7237 - val_loss: 0.0117 - val_coeff_determination: 0.7219
Epoch 71/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0120 - coeff_determinatio
n: 0.7162 - val_loss: 0.0112 - val_coeff_determination: 0.7332
Epoch 72/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0116 - coeff_determinatio
n: 0.7258 - val_loss: 0.0115 - val_coeff_determination: 0.7241
Epoch 73/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0115 - coeff_determinatio
n: 0.7297 - val_loss: 0.0112 - val_coeff_determination: 0.7345
```

```
Epoch 74/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0115 - coeff_determinatio
n: 0.7309 - val_loss: 0.0110 - val_coeff_determination: 0.7390
Epoch 75/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0113 - coeff_determinatio
n: 0.7339 - val_loss: 0.0109 - val_coeff_determination: 0.7402
Epoch 76/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0115 - coeff_determinatio
n: 0.7280 - val_loss: 0.0110 - val_coeff_determination: 0.7384
Epoch 77/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0112 - coeff_determinatio
n: 0.7372 - val_loss: 0.0107 - val_coeff_determination: 0.7460
Epoch 78/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0114 - coeff_determinatio
n: 0.7323 - val_loss: 0.0109 - val_coeff_determination: 0.7394
Epoch 79/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0112 - coeff_determinatio
n: 0.7361 - val_loss: 0.0108 - val_coeff_determination: 0.7440
Epoch 80/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0111 - coeff_determinatio
n: 0.7381 - val_loss: 0.0106 - val_coeff_determination: 0.7472
Epoch 81/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0111 - coeff_determinatio
n: 0.7372 - val_loss: 0.0104 - val_coeff_determination: 0.7520
Epoch 82/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0111 - coeff_determinatio
n: 0.7366 - val_loss: 0.0103 - val_coeff_determination: 0.7553
Epoch 83/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0109 - coeff_determinatio
n: 0.7413 - val_loss: 0.0109 - val_coeff_determination: 0.7395
Epoch 84/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0109 - coeff_determinatio
n: 0.7453 - val_loss: 0.0101 - val_coeff_determination: 0.7585
Epoch 85/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0108 - coeff_determinatio
n: 0.7462 - val_loss: 0.0111 - val_coeff_determination: 0.7332
Epoch 86/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0107 - coeff_determinatio
n: 0.7464 - val_loss: 0.0102 - val_coeff_determination: 0.7583
Epoch 87/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0107 - coeff_determinatio
n: 0.7490 - val_loss: 0.0102 - val_coeff_determination: 0.7572
Epoch 88/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0106 - coeff_determinatio
n: 0.7510 - val_loss: 0.0100 - val_coeff_determination: 0.7623
Epoch 89/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0104 - coeff_determinatio
n: 0.7546 - val_loss: 0.0101 - val_coeff_determination: 0.7597
Epoch 90/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0106 - coeff_determinatio
n: 0.7516 - val_loss: 0.0100 - val_coeff_determination: 0.7602
Epoch 91/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0106 - coeff_determinatio
n: 0.7506 - val_loss: 0.0102 - val_coeff_determination: 0.7555
Epoch 92/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0106 - coeff_determinatio
n: 0.7509 - val_loss: 0.0098 - val_coeff_determination: 0.7661
Epoch 93/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0102 - coeff_determinatio
n: 0.7567 - val_loss: 0.0098 - val_coeff_determination: 0.7659
Epoch 94/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0103 - coeff_determinatio
n: 0.7531 - val_loss: 0.0098 - val_coeff_determination: 0.7675
Epoch 95/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0102 - coeff_determinatio
```

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n: 0.7589 - val_loss: 0.0097 - val_coeff_determination: 0.7702
Epoch 96/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0102 - coeff_determinatio
n: 0.7588 - val_loss: 0.0099 - val_coeff_determination: 0.7639
Epoch 97/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0102 - coeff_determinatio
n: 0.7587 - val_loss: 0.0098 - val_coeff_determination: 0.7669
Epoch 98/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0102 - coeff_determinatio
n: 0.7579 - val_loss: 0.0095 - val_coeff_determination: 0.7745
Epoch 99/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0103 - coeff_determinatio
n: 0.7560 - val_loss: 0.0097 - val_coeff_determination: 0.7700
Epoch 100/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0100 - coeff_determinatio
n: 0.7615 - val_loss: 0.0097 - val_coeff_determination: 0.7674
Epoch 101/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0101 - coeff_determinatio
n: 0.7633 - val_loss: 0.0097 - val_coeff_determination: 0.7665
Epoch 102/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0100 - coeff_determinatio
n: 0.7604 - val_loss: 0.0113 - val_coeff_determination: 0.7329
Epoch 103/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0099 - coeff_determinatio
n: 0.7684 - val_loss: 0.0100 - val_coeff_determination: 0.7632
Epoch 104/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0099 - coeff_determinatio
n: 0.7662 - val_loss: 0.0092 - val_coeff_determination: 0.7788
Epoch 105/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0100 - coeff_determinatio
n: 0.7645 - val_loss: 0.0093 - val_coeff_determination: 0.7782
Epoch 106/450
96/96 [==============================] - ETA: 0s - loss: 0.0099 - coeff_determination:
0.766 - 1s 6ms/step - loss: 0.0099 - coeff_determination: 0.7676 - val_loss: 0.0094 - va
l_coeff_determination: 0.7757
Epoch 107/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0098 - coeff_determinatio
n: 0.7680 - val_loss: 0.0093 - val_coeff_determination: 0.7757
Epoch 108/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0098 - coeff_determinatio
n: 0.7687 - val_loss: 0.0094 - val_coeff_determination: 0.7757
Epoch 109/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0098 - coeff_determinatio
n: 0.7705 - val_loss: 0.0093 - val_coeff_determination: 0.7762
Epoch 110/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0097 - coeff_determinatio
n: 0.7704 - val_loss: 0.0093 - val_coeff_determination: 0.7772
Epoch 111/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0097 - coeff_determinatio
n: 0.7701 - val_loss: 0.0091 - val_coeff_determination: 0.7816
Epoch 112/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0097 - coeff_determinatio
n: 0.7710 - val_loss: 0.0090 - val_coeff_determination: 0.7867
Epoch 113/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0096 - coeff_determinatio
n: 0.7714 - val_loss: 0.0097 - val_coeff_determination: 0.7703
