In [49]:

```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python docker image: https://github.com/kaggle/docker-pytho
n
# For example, here's several helpful packages to load in

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

# Input data files are available in the "../input/" directory.
# For example, running this (by clicking run or pressing Shift+Enter) will list the files
in the input directory

import os
print(os.listdir("../input"))

# Any results you write to the current directory are saved as output.
```

```
['cement-train-test-data']
```

In [50]:

```
#Importign libraries

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import keras
```

In [51]:

```
#Importing the Dataset
df = pd.read_csv('../input/cement-train-test-data/train_data.csv')

# df = pd.concat([pd.read_csv('../input/cement-train-test-data/train_data.csv'),pd.read_c
sv('../input/cement-train-test-data/compresive_strength_concrete.csv'),pd.read_csv('../in
put/cement-train-test-data/train_data2.csv')])
# df = pd.concat([pd.read_csv('../input/cement-train-test-data/compresive_strength_concre
te.csv'),pd.read_csv('../input/cement-train-test-data/train_data2.csv')])
x_org = df.drop('strength',axis=1).values
y_org = df['strength'].values
```

In [52]:

```
# Using Test/Train Split
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(x_org,y_org, test_size=0.22)

# Feature Scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_trans form(X_train)
X_test = sc.transform(X_test)
```

In [53]:

```
print(X_train.shape, X_test.shape, y_train.shape, y_test.shape)
```

```
(562, 8) (159, 8) (562,) (159,)
```

In [54]:

```
# Building ANN As a Regressor
from keras.models import Sequential
from keras.layers import Dense
from keras.layers.normalization import BatchNormalization
from keras import backend
```

In [55]:

```
#Defining Root Mean Square Error As our Metric Function
def rmse(y_true, y_pred):
    return backend.sqrt(backend.mean(backend.square(y_pred - y_true), axis=-1))
```

In [56]:

```
#Building  first layer Layers
model=Sequential()

model.add(Dense(64,input_dim=8,activation = 'relu'))

# Bulding Second and third layer
model.add(Dense(32,activation='relu'))
model.add(keras.layers.normalization.BatchNormalization())

# Output Layer
model.add(Dense(1,activation='linear'))
```

?? model.fit

In [57]:

```
# Optimize , Compile And Train The Model
opt = keras.optimizers.Adam(lr=0.0009)

model.compile(optimizer=opt,loss='mean_squared_error',metrics=[rmse,'accuracy'])
history1 = model.fit(X_train,y_train,epochs = 200 ,batch_size=32,validation_data=(X_test
,y_test))
```

```
Train on 562 samples, validate on 159 samples
Epoch 1/200
562/562 [==============================] - 1s 943us/step - loss: 1602.1874 - rmse: 36.347
5 - accuracy: 0.0000e+00 - val_loss: 1474.4794 - val_rmse: 34.0692 - val_accuracy: 0.0000
e+00
Epoch 2/200
562/562 [==============================] - 0s 162us/step - loss: 1553.1534 - rmse: 36.215
7 - accuracy: 0.0000e+00 - val_loss: 1458.8065 - val_rmse: 33.9743 - val_accuracy: 0.0000
e+00
Epoch 3/200
562/562 [==============================] - 0s 151us/step - loss: 1515.7154 - rmse: 36.070
8 - accuracy: 0.0000e+00 - val_loss: 1440.9401 - val_rmse: 33.8749 - val_accuracy: 0.0000
e+00
Epoch 4/200
562/562 [==============================] - 0s 143us/step - loss: 1480.5260 - rmse: 35.903
3 - accuracy: 0.0000e+00 - val_loss: 1423.7447 - val_rmse: 33.8127 - val_accuracy: 0.0000
e+00
Epoch 5/200
562/562 [==============================] - 0s 141us/step - loss: 1445.8549 - rmse: 35.707
3 - accuracy: 0.0000e+00 - val_loss: 1407.5442 - val_rmse: 33.8072 - val_accuracy: 0.0000
e+00
Epoch 6/200
562/562 [==============================] - 0s 149us/step - loss: 1411.5334 - rmse: 35.478
8 - accuracy: 0.0000e+00 - val_loss: 1388.1831 - val_rmse: 33.7750 - val_accuracy: 0.0000
e+00
Epoch 7/200
562/562 [==============================] - 0s 147us/step - loss: 1375.6569 - rmse: 35.222
0 - accuracy: 0.0000e+00 - val_loss: 1368.2955 - val_rmse: 33.7398 - val_accuracy: 0.0000
e+00
Epoch 8/200
562/562 [==============================] - 0s 152us/step - loss: 1338.9248 - rmse: 34.930
6 - accuracy: 0.0000e+00 - val_loss: 1353.1527 - val_rmse: 33.7923 - val_accuracy: 0.0000
e+00
Epoch 9/200
562/562 [==============================] - 0s 143us/step - loss: 1308.5658 - rmse: 34.603
9 - accuracy: 0.0000e+00 - val_loss: 1337.0673 - val_rmse: 33.8073 - val_accuracy: 0.0000
e+00
Epoch 10/200
562/562 [==============================] - 0s 146us/step - loss: 1266.4904 - rmse: 34.257
```

1 - accuracy: 0.0000e+00 - val_loss: 1322.5629 - val_rmse: 33.8351 - val_accuracy: 0.0000
e+00
Epoch 11/200
562/562 [==============================] - 0s 139us/step - loss: 1227.3466 - rmse: 33.877
2 - accuracy: 0.0000e+00 - val_loss: 1303.0761 - val_rmse: 33.8106 - val_accuracy: 0.0000
e+00
Epoch 12/200
562/562 [==============================] - 0s 150us/step - loss: 1191.1146 - rmse: 33.467
7 - accuracy: 0.0000e+00 - val_loss: 1284.2885 - val_rmse: 33.7744 - val_accuracy: 0.0000
e+00
Epoch 13/200
562/562 [==============================] - 0s 144us/step - loss: 1157.2815 - rmse: 33.029
7 - accuracy: 0.0000e+00 - val_loss: 1250.6656 - val_rmse: 33.4825 - val_accuracy: 0.0000
e+00
Epoch 14/200
562/562 [==============================] - 0s 144us/step - loss: 1119.0852 - rmse: 32.571
3 - accuracy: 0.0000e+00 - val_loss: 1210.8255 - val_rmse: 33.0808 - val_accuracy: 0.0000
e+00
Epoch 15/200
562/562 [==============================] - 0s 144us/step - loss: 1082.5199 - rmse: 32.084
3 - accuracy: 0.0000e+00 - val_loss: 1183.1133 - val_rmse: 32.8143 - val_accuracy: 0.0000
e+00
Epoch 16/200
562/562 [==============================] - 0s 141us/step - loss: 1046.5879 - rmse: 31.577
2 - accuracy: 0.0000e+00 - val_loss: 1131.7474 - val_rmse: 32.1609 - val_accuracy: 0.0000
e+00
Epoch 17/200
562/562 [==============================] - 0s 147us/step - loss: 1011.6798 - rmse: 31.041
9 - accuracy: 0.0000e+00 - val_loss: 1085.1196 - val_rmse: 31.5426 - val_accuracy: 0.0000
e+00
Epoch 18/200
562/562 [==============================] - 0s 143us/step - loss: 977.5017 - rmse: 30.4799
- accuracy: 0.0000e+00 - val_loss: 1035.9609 - val_rmse: 30.8659 - val_accuracy: 0.0000e+
00
Epoch 19/200
562/562 [==============================] - 0s 147us/step - loss: 932.3590 - rmse: 29.9022
- accuracy: 0.0000e+00 - val_loss: 961.8199 - val_rmse: 29.7267 - val_accuracy: 0.0000e+0
0
Epoch 20/200
562/562 [==============================] - 0s 156us/step - loss: 899.0537 - rmse: 29.2925
- accuracy: 0.0000e+00 - val_loss: 919.1931 - val_rmse: 29.0768 - val_accuracy: 0.0000e+0
0
Epoch 21/200
562/562 [==============================] - 0s 158us/step - loss: 858.0717 - rmse: 28.6597
- accuracy: 0.0000e+00 - val_loss: 870.3437 - val_rmse: 28.3436 - val_accuracy: 0.0000e+0
0
Epoch 22/200
562/562 [==============================] - 0s 145us/step - loss: 821.8525 - rmse: 27.9989
- accuracy: 0.0000e+00 - val_loss: 823.6094 - val_rmse: 27.5506 - val_accuracy: 0.0000e+0
0
Epoch 23/200
562/562 [==============================] - 0s 141us/step - loss: 783.3223 - rmse: 27.3153
- accuracy: 0.0000e+00 - val_loss: 755.1317 - val_rmse: 26.3731 - val_accuracy: 0.0000e+0
0
Epoch 24/200
562/562 [==============================] - 0s 153us/step - loss: 744.3486 - rmse: 26.6007
- accuracy: 0.0000e+00 - val_loss: 718.8176 - val_rmse: 25.6825 - val_accuracy: 0.0000e+0
0
Epoch 25/200
562/562 [==============================] - 0s 153us/step - loss: 713.1174 - rmse: 25.8713
- accuracy: 0.0000e+00 - val_loss: 689.1877 - val_rmse: 25.1859 - val_accuracy: 0.0000e+0
0
Epoch 26/200
562/562 [==============================] - 0s 155us/step - loss: 663.0637 - rmse: 25.1250
- accuracy: 0.0000e+00 - val_loss: 620.6614 - val_rmse: 23.8170 - val_accuracy: 0.0000e+0
0
Epoch 27/200
562/562 [==============================] - 0s 152us/step - loss: 625.4490 - rmse: 24.3511
- accuracy: 0.0000e+00 - val_loss: 577.9909 - val_rmse: 23.0120 - val_accuracy: 0.0000e+0
0
Epoch 28/200
562/562 [==============================] - 0s 140us/step - loss: 583.4366 - rmse: 23.5649