Epoch 114/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0093 - coeff_determinatio
n: 0.7814 - val_loss: 0.0092 - val_coeff_determination: 0.7810
Epoch 115/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0095 - coeff_determinatio
n: 0.7760 - val_loss: 0.0088 - val_coeff_determination: 0.7904
Epoch 116/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0092 - coeff_determinatio
n: 0.7818 - val_loss: 0.0091 - val_coeff_determination: 0.7817
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Epoch 117/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0094 - coeff_determinatio
n: 0.7766 - val_loss: 0.0088 - val_coeff_determination: 0.7906
Epoch 118/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0092 - coeff_determinatio
n: 0.7821 - val_loss: 0.0087 - val_coeff_determination: 0.7921
Epoch 119/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0092 - coeff_determinatio
n: 0.7845 - val_loss: 0.0087 - val_coeff_determination: 0.7927
Epoch 120/450
96/96 [==============================] - 1s 6ms/step - loss: 0.0093 - coeff_determinatio
n: 0.7813 - val_loss: 0.0087 - val_coeff_determination: 0.7912
Epoch 121/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0091 - coeff_determinatio
n: 0.7873 - val_loss: 0.0086 - val_coeff_determination: 0.7935
Epoch 122/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0093 - coeff_determinatio
n: 0.7806 - val_loss: 0.0085 - val_coeff_determination: 0.7974
Epoch 123/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0092 - coeff_determinatio
n: 0.7844 - val_loss: 0.0091 - val_coeff_determination: 0.7831
Epoch 124/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0091 - coeff_determinatio
n: 0.7859 - val_loss: 0.0086 - val_coeff_determination: 0.7953
Epoch 125/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0090 - coeff_determinatio
n: 0.7904 - val_loss: 0.0086 - val_coeff_determination: 0.7950
Epoch 126/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0090 - coeff_determinatio
n: 0.7870 - val_loss: 0.0083 - val_coeff_determination: 0.8025
Epoch 127/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0089 - coeff_determinatio
n: 0.7854 - val_loss: 0.0094 - val_coeff_determination: 0.7742
Epoch 128/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0088 - coeff_determinatio
n: 0.7922 - val_loss: 0.0082 - val_coeff_determination: 0.8040
Epoch 129/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0089 - coeff_determinatio
n: 0.7898 - val_loss: 0.0084 - val_coeff_determination: 0.8002
Epoch 130/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0088 - coeff_determinatio
n: 0.7904 - val_loss: 0.0087 - val_coeff_determination: 0.7915
Epoch 131/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0087 - coeff_determinatio
n: 0.7936 - val_loss: 0.0090 - val_coeff_determination: 0.7839
Epoch 132/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0087 - coeff_determinatio
n: 0.7963 - val_loss: 0.0082 - val_coeff_determination: 0.8031
Epoch 133/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0085 - coeff_determinatio
n: 0.7994 - val_loss: 0.0080 - val_coeff_determination: 0.8092
Epoch 134/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0086 - coeff_determinatio
n: 0.7973 - val_loss: 0.0082 - val_coeff_determination: 0.8041
Epoch 135/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0084 - coeff_determinatio
n: 0.8020 - val_loss: 0.0079 - val_coeff_determination: 0.8104
Epoch 136/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0086 - coeff_determinatio
n: 0.7983 - val_loss: 0.0080 - val_coeff_determination: 0.8063
Epoch 137/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0084 - coeff_determinatio
n: 0.8006 - val_loss: 0.0080 - val_coeff_determination: 0.8088
Epoch 138/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0085 - coeff_determinatio
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n: 0.7983 - val_loss: 0.0078 - val_coeff_determination: 0.8122
Epoch 139/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0084 - coeff_determinatio
n: 0.7995 - val_loss: 0.0081 - val_coeff_determination: 0.8056
Epoch 140/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0084 - coeff_determinatio
n: 0.8005 - val_loss: 0.0078 - val_coeff_determination: 0.8129
Epoch 141/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0083 - coeff_determinatio
n: 0.8072 - val_loss: 0.0077 - val_coeff_determination: 0.8159
Epoch 142/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0082 - coeff_determinatio
n: 0.8074 - val_loss: 0.0076 - val_coeff_determination: 0.8160
Epoch 143/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0083 - coeff_determinatio
n: 0.8029 - val_loss: 0.0079 - val_coeff_determination: 0.8094
Epoch 144/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0079 - coeff_determinatio
n: 0.8130 - val_loss: 0.0079 - val_coeff_determination: 0.8121
Epoch 145/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0081 - coeff_determinatio
n: 0.8068 - val_loss: 0.0081 - val_coeff_determination: 0.8045
Epoch 146/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0081 - coeff_determinatio
n: 0.8074 - val_loss: 0.0075 - val_coeff_determination: 0.8206
Epoch 147/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0080 - coeff_determinatio
n: 0.8095 - val_loss: 0.0080 - val_coeff_determination: 0.8105
Epoch 148/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0079 - coeff_determinatio
n: 0.8147 - val_loss: 0.0075 - val_coeff_determination: 0.8216
Epoch 149/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0078 - coeff_determinatio
n: 0.8143 - val_loss: 0.0086 - val_coeff_determination: 0.7919
Epoch 150/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0079 - coeff_determinatio
n: 0.8105 - val_loss: 0.0072 - val_coeff_determination: 0.8279
Epoch 151/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0080 - coeff_determinatio
n: 0.8115 - val_loss: 0.0075 - val_coeff_determination: 0.8198
Epoch 152/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0079 - coeff_determinatio
n: 0.8146 - val_loss: 0.0073 - val_coeff_determination: 0.8251
Epoch 153/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0077 - coeff_determinatio
n: 0.8192 - val_loss: 0.0082 - val_coeff_determination: 0.8016
Epoch 154/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0078 - coeff_determinatio
n: 0.8155 - val_loss: 0.0072 - val_coeff_determination: 0.8271
Epoch 155/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0077 - coeff_determinatio
n: 0.8177 - val_loss: 0.0074 - val_coeff_determination: 0.8237
Epoch 156/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0076 - coeff_determinatio
n: 0.8197 - val_loss: 0.0074 - val_coeff_determination: 0.8243
Epoch 157/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0078 - coeff_determinatio