- accuracy: 0.0000e+00 - val_loss: 550.9912 - val_rmse: 22.4386 - val_accuracy: 0.0000e+0
0
Epoch 29/200
562/562 [==============================] - 0s 140us/step - loss: 544.7730 - rmse: 22.7626
- accuracy: 0.0000e+00 - val_loss: 528.9918 - val_rmse: 22.0097 - val_accuracy: 0.0000e+0
0
Epoch 30/200
562/562 [==============================] - 0s 143us/step - loss: 510.0891 - rmse: 21.9377
- accuracy: 0.0000e+00 - val_loss: 484.0269 - val_rmse: 20.9733 - val_accuracy: 0.0000e+0
0
Epoch 31/200
562/562 [==============================] - 0s 145us/step - loss: 477.2748 - rmse: 21.1140
- accuracy: 0.0000e+00 - val_loss: 451.9079 - val_rmse: 20.2960 - val_accuracy: 0.0000e+0
0
Epoch 32/200
562/562 [==============================] - 0s 142us/step - loss: 437.2790 - rmse: 20.2802
- accuracy: 0.0000e+00 - val_loss: 411.5082 - val_rmse: 19.2597 - val_accuracy: 0.0000e+0
0
Epoch 33/200
562/562 [==============================] - 0s 141us/step - loss: 405.9753 - rmse: 19.4564
- accuracy: 0.0000e+00 - val_loss: 398.3387 - val_rmse: 18.9121 - val_accuracy: 0.0000e+0
0
Epoch 34/200
562/562 [==============================] - 0s 151us/step - loss: 376.6670 - rmse: 18.6231
- accuracy: 0.0000e+00 - val_loss: 346.3729 - val_rmse: 17.5503 - val_accuracy: 0.0000e+0
0
Epoch 35/200
562/562 [==============================] - 0s 144us/step - loss: 340.3900 - rmse: 17.7668
- accuracy: 0.0000e+00 - val_loss: 341.2575 - val_rmse: 17.4862 - val_accuracy: 0.0000e+0
0
Epoch 36/200
562/562 [==============================] - 0s 141us/step - loss: 310.6353 - rmse: 16.9353
- accuracy: 0.0000e+00 - val_loss: 314.2292 - val_rmse: 16.6679 - val_accuracy: 0.0000e+0
0
Epoch 37/200
562/562 [==============================] - 0s 144us/step - loss: 281.2475 - rmse: 16.0932
- accuracy: 0.0000e+00 - val_loss: 281.8170 - val_rmse: 15.6717 - val_accuracy: 0.0000e+0
0
Epoch 38/200
562/562 [==============================] - 0s 152us/step - loss: 263.1880 - rmse: 15.3067
- accuracy: 0.0000e+00 - val_loss: 254.3928 - val_rmse: 14.8487 - val_accuracy: 0.0000e+0
0
Epoch 39/200
562/562 [==============================] - 0s 145us/step - loss: 231.7878 - rmse: 14.4849
- accuracy: 0.0000e+00 - val_loss: 225.8493 - val_rmse: 13.8657 - val_accuracy: 0.0000e+0
0
Epoch 40/200
562/562 [==============================] - 0s 140us/step - loss: 214.3023 - rmse: 13.7056
- accuracy: 0.0000e+00 - val_loss: 206.4959 - val_rmse: 13.1839 - val_accuracy: 0.0000e+0
0
Epoch 41/200
562/562 [==============================] - 0s 145us/step - loss: 187.6778 - rmse: 12.8921
- accuracy: 0.0000e+00 - val_loss: 176.9278 - val_rmse: 12.1335 - val_accuracy: 0.0000e+0
0
Epoch 42/200
562/562 [==============================] - 0s 139us/step - loss: 169.1412 - rmse: 12.1717
- accuracy: 0.0000e+00 - val_loss: 170.3276 - val_rmse: 11.7370 - val_accuracy: 0.0000e+0
0
Epoch 43/200
562/562 [==============================] - 0s 146us/step - loss: 147.9430 - rmse: 11.4030
- accuracy: 0.0000e+00 - val_loss: 146.5665 - val_rmse: 10.8412 - val_accuracy: 0.0000e+0
0
Epoch 44/200
562/562 [==============================] - 0s 139us/step - loss: 131.3575 - rmse: 10.6678
- accuracy: 0.0000e+00 - val_loss: 123.9154 - val_rmse: 9.7940 - val_accuracy: 0.0063
Epoch 45/200
562/562 [==============================] - 0s 187us/step - loss: 121.7297 - rmse: 10.0837
- accuracy: 0.0000e+00 - val_loss: 110.1659 - val_rmse: 9.1597 - val_accuracy: 0.0000e+00
Epoch 46/200
562/562 [==============================] - 0s 158us/step - loss: 103.6322 - rmse: 9.2767
- accuracy: 0.0000e+00 - val_loss: 109.8143 - val_rmse: 9.1160 - val_accuracy: 0.0000e+00
Epoch 47/200

562/562 [==============================] - 0s 140us/step - loss: 98.7246 - rmse: 8.7865 -
accuracy: 0.0000e+00 - val_loss: 102.3897 - val_rmse: 8.5458 - val_accuracy: 0.0000e+00
Epoch 48/200
562/562 [==============================] - 0s 144us/step - loss: 87.0675 - rmse: 8.1449 -
accuracy: 0.0000e+00 - val_loss: 83.6850 - val_rmse: 7.7076 - val_accuracy: 0.0000e+00
Epoch 49/200
562/562 [==============================] - 0s 150us/step - loss: 72.4751 - rmse: 7.5355 -
accuracy: 0.0000e+00 - val_loss: 76.5340 - val_rmse: 7.3605 - val_accuracy: 0.0000e+00
Epoch 50/200
562/562 [==============================] - 0s 147us/step - loss: 65.8648 - rmse: 7.1050 -
accuracy: 0.0000e+00 - val_loss: 63.3315 - val_rmse: 6.4615 - val_accuracy: 0.0000e+00
Epoch 51/200
562/562 [==============================] - 0s 146us/step - loss: 62.7146 - rmse: 6.7471 -
accuracy: 0.0018 - val_loss: 63.3596 - val_rmse: 6.3825 - val_accuracy: 0.0000e+00
Epoch 52/200
562/562 [==============================] - 0s 146us/step - loss: 52.6510 - rmse: 6.1211 -
accuracy: 0.0000e+00 - val_loss: 61.5321 - val_rmse: 6.1819 - val_accuracy: 0.0000e+00
Epoch 53/200
562/562 [==============================] - 0s 140us/step - loss: 48.7406 - rmse: 5.7778 -
accuracy: 0.0000e+00 - val_loss: 62.4176 - val_rmse: 6.2778 - val_accuracy: 0.0000e+00
Epoch 54/200
562/562 [==============================] - 0s 151us/step - loss: 42.6750 - rmse: 5.4164 -
accuracy: 0.0000e+00 - val_loss: 50.4895 - val_rmse: 5.5209 - val_accuracy: 0.0000e+00
Epoch 55/200
562/562 [==============================] - 0s 140us/step - loss: 35.8913 - rmse: 5.0036 -
accuracy: 0.0018 - val_loss: 57.7546 - val_rmse: 5.6780 - val_accuracy: 0.0000e+00
Epoch 56/200
562/562 [==============================] - 0s 158us/step - loss: 34.1772 - rmse: 4.6568 -
accuracy: 0.0000e+00 - val_loss: 44.5809 - val_rmse: 5.1261 - val_accuracy: 0.0000e+00
Epoch 57/200
562/562 [==============================] - 0s 139us/step - loss: 32.3141 - rmse: 4.6812 -
accuracy: 0.0000e+00 - val_loss: 43.7585 - val_rmse: 4.9476 - val_accuracy: 0.0063
Epoch 58/200
562/562 [==============================] - 0s 146us/step - loss: 32.4633 - rmse: 4.6188 -
accuracy: 0.0018 - val_loss: 45.0541 - val_rmse: 4.8139 - val_accuracy: 0.0000e+00
Epoch 59/200