n: 0.8153 - val_loss: 0.0072 - val_coeff_determination: 0.8278
Epoch 158/450
96/96 [==============================] - 1s 7ms/step - loss: 0.0076 - coeff_determinatio
n: 0.8189 - val_loss: 0.0077 - val_coeff_determination: 0.8135
Epoch 159/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0076 - coeff_determinatio
n: 0.8214 - val_loss: 0.0071 - val_coeff_determination: 0.8305
Epoch 160/450
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96/96 [==============================] - 1s 8ms/step - loss: 0.0074 - coeff_determinatio
n: 0.8232 - val_loss: 0.0072 - val_coeff_determination: 0.8271
Epoch 161/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0074 - coeff_determinatio
n: 0.8246 - val_loss: 0.0071 - val_coeff_determination: 0.8298
Epoch 162/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0075 - coeff_determinatio
n: 0.8224 - val_loss: 0.0077 - val_coeff_determination: 0.8151
Epoch 163/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0075 - coeff_determinatio
n: 0.8235 - val_loss: 0.0072 - val_coeff_determination: 0.8277
Epoch 164/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0073 - coeff_determinatio
n: 0.8262 - val_loss: 0.0077 - val_coeff_determination: 0.8156
Epoch 165/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0076 - coeff_determinatio
n: 0.8183 - val_loss: 0.0086 - val_coeff_determination: 0.7953
Epoch 166/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0074 - coeff_determinatio
n: 0.8254 - val_loss: 0.0071 - val_coeff_determination: 0.8303
Epoch 167/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0073 - coeff_determinatio
n: 0.8295 - val_loss: 0.0070 - val_coeff_determination: 0.8329
Epoch 168/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0073 - coeff_determinatio
n: 0.8275 - val_loss: 0.0068 - val_coeff_determination: 0.8373
Epoch 169/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0072 - coeff_determinatio
n: 0.8301 - val_loss: 0.0070 - val_coeff_determination: 0.8336
Epoch 170/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0072 - coeff_determinatio
n: 0.8281 - val_loss: 0.0071 - val_coeff_determination: 0.8295
Epoch 171/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8296 - val_loss: 0.0067 - val_coeff_determination: 0.8399
Epoch 172/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8317 - val_loss: 0.0075 - val_coeff_determination: 0.8191
Epoch 173/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0072 - coeff_determinatio
n: 0.8281 - val_loss: 0.0072 - val_coeff_determination: 0.8287
Epoch 174/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8329 - val_loss: 0.0078 - val_coeff_determination: 0.8118
Epoch 175/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0072 - coeff_determinatio
n: 0.8281 - val_loss: 0.0067 - val_coeff_determination: 0.8395
Epoch 176/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0072 - coeff_determinatio
n: 0.8314 - val_loss: 0.0070 - val_coeff_determination: 0.8314
Epoch 177/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8341 - val_loss: 0.0075 - val_coeff_determination: 0.8177
Epoch 178/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8367 - val_loss: 0.0070 - val_coeff_determination: 0.8320
Epoch 179/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8325 - val_loss: 0.0069 - val_coeff_determination: 0.8351
Epoch 180/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8330 - val_loss: 0.0066 - val_coeff_determination: 0.8434
Epoch 181/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8328 - val_loss: 0.0065 - val_coeff_determination: 0.8439
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Epoch 182/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8343 - val_loss: 0.0072 - val_coeff_determination: 0.8257
Epoch 183/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0071 - coeff_determinatio
n: 0.8324 - val_loss: 0.0074 - val_coeff_determination: 0.8228
Epoch 184/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8333 - val_loss: 0.0068 - val_coeff_determination: 0.8373
Epoch 185/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8345 - val_loss: 0.0067 - val_coeff_determination: 0.8386
Epoch 186/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8337 - val_loss: 0.0065 - val_coeff_determination: 0.8450
Epoch 187/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0070 - coeff_determinatio
n: 0.8335 - val_loss: 0.0066 - val_coeff_determination: 0.8415
Epoch 188/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0069 - coeff_determinatio
n: 0.8358 - val_loss: 0.0067 - val_coeff_determination: 0.8389
Epoch 189/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0069 - coeff_determinatio
n: 0.8377 - val_loss: 0.0069 - val_coeff_determination: 0.8353
Epoch 190/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0069 - coeff_determinatio
n: 0.8382 - val_loss: 0.0066 - val_coeff_determination: 0.8421
Epoch 191/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0067 - coeff_determinatio
n: 0.8406 - val_loss: 0.0066 - val_coeff_determination: 0.8424
Epoch 192/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0068 - coeff_determinatio
n: 0.8392 - val_loss: 0.0066 - val_coeff_determination: 0.8420
Epoch 193/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0068 - coeff_determinatio
n: 0.8386 - val_loss: 0.0069 - val_coeff_determination: 0.8342
Epoch 194/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0068 - coeff_determinatio
n: 0.8405 - val_loss: 0.0064 - val_coeff_determination: 0.8473
Epoch 195/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0068 - coeff_determinatio
n: 0.8385 - val_loss: 0.0071 - val_coeff_determination: 0.8303
Epoch 196/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0067 - coeff_determinatio
n: 0.8429 - val_loss: 0.0069 - val_coeff_determination: 0.8358
Epoch 197/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0067 - coeff_determinatio
n: 0.8409 - val_loss: 0.0065 - val_coeff_determination: 0.8427
Epoch 198/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0068 - coeff_determinatio
n: 0.8350 - val_loss: 0.0064 - val_coeff_determination: 0.8456
Epoch 199/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8443 - val_loss: 0.0063 - val_coeff_determination: 0.8484
Epoch 200/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8421 - val_loss: 0.0066 - val_coeff_determination: 0.8431
Epoch 201/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8448 - val_loss: 0.0063 - val_coeff_determination: 0.8492
Epoch 202/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0066 - coeff_determinati
on: 0.8431 - val_loss: 0.0065 - val_coeff_determination: 0.8456
Epoch 203/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
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n: 0.8447 - val_loss: 0.0063 - val_coeff_determination: 0.8480
Epoch 204/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8435 - val_loss: 0.0070 - val_coeff_determination: 0.8340
Epoch 205/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8447 - val_loss: 0.0063 - val_coeff_determination: 0.8475
Epoch 206/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8444 - val_loss: 0.0066 - val_coeff_determination: 0.8433
Epoch 207/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8454 - val_loss: 0.0063 - val_coeff_determination: 0.8492
Epoch 208/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8442 - val_loss: 0.0065 - val_coeff_determination: 0.8447
Epoch 209/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8445 - val_loss: 0.0063 - val_coeff_determination: 0.8493
Epoch 210/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8445 - val_loss: 0.0064 - val_coeff_determination: 0.8477
Epoch 211/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8427 - val_loss: 0.0065 - val_coeff_determination: 0.8441
Epoch 212/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8491 - val_loss: 0.0069 - val_coeff_determination: 0.8326
Epoch 213/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8475 - val_loss: 0.0067 - val_coeff_determination: 0.8391
Epoch 214/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8504 - val_loss: 0.0064 - val_coeff_determination: 0.8471
Epoch 215/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8457 - val_loss: 0.0063 - val_coeff_determination: 0.8499
Epoch 216/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8481 - val_loss: 0.0065 - val_coeff_determination: 0.8455
Epoch 217/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8467 - val_loss: 0.0065 - val_coeff_determination: 0.8434
Epoch 218/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8469 - val_loss: 0.0062 - val_coeff_determination: 0.8511
Epoch 219/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8449 - val_loss: 0.0066 - val_coeff_determination: 0.8420
Epoch 220/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8501 - val_loss: 0.0064 - val_coeff_determination: 0.8462
Epoch 221/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8495 - val_loss: 0.0065 - val_coeff_determination: 0.8449
Epoch 222/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0066 - coeff_determinatio
n: 0.8460 - val_loss: 0.0065 - val_coeff_determination: 0.8450
Epoch 223/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8500 - val_loss: 0.0062 - val_coeff_determination: 0.8508
Epoch 224/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8472 - val_loss: 0.0063 - val_coeff_determination: 0.8499
Epoch 225/450
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96/96 [==============================] - 1s 8ms/step - loss: 0.0065 - coeff_determinatio
n: 0.8450 - val_loss: 0.0064 - val_coeff_determination: 0.8471
Epoch 226/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8501 - val_loss: 0.0067 - val_coeff_determination: 0.8395
Epoch 227/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8506 - val_loss: 0.0060 - val_coeff_determination: 0.8566
Epoch 228/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8491 - val_loss: 0.0063 - val_coeff_determination: 0.8500
Epoch 229/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8504 - val_loss: 0.0064 - val_coeff_determination: 0.8484
Epoch 230/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8510 - val_loss: 0.0061 - val_coeff_determination: 0.8529
Epoch 231/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8492 - val_loss: 0.0066 - val_coeff_determination: 0.8428
Epoch 232/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8537 - val_loss: 0.0065 - val_coeff_determination: 0.8447
Epoch 233/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8575 - val_loss: 0.0065 - val_coeff_determination: 0.8436
Epoch 234/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8538 - val_loss: 0.0062 - val_coeff_determination: 0.8513
Epoch 235/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8551 - val_loss: 0.0062 - val_coeff_determination: 0.8506
Epoch 236/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8568 - val_loss: 0.0061 - val_coeff_determination: 0.8538
Epoch 237/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8543 - val_loss: 0.0064 - val_coeff_determination: 0.8479
Epoch 238/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8546 - val_loss: 0.0061 - val_coeff_determination: 0.8539
Epoch 239/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8503 - val_loss: 0.0066 - val_coeff_determination: 0.8421
Epoch 240/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0064 - coeff_determinatio
n: 0.8476 - val_loss: 0.0060 - val_coeff_determination: 0.8553
Epoch 241/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8504 - val_loss: 0.0062 - val_coeff_determination: 0.8505
Epoch 242/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8539 - val_loss: 0.0062 - val_coeff_determination: 0.8526
Epoch 243/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8528 - val_loss: 0.0062 - val_coeff_determination: 0.8519
Epoch 244/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8552 - val_loss: 0.0062 - val_coeff_determination: 0.8512
Epoch 245/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8543 - val_loss: 0.0062 - val_coeff_determination: 0.8503
Epoch 246/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8549 - val_loss: 0.0060 - val_coeff_determination: 0.8561
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Epoch 247/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8553 - val_loss: 0.0061 - val_coeff_determination: 0.8537
Epoch 248/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8605 - val_loss: 0.0065 - val_coeff_determination: 0.8447
Epoch 249/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8565 - val_loss: 0.0060 - val_coeff_determination: 0.8560
Epoch 250/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8543 - val_loss: 0.0063 - val_coeff_determination: 0.8488
Epoch 251/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8573 - val_loss: 0.0060 - val_coeff_determination: 0.8550
Epoch 252/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8536 - val_loss: 0.0060 - val_coeff_determination: 0.8567
Epoch 253/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8507 - val_loss: 0.0059 - val_coeff_determination: 0.8578
Epoch 254/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8581 - val_loss: 0.0063 - val_coeff_determination: 0.8500
Epoch 255/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8567 - val_loss: 0.0065 - val_coeff_determination: 0.8450
Epoch 256/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8547 - val_loss: 0.0060 - val_coeff_determination: 0.8552
Epoch 257/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8570 - val_loss: 0.0060 - val_coeff_determination: 0.8547