562/562 [==============================] - 0s 143us/step - loss: 30.3532 - rmse: 4.4525 -
accuracy: 0.0000e+00 - val_loss: 36.1413 - val_rmse: 4.3284 - val_accuracy: 0.0000e+00
Epoch 60/200
562/562 [==============================] - 0s 145us/step - loss: 24.8152 - rmse: 4.0468 -
accuracy: 0.0053 - val_loss: 34.9270 - val_rmse: 4.2716 - val_accuracy: 0.0000e+00
Epoch 61/200
562/562 [==============================] - 0s 144us/step - loss: 24.2826 - rmse: 4.0748 -
accuracy: 0.0000e+00 - val_loss: 34.3019 - val_rmse: 4.2407 - val_accuracy: 0.0000e+00
Epoch 62/200
562/562 [==============================] - 0s 150us/step - loss: 18.5884 - rmse: 3.4118 -
accuracy: 0.0018 - val_loss: 35.2035 - val_rmse: 4.1667 - val_accuracy: 0.0000e+00
Epoch 63/200
562/562 [==============================] - 0s 145us/step - loss: 30.3663 - rmse: 4.1097 -
accuracy: 0.0000e+00 - val_loss: 33.0922 - val_rmse: 4.0205 - val_accuracy: 0.0126
Epoch 64/200
562/562 [==============================] - 0s 140us/step - loss: 18.1779 - rmse: 3.2999 -
accuracy: 0.0000e+00 - val_loss: 29.0731 - val_rmse: 3.7749 - val_accuracy: 0.0000e+00
Epoch 65/200
562/562 [==============================] - 0s 143us/step - loss: 19.6241 - rmse: 3.3406 -
accuracy: 0.0018 - val_loss: 30.5942 - val_rmse: 3.8427 - val_accuracy: 0.0000e+00
Epoch 66/200
562/562 [==============================] - 0s 151us/step - loss: 21.6622 - rmse: 3.6799 -
accuracy: 0.0018 - val_loss: 34.1862 - val_rmse: 3.9666 - val_accuracy: 0.0000e+00
Epoch 67/200
562/562 [==============================] - 0s 151us/step - loss: 20.4090 - rmse: 3.6312 -
accuracy: 0.0000e+00 - val_loss: 29.8148 - val_rmse: 3.7855 - val_accuracy: 0.0063
Epoch 68/200
562/562 [==============================] - 0s 147us/step - loss: 19.5297 - rmse: 3.3975 -
accuracy: 0.0000e+00 - val_loss: 29.6156 - val_rmse: 3.9017 - val_accuracy: 0.0000e+00
Epoch 69/200
562/562 [==============================] - 0s 143us/step - loss: 15.0701 - rmse: 2.9486 -
accuracy: 0.0000e+00 - val_loss: 31.6432 - val_rmse: 4.0011 - val_accuracy: 0.0000e+00
Epoch 70/200
562/562 [==============================] - 0s 140us/step - loss: 18.5353 - rmse: 3.2501 -
accuracy: 0.0000e+00 - val_loss: 28.0815 - val_rmse: 3.6389 - val_accuracy: 0.0000e+00
Epoch 71/200