Epoch 258/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8567 - val_loss: 0.0064 - val_coeff_determination: 0.8469
Epoch 259/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0062 - coeff_determinatio
n: 0.8530 - val_loss: 0.0064 - val_coeff_determination: 0.8477
Epoch 260/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8580 - val_loss: 0.0062 - val_coeff_determination: 0.8515
Epoch 261/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8586 - val_loss: 0.0061 - val_coeff_determination: 0.8532
Epoch 262/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8547 - val_loss: 0.0062 - val_coeff_determination: 0.8522
Epoch 263/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8625 - val_loss: 0.0060 - val_coeff_determination: 0.8562
Epoch 264/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8560 - val_loss: 0.0061 - val_coeff_determination: 0.8535
Epoch 265/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8585 - val_loss: 0.0059 - val_coeff_determination: 0.8590
Epoch 266/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8549 - val_loss: 0.0059 - val_coeff_determination: 0.8579
Epoch 267/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8586 - val_loss: 0.0059 - val_coeff_determination: 0.8581
Epoch 268/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
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n: 0.8617 - val_loss: 0.0064 - val_coeff_determination: 0.8468
Epoch 269/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8594 - val_loss: 0.0059 - val_coeff_determination: 0.8589
Epoch 270/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0063 - coeff_determinatio
n: 0.8512 - val_loss: 0.0064 - val_coeff_determination: 0.8467
Epoch 271/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8586 - val_loss: 0.0061 - val_coeff_determination: 0.8535
Epoch 272/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8600 - val_loss: 0.0064 - val_coeff_determination: 0.8458
Epoch 273/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8557 - val_loss: 0.0060 - val_coeff_determination: 0.8555
Epoch 274/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0061 - coeff_determinatio
n: 0.8569 - val_loss: 0.0059 - val_coeff_determination: 0.8590
Epoch 275/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8588 - val_loss: 0.0059 - val_coeff_determination: 0.8580
Epoch 276/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8588 - val_loss: 0.0059 - val_coeff_determination: 0.8586
Epoch 277/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8610 - val_loss: 0.0062 - val_coeff_determination: 0.8524
Epoch 278/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8615 - val_loss: 0.0065 - val_coeff_determination: 0.8452
Epoch 279/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8572 - val_loss: 0.0058 - val_coeff_determination: 0.8606
Epoch 280/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8613 - val_loss: 0.0058 - val_coeff_determination: 0.8609
Epoch 281/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8601 - val_loss: 0.0060 - val_coeff_determination: 0.8567
Epoch 282/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8594 - val_loss: 0.0062 - val_coeff_determination: 0.8499
Epoch 283/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8563 - val_loss: 0.0059 - val_coeff_determination: 0.8589
Epoch 284/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8616 - val_loss: 0.0063 - val_coeff_determination: 0.8501
Epoch 285/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8611 - val_loss: 0.0062 - val_coeff_determination: 0.8510
Epoch 286/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8632 - val_loss: 0.0064 - val_coeff_determination: 0.8477
Epoch 287/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8624 - val_loss: 0.0062 - val_coeff_determination: 0.8519
Epoch 288/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8609 - val_loss: 0.0060 - val_coeff_determination: 0.8573
Epoch 289/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8613 - val_loss: 0.0060 - val_coeff_determination: 0.8557
Epoch 290/450
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96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8595 - val_loss: 0.0061 - val_coeff_determination: 0.8545
Epoch 291/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8607 - val_loss: 0.0062 - val_coeff_determination: 0.8507
Epoch 292/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8623 - val_loss: 0.0061 - val_coeff_determination: 0.8537
Epoch 293/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8635 - val_loss: 0.0059 - val_coeff_determination: 0.8582
Epoch 294/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8624 - val_loss: 0.0058 - val_coeff_determination: 0.8615
Epoch 295/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0060 - coeff_determinatio
n: 0.8581 - val_loss: 0.0058 - val_coeff_determination: 0.8610
Epoch 296/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8599 - val_loss: 0.0061 - val_coeff_determination: 0.8532
Epoch 297/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8600 - val_loss: 0.0060 - val_coeff_determination: 0.8564
Epoch 298/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8638 - val_loss: 0.0071 - val_coeff_determination: 0.8301
Epoch 299/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8653 - val_loss: 0.0061 - val_coeff_determination: 0.8540
Epoch 300/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8623 - val_loss: 0.0059 - val_coeff_determination: 0.8595
Epoch 301/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8623 - val_loss: 0.0068 - val_coeff_determination: 0.8363
Epoch 302/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8634 - val_loss: 0.0060 - val_coeff_determination: 0.8556
Epoch 303/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8666 - val_loss: 0.0059 - val_coeff_determination: 0.8587
Epoch 304/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0059 - coeff_determinatio
n: 0.8603 - val_loss: 0.0057 - val_coeff_determination: 0.8633
Epoch 305/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8643 - val_loss: 0.0059 - val_coeff_determination: 0.8589
Epoch 306/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8625 - val_loss: 0.0062 - val_coeff_determination: 0.8522
Epoch 307/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0058 - coeff_determinati
on: 0.8619 - val_loss: 0.0061 - val_coeff_determination: 0.8527
Epoch 308/450
96/96 [==============================] - 1s 12ms/step - loss: 0.0059 - coeff_determinati
on: 0.8598 - val_loss: 0.0058 - val_coeff_determination: 0.8610
Epoch 309/450
96/96 [==============================] - 1s 12ms/step - loss: 0.0058 - coeff_determinati
on: 0.8625 - val_loss: 0.0059 - val_coeff_determination: 0.8592