562/562 [==============================] - 0s 140us/step - loss: 21.2309 - rmse: 3.5418 - accuracy: 0.0018 - val_loss: 27.8556 - val_rmse: 3.5933 - val_accuracy: 0.0063
Epoch 72/200
562/562 [==============================] - 0s 141us/step - loss: 15.7735 - rmse: 3.0549 - accuracy: 0.0018 - val_loss: 30.6496 - val_rmse: 3.7514 - val_accuracy: 0.0063
Epoch 73/200
562/562 [==============================] - 0s 142us/step - loss: 15.9583 - rmse: 3.1285 - accuracy: 0.0018 - val_loss: 30.1990 - val_rmse: 3.7106 - val_accuracy: 0.0000e+00
Epoch 74/200
562/562 [==============================] - 0s 139us/step - loss: 16.8788 - rmse: 3.1107 - accuracy: 0.0018 - val_loss: 29.0213 - val_rmse: 3.7708 - val_accuracy: 0.0063
Epoch 75/200
562/562 [==============================] - 0s 143us/step - loss: 14.8071 - rmse: 2.9582 - accuracy: 0.0000e+00 - val_loss: 28.0059 - val_rmse: 3.5818 - val_accuracy: 0.0063
Epoch 76/200
562/562 [==============================] - 0s 143us/step - loss: 18.8659 - rmse: 3.3930 - accuracy: 0.0018 - val_loss: 30.2364 - val_rmse: 3.8707 - val_accuracy: 0.0000e+00
Epoch 77/200
562/562 [==============================] - 0s 146us/step - loss: 17.4695 - rmse: 3.2594 - accuracy: 0.0018 - val_loss: 32.6187 - val_rmse: 3.8656 - val_accuracy: 0.0000e+00
Epoch 78/200
562/562 [==============================] - 0s 148us/step - loss: 18.9282 - rmse: 3.3780 - accuracy: 0.0018 - val_loss: 29.5558 - val_rmse: 3.6912 - val_accuracy: 0.0000e+00
Epoch 79/200
562/562 [==============================] - 0s 148us/step - loss: 18.6567 - rmse: 3.3835 - accuracy: 0.0018 - val_loss: 30.0821 - val_rmse: 3.8670 - val_accuracy: 0.0063
Epoch 80/200
562/562 [==============================] - 0s 144us/step - loss: 19.7889 - rmse: 3.4932 - accuracy: 0.0036 - val_loss: 27.7205 - val_rmse: 3.6795 - val_accuracy: 0.0000e+00
Epoch 81/200
562/562 [==============================] - 0s 140us/step - loss: 17.9975 - rmse: 3.2944 - accuracy: 0.0000e+00 - val_loss: 28.4419 - val_rmse: 3.8638 - val_accuracy: 0.0000e+00
Epoch 82/200
562/562 [==============================] - 0s 145us/step - loss: 22.4587 - rmse: 3.7068 - accuracy: 0.0000e+00 - val_loss: 30.2233 - val_rmse: 3.9267 - val_accuracy: 0.0000e+00
Epoch 83/200
562/562 [==============================] - 0s 143us/step - loss: 16.4104 - rmse: 3.1310 - accuracy: 0.0000e+00 - val_loss: 27.9883 - val_rmse: 3.5549 - val_accuracy: 0.0063
Epoch 84/200
562/562 [==============================] - 0s 141us/step - loss: 16.4891 - rmse: 3.1322 - accuracy: 0.0018 - val_loss: 30.5612 - val_rmse: 3.6929 - val_accuracy: 0.0063
Epoch 85/200
562/562 [==============================] - 0s 148us/step - loss: 19.4767 - rmse: 3.3592 - accuracy: 0.0000e+00 - val_loss: 30.8515 - val_rmse: 3.9816 - val_accuracy: 0.0063
Epoch 86/200
562/562 [==============================] - 0s 151us/step - loss: 19.0817 - rmse: 3.2998 - accuracy: 0.0000e+00 - val_loss: 30.4409 - val_rmse: 3.7719 - val_accuracy: 0.0000e+00
Epoch 87/200
562/562 [==============================] - 0s 145us/step - loss: 18.9117 - rmse: 3.3231 - accuracy: 0.0036 - val_loss: 30.9167 - val_rmse: 3.8320 - val_accuracy: 0.0000e+00
Epoch 88/200
562/562 [==============================] - 0s 141us/step - loss: 19.6785 - rmse: 3.4540 - accuracy: 0.0000e+00 - val_loss: 28.0278 - val_rmse: 3.5513 - val_accuracy: 0.0063
Epoch 89/200
562/562 [==============================] - 0s 141us/step - loss: 16.3645 - rmse: 3.0327 - accuracy: 0.0018 - val_loss: 30.5783 - val_rmse: 3.7951 - val_accuracy: 0.0000e+00
Epoch 90/200
562/562 [==============================] - 0s 152us/step - loss: 17.4806 - rmse: 3.1186 - accuracy: 0.0036 - val_loss: 30.1168 - val_rmse: 3.8165 - val_accuracy: 0.0063
Epoch 91/200
562/562 [==============================] - 0s 155us/step - loss: 16.8867 - rmse: 3.2420 - accuracy: 0.0018 - val_loss: 28.1781 - val_rmse: 3.6157 - val_accuracy: 0.0063
Epoch 92/200
562/562 [==============================] - 0s 157us/step - loss: 13.5148 - rmse: 2.7755 - accuracy: 0.0000e+00 - val_loss: 29.5362 - val_rmse: 3.8540 - val_accuracy: 0.0000e+00
Epoch 93/200
562/562 [==============================] - 0s 150us/step - loss: 14.9227 - rmse: 2.9117 - accuracy: 0.0036 - val_loss: 27.3314 - val_rmse: 3.5202 - val_accuracy: 0.0063
Epoch 94/200
562/562 [==============================] - 0s 152us/step - loss: 18.0368 - rmse: 3.2093 - accuracy: 0.0018 - val_loss: 30.3548 - val_rmse: 3.7579 - val_accuracy: 0.0000e+00
Epoch 95/200

562/562 [==============================] - 0s 144us/step - loss: 23.3106 - rmse: 3.7497 - accuracy: 0.0000e+00 - val_loss: 28.7094 - val_rmse: 3.6669 - val_accuracy: 0.0000e+00
Epoch 96/200
562/562 [==============================] - 0s 150us/step - loss: 17.3482 - rmse: 3.2059 - accuracy: 0.0000e+00 - val_loss: 30.7040 - val_rmse: 3.7551 - val_accuracy: 0.0063
Epoch 97/200
562/562 [==============================] - 0s 145us/step - loss: 13.8435 - rmse: 2.8221 - accuracy: 0.0000e+00 - val_loss: 28.2473 - val_rmse: 3.6698 - val_accuracy: 0.0000e+00
Epoch 98/200
562/562 [==============================] - 0s 141us/step - loss: 16.8436 - rmse: 3.3065 - accuracy: 0.0036 - val_loss: 27.9684 - val_rmse: 3.6362 - val_accuracy: 0.0000e+00
Epoch 99/200
562/562 [==============================] - 0s 141us/step - loss: 20.5889 - rmse: 3.6042 - accuracy: 0.0000e+00 - val_loss: 27.8857 - val_rmse: 3.5084 - val_accuracy: 0.0000e+00
Epoch 100/200
562/562 [==============================] - 0s 142us/step - loss: 20.6431 - rmse: 3.3182 - accuracy: 0.0018 - val_loss: 28.8549 - val_rmse: 3.6598 - val_accuracy: 0.0063
Epoch 101/200
562/562 [==============================] - 0s 146us/step - loss: 14.3757 - rmse: 2.8347 - accuracy: 0.0036 - val_loss: 30.4880 - val_rmse: 3.7254 - val_accuracy: 0.0000e+00
Epoch 102/200
562/562 [==============================] - 0s 141us/step - loss: 15.5943 - rmse: 3.0509 - accuracy: 0.0018 - val_loss: 27.1220 - val_rmse: 3.4566 - val_accuracy: 0.0063
Epoch 103/200
562/562 [==============================] - 0s 147us/step - loss: 12.7607 - rmse: 2.6257 - accuracy: 0.0018 - val_loss: 31.2709 - val_rmse: 4.0387 - val_accuracy: 0.0063
Epoch 104/200
562/562 [==============================] - 0s 148us/step - loss: 20.9150 - rmse: 3.4935 - accuracy: 0.0000e+00 - val_loss: 28.3714 - val_rmse: 3.7620 - val_accuracy: 0.0063
Epoch 105/200
562/562 [==============================] - 0s 163us/step - loss: 18.4875 - rmse: 3.2631 - accuracy: 0.0000e+00 - val_loss: 29.7916 - val_rmse: 3.7173 - val_accuracy: 0.0000e+00
Epoch 106/200
562/562 [==============================] - 0s 141us/step - loss: 14.8780 - rmse: 2.9184 - accuracy: 0.0018 - val_loss: 28.0563 - val_rmse: 3.5467 - val_accuracy: 0.0000e+00
Epoch 107/200