Epoch 310/450
96/96 [==============================] - 1s 12ms/step - loss: 0.0058 - coeff_determinati
on: 0.8637 - val_loss: 0.0058 - val_coeff_determination: 0.8619
Epoch 311/450
96/96 [==============================] - 1s 11ms/step - loss: 0.0057 - coeff_determinati
on: 0.8636 - val_loss: 0.0058 - val_coeff_determination: 0.8602
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Epoch 312/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0058 - coeff_determinati
on: 0.8638 - val_loss: 0.0059 - val_coeff_determination: 0.8573
Epoch 313/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8660 - val_loss: 0.0057 - val_coeff_determination: 0.8636
Epoch 314/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8655 - val_loss: 0.0059 - val_coeff_determination: 0.8590
Epoch 315/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8662 - val_loss: 0.0058 - val_coeff_determination: 0.8607
Epoch 316/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0057 - coeff_determinati
on: 0.8632 - val_loss: 0.0058 - val_coeff_determination: 0.8601
Epoch 317/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0056 - coeff_determinati
on: 0.8669 - val_loss: 0.0058 - val_coeff_determination: 0.8623
Epoch 318/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8679 - val_loss: 0.0060 - val_coeff_determination: 0.8569
Epoch 319/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8621 - val_loss: 0.0060 - val_coeff_determination: 0.8571
Epoch 320/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8619 - val_loss: 0.0060 - val_coeff_determination: 0.8580
Epoch 321/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8680 - val_loss: 0.0059 - val_coeff_determination: 0.8591
Epoch 322/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8671 - val_loss: 0.0057 - val_coeff_determination: 0.8627
Epoch 323/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8651 - val_loss: 0.0061 - val_coeff_determination: 0.8557
Epoch 324/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8639 - val_loss: 0.0056 - val_coeff_determination: 0.8658
Epoch 325/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8642 - val_loss: 0.0057 - val_coeff_determination: 0.8649
Epoch 326/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8639 - val_loss: 0.0057 - val_coeff_determination: 0.8647
Epoch 327/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8650 - val_loss: 0.0058 - val_coeff_determination: 0.8614
Epoch 328/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8671 - val_loss: 0.0064 - val_coeff_determination: 0.8466
Epoch 329/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8651 - val_loss: 0.0057 - val_coeff_determination: 0.8625
Epoch 330/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8675 - val_loss: 0.0059 - val_coeff_determination: 0.8591
Epoch 331/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8662 - val_loss: 0.0062 - val_coeff_determination: 0.8521
Epoch 332/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0058 - coeff_determinatio
n: 0.8646 - val_loss: 0.0057 - val_coeff_determination: 0.8643
Epoch 333/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
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n: 0.8688 - val_loss: 0.0065 - val_coeff_determination: 0.8438
Epoch 334/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8670 - val_loss: 0.0057 - val_coeff_determination: 0.8624
Epoch 335/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8694 - val_loss: 0.0064 - val_coeff_determination: 0.8458
Epoch 336/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8680 - val_loss: 0.0062 - val_coeff_determination: 0.8526
Epoch 337/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8681 - val_loss: 0.0056 - val_coeff_determination: 0.8651
Epoch 338/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8645 - val_loss: 0.0059 - val_coeff_determination: 0.8603
Epoch 339/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8710 - val_loss: 0.0057 - val_coeff_determination: 0.8643
Epoch 340/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8661 - val_loss: 0.0058 - val_coeff_determination: 0.8615
Epoch 341/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8664 - val_loss: 0.0057 - val_coeff_determination: 0.8631
Epoch 342/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8642 - val_loss: 0.0056 - val_coeff_determination: 0.8669
Epoch 343/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8706 - val_loss: 0.0058 - val_coeff_determination: 0.8608
Epoch 344/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8704 - val_loss: 0.0057 - val_coeff_determination: 0.8644
Epoch 345/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0057 - coeff_determinatio
n: 0.8662 - val_loss: 0.0058 - val_coeff_determination: 0.8626
Epoch 346/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8659 - val_loss: 0.0062 - val_coeff_determination: 0.8539
Epoch 347/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8666 - val_loss: 0.0058 - val_coeff_determination: 0.8617
Epoch 348/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8661 - val_loss: 0.0058 - val_coeff_determination: 0.8622
Epoch 349/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8677 - val_loss: 0.0064 - val_coeff_determination: 0.8465
Epoch 350/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8672 - val_loss: 0.0063 - val_coeff_determination: 0.8497
Epoch 351/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8685 - val_loss: 0.0057 - val_coeff_determination: 0.8641
Epoch 352/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8702 - val_loss: 0.0058 - val_coeff_determination: 0.8613
Epoch 353/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8686 - val_loss: 0.0056 - val_coeff_determination: 0.8660
Epoch 354/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0056 - coeff_determinati
on: 0.8662 - val_loss: 0.0059 - val_coeff_determination: 0.8585
Epoch 355/450
```

```
96/96 [==============================] - 1s 11ms/step - loss: 0.0054 - coeff_determinati
on: 0.8722 - val_loss: 0.0057 - val_coeff_determination: 0.8647
Epoch 356/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8712 - val_loss: 0.0063 - val_coeff_determination: 0.8490
Epoch 357/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8724 - val_loss: 0.0057 - val_coeff_determination: 0.8627
Epoch 358/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8710 - val_loss: 0.0057 - val_coeff_determination: 0.8647
Epoch 359/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8721 - val_loss: 0.0058 - val_coeff_determination: 0.8608
Epoch 360/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8701 - val_loss: 0.0062 - val_coeff_determination: 0.8511
Epoch 361/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0056 - coeff_determinati
on: 0.8678 - val_loss: 0.0057 - val_coeff_determination: 0.8629
Epoch 362/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8731 - val_loss: 0.0056 - val_coeff_determination: 0.8662
Epoch 363/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0055 - coeff_determinati
on: 0.8707 - val_loss: 0.0055 - val_coeff_determination: 0.8680
Epoch 364/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8668 - val_loss: 0.0059 - val_coeff_determination: 0.8588
Epoch 365/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8692 - val_loss: 0.0060 - val_coeff_determination: 0.8552
Epoch 366/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0056 - coeff_determinatio
n: 0.8647 - val_loss: 0.0056 - val_coeff_determination: 0.8658
Epoch 367/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8710 - val_loss: 0.0060 - val_coeff_determination: 0.8567
Epoch 368/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8717 - val_loss: 0.0058 - val_coeff_determination: 0.8601
Epoch 369/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8763 - val_loss: 0.0058 - val_coeff_determination: 0.8617
Epoch 370/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8715 - val_loss: 0.0065 - val_coeff_determination: 0.8444
Epoch 371/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0053 - coeff_determinati
on: 0.8737 - val_loss: 0.0057 - val_coeff_determination: 0.8638
Epoch 372/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0055 - coeff_determinati
on: 0.8687 - val_loss: 0.0057 - val_coeff_determination: 0.8657
Epoch 373/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0055 - coeff_determinati
on: 0.8707 - val_loss: 0.0056 - val_coeff_determination: 0.8658
Epoch 374/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8717 - val_loss: 0.0064 - val_coeff_determination: 0.8450
Epoch 375/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8696 - val_loss: 0.0057 - val_coeff_determination: 0.8632
Epoch 376/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8710 - val_loss: 0.0057 - val_coeff_determination: 0.8645
```

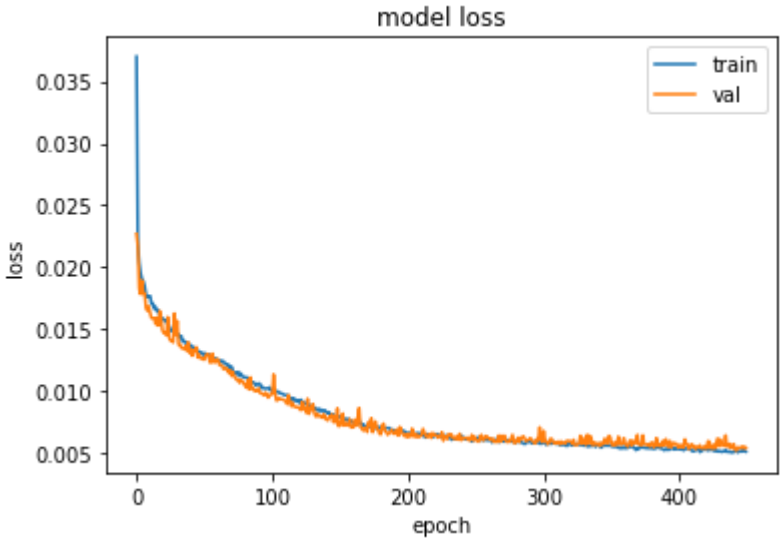
```
Epoch 377/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8716 - val_loss: 0.0057 - val_coeff_determination: 0.8648
Epoch 378/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8708 - val_loss: 0.0057 - val_coeff_determination: 0.8639
Epoch 379/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8717 - val_loss: 0.0055 - val_coeff_determination: 0.8679
Epoch 380/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8718 - val_loss: 0.0058 - val_coeff_determination: 0.8622
Epoch 381/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8721 - val_loss: 0.0059 - val_coeff_determination: 0.8610
Epoch 382/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0053 - coeff_determinati
on: 0.8728 - val_loss: 0.0055 - val_coeff_determination: 0.8699
Epoch 383/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0053 - coeff_determinati
on: 0.8737 - val_loss: 0.0056 - val_coeff_determination: 0.8664
Epoch 384/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8691 - val_loss: 0.0062 - val_coeff_determination: 0.8517
Epoch 385/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0055 - coeff_determinatio
n: 0.8714 - val_loss: 0.0056 - val_coeff_determination: 0.8671
Epoch 386/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8731 - val_loss: 0.0058 - val_coeff_determination: 0.8623
Epoch 387/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8726 - val_loss: 0.0055 - val_coeff_determination: 0.8676
Epoch 388/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8733 - val_loss: 0.0057 - val_coeff_determination: 0.8634
Epoch 389/450
96/96 [==============================] - ETA: 0s - loss: 0.0053 - coeff_determination:
 0.874 - 1s 8ms/step - loss: 0.0053 - coeff_determination: 0.8751 - val_loss: 0.0060 - v
al_coeff_determination: 0.8561
Epoch 390/450
96/96 [==============================] - 1s 9ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8764 - val_loss: 0.0056 - val_coeff_determination: 0.8662
Epoch 391/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8743 - val_loss: 0.0061 - val_coeff_determination: 0.8529
Epoch 392/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8742 - val_loss: 0.0058 - val_coeff_determination: 0.8616
Epoch 393/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8765 - val_loss: 0.0055 - val_coeff_determination: 0.8694
Epoch 394/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8743 - val_loss: 0.0060 - val_coeff_determination: 0.8572
Epoch 395/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8738 - val_loss: 0.0055 - val_coeff_determination: 0.8696
Epoch 396/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8726 - val_loss: 0.0056 - val_coeff_determination: 0.8651
Epoch 397/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8743 - val_loss: 0.0058 - val_coeff_determination: 0.8606
Epoch 398/450
```

```
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8724 - val_loss: 0.0057 - val_coeff_determination: 0.8632
Epoch 399/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8735 - val_loss: 0.0057 - val_coeff_determination: 0.8635
Epoch 400/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8738 - val_loss: 0.0054 - val_coeff_determination: 0.8701
Epoch 401/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8744 - val_loss: 0.0055 - val_coeff_determination: 0.8694
Epoch 402/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8740 - val_loss: 0.0057 - val_coeff_determination: 0.8649
Epoch 403/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8739 - val_loss: 0.0055 - val_coeff_determination: 0.8694
Epoch 404/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8773 - val_loss: 0.0054 - val_coeff_determination: 0.8710
Epoch 405/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0053 - coeff_determinati
on: 0.8746 - val_loss: 0.0061 - val_coeff_determination: 0.8535
Epoch 406/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8725 - val_loss: 0.0057 - val_coeff_determination: 0.8633
Epoch 407/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0054 - coeff_determinati
on: 0.8712 - val_loss: 0.0057 - val_coeff_determination: 0.8641
Epoch 408/450
96/96 [==============================] - 1s 10ms/step - loss: 0.0053 - coeff_determinati
on: 0.8732 - val_loss: 0.0053 - val_coeff_determination: 0.8734
Epoch 409/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8734 - val_loss: 0.0056 - val_coeff_determination: 0.8668
Epoch 410/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8771 - val_loss: 0.0057 - val_coeff_determination: 0.8631
Epoch 411/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8779 - val_loss: 0.0055 - val_coeff_determination: 0.8700
Epoch 412/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8772 - val_loss: 0.0056 - val_coeff_determination: 0.8673
Epoch 413/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8756 - val_loss: 0.0053 - val_coeff_determination: 0.8732
Epoch 414/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8733 - val_loss: 0.0055 - val_coeff_determination: 0.8699
Epoch 415/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8745 - val_loss: 0.0055 - val_coeff_determination: 0.8688
Epoch 416/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8810 - val_loss: 0.0056 - val_coeff_determination: 0.8660
Epoch 417/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8759 - val_loss: 0.0054 - val_coeff_determination: 0.8717
Epoch 418/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8770 - val_loss: 0.0054 - val_coeff_determination: 0.8704
Epoch 419/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0054 - coeff_determinatio
n: 0.8703 - val_loss: 0.0054 - val_coeff_determination: 0.8715
```

```
Epoch 420/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8762 - val_loss: 0.0056 - val_coeff_determination: 0.8678
Epoch 421/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8727 - val_loss: 0.0053 - val_coeff_determination: 0.8726
Epoch 422/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8755 - val_loss: 0.0060 - val_coeff_determination: 0.8576
Epoch 423/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8761 - val_loss: 0.0059 - val_coeff_determination: 0.8580
Epoch 424/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8738 - val_loss: 0.0054 - val_coeff_determination: 0.8719
Epoch 425/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8744 - val_loss: 0.0054 - val_coeff_determination: 0.8712
Epoch 426/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8762 - val_loss: 0.0057 - val_coeff_determination: 0.8647
Epoch 427/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8797 - val_loss: 0.0053 - val_coeff_determination: 0.8721
Epoch 428/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8733 - val_loss: 0.0057 - val_coeff_determination: 0.8626
Epoch 429/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8783 - val_loss: 0.0062 - val_coeff_determination: 0.8516
Epoch 430/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8777 - val_loss: 0.0055 - val_coeff_determination: 0.8676
Epoch 431/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8775 - val_loss: 0.0061 - val_coeff_determination: 0.8533
Epoch 432/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8805 - val_loss: 0.0058 - val_coeff_determination: 0.8621
Epoch 433/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8790 - val_loss: 0.0056 - val_coeff_determination: 0.8667
Epoch 434/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8772 - val_loss: 0.0056 - val_coeff_determination: 0.8657
Epoch 435/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8764 - val_loss: 0.0064 - val_coeff_determination: 0.8455
Epoch 436/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8796 - val_loss: 0.0055 - val_coeff_determination: 0.8688
Epoch 437/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8792 - val_loss: 0.0056 - val_coeff_determination: 0.8660
Epoch 438/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8786 - val_loss: 0.0057 - val_coeff_determination: 0.8629
Epoch 439/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0050 - coeff_determinatio
n: 0.8809 - val_loss: 0.0054 - val_coeff_determination: 0.8716
Epoch 440/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8793 - val_loss: 0.0056 - val_coeff_determination: 0.8659
Epoch 441/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
```

```
n: 0.8807 - val_loss: 0.0057 - val_coeff_determination: 0.8627
Epoch 442/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8777 - val_loss: 0.0052 - val_coeff_determination: 0.8749
Epoch 443/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8780 - val_loss: 0.0052 - val_coeff_determination: 0.8760
Epoch 444/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0050 - coeff_determinatio
n: 0.8797 - val_loss: 0.0055 - val_coeff_determination: 0.8698
Epoch 445/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8776 - val_loss: 0.0054 - val_coeff_determination: 0.8710
Epoch 446/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8786 - val_loss: 0.0054 - val_coeff_determination: 0.8704
Epoch 447/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8784 - val_loss: 0.0055 - val_coeff_determination: 0.8681
Epoch 448/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0053 - coeff_determinatio
n: 0.8742 - val_loss: 0.0054 - val_coeff_determination: 0.8725
Epoch 449/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0052 - coeff_determinatio
n: 0.8775 - val_loss: 0.0055 - val_coeff_determination: 0.8687
Epoch 450/450
96/96 [==============================] - 1s 8ms/step - loss: 0.0051 - coeff_determinatio
n: 0.8793 - val_loss: 0.0054 - val_coeff_determination: 0.8711
```

In [16]:
```
plt.plot(regressor.history.history['loss'])
plt.plot(regressor.history.history['val_loss'])
plt.title('model loss')
plt.ylabel('loss')
plt.xlabel('epoch')
plt.legend(['train', 'val'], loc='upper right')
plt.show()
```



In [17]:
```
#Load test data



testing_set=df.iloc[TRAIN_SIZE:, 1:].values
testing_set_df=df.iloc[TRAIN_SIZE:, 1:]
```

In [18]:
```
# Getting test results

X_test=[]
Y_test=[]

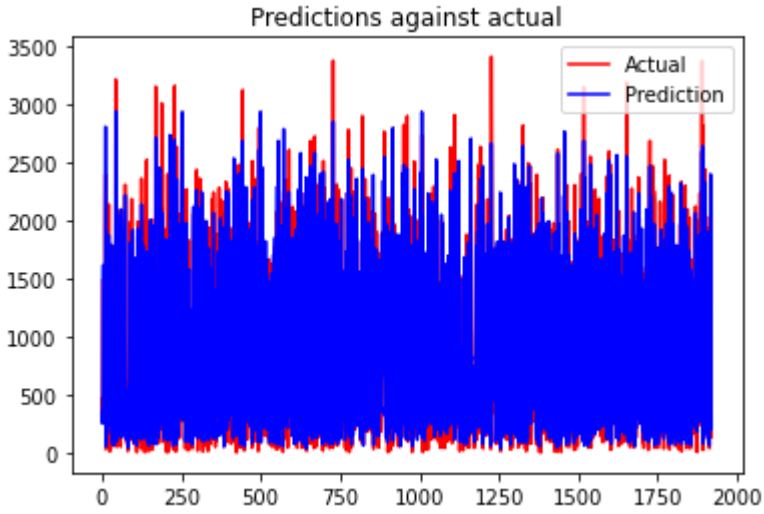
testing_set=testing_set_df.iloc[:,:].values
#testing_set= testing_set.reshape(-15,15)
testing_set_scaled=sc.transform(testing_set)

for i in range(0,TEST_SIZE):
  X_test.append(testing_set_scaled[i,1:])
  Y_test.append(testing_set_scaled[i,0])
X_test = np.array(X_test)
Y_test = np.array(Y_test)
#reshaping
X_test = np.reshape(X_test, (X_test.shape[0], 1, COLUMNS_TOTAL))

predicted_y = regressor.predict(X_test)
predicted_y = sc2.inverse_transform(predicted_y)
```

In [19]:
```
#print (predicted_y)
#print(testing_set[0])
Y_test2=Y_test.reshape(-1,1)
Y_test2=sc2.inverse_transform(Y_test2)
plt.plot(Y_test2, color='red', label = 'Actual')
plt.plot(predicted_y, color='blue', label = 'Prediction')
plt.title('Predictions against actual')

plt.legend()
plt.show()
```



In [20]:
```
#Comparison overview for test purposes
print(predicted_y[500:510])
print (Y_test2[500:510])
```

```
[[ 389.18005 ]
 [  90.529884]
 [1853.085   ]
 [ 210.22937 ]
 [2462.2354  ]
 [ 328.408   ]
 [1196.467   ]
 [1238.8711  ]
 [ 267.67606 ]
```

```
 [1571.9208  ]]
[[ 545.]
 [ 103.]
 [2123.]
 [ 149.]
 [1979.]
 [ 534.]
 [ 895.]
 [ 967.]
 [ 332.]
 [1517.]]
```

In [21]:
```
regressor.evaluate(X_test, Y_test)
```

```
60/60 [==============================] - 0s 2ms/step - loss: 0.0042 - coeff_determinatio
n: 0.8932
```

Out[21]:
```
[0.004242944531142712, 0.893238365650177]
```