562/562 [==============================] - 0s 143us/step - loss: 20.3090 - rmse: 3.5771 - accuracy: 0.0018 - val_loss: 29.5667 - val_rmse: 3.7703 - val_accuracy: 0.0000e+00
Epoch 108/200
562/562 [==============================] - 0s 147us/step - loss: 20.9895 - rmse: 3.4408 - accuracy: 0.0000e+00 - val_loss: 27.6755 - val_rmse: 3.5381 - val_accuracy: 0.0000e+00
Epoch 109/200
562/562 [==============================] - 0s 150us/step - loss: 16.2032 - rmse: 3.0846 - accuracy: 0.0000e+00 - val_loss: 31.6124 - val_rmse: 3.9162 - val_accuracy: 0.0063
Epoch 110/200
562/562 [==============================] - 0s 145us/step - loss: 14.5359 - rmse: 2.9785 - accuracy: 0.0036 - val_loss: 33.5382 - val_rmse: 4.1667 - val_accuracy: 0.0000e+00
Epoch 111/200
562/562 [==============================] - 0s 143us/step - loss: 17.4049 - rmse: 3.2556 - accuracy: 0.0000e+00 - val_loss: 30.0659 - val_rmse: 3.6868 - val_accuracy: 0.0063
Epoch 112/200
562/562 [==============================] - 0s 198us/step - loss: 14.1060 - rmse: 2.8133 - accuracy: 0.0000e+00 - val_loss: 29.6999 - val_rmse: 3.6844 - val_accuracy: 0.0063
Epoch 113/200
562/562 [==============================] - 0s 166us/step - loss: 12.5714 - rmse: 2.7351 - accuracy: 0.0000e+00 - val_loss: 29.6110 - val_rmse: 3.7326 - val_accuracy: 0.0063
Epoch 114/200
562/562 [==============================] - 0s 232us/step - loss: 13.1943 - rmse: 2.6851 - accuracy: 0.0036 - val_loss: 29.6126 - val_rmse: 3.7609 - val_accuracy: 0.0000e+00
Epoch 115/200
562/562 [==============================] - 0s 162us/step - loss: 15.5345 - rmse: 3.0324 - accuracy: 0.0000e+00 - val_loss: 27.6439 - val_rmse: 3.5874 - val_accuracy: 0.0063
Epoch 116/200
562/562 [==============================] - 0s 143us/step - loss: 13.8230 - rmse: 2.8552 - accuracy: 0.0018 - val_loss: 28.3387 - val_rmse: 3.5497 - val_accuracy: 0.0063
Epoch 117/200
562/562 [==============================] - 0s 144us/step - loss: 28.8391 - rmse: 4.4383 - accuracy: 0.0018 - val_loss: 30.4619 - val_rmse: 3.7234 - val_accuracy: 0.0063
Epoch 118/200
562/562 [==============================] - 0s 145us/step - loss: 22.7215 - rmse: 3.6182 - accuracy: 0.0036 - val_loss: 29.0656 - val_rmse: 3.6333 - val_accuracy: 0.0000e+00
Epoch 119/200

562/562 [==============================] - 0s 149us/step - loss: 16.9464 - rmse: 3.2198 -
accuracy: 0.0000e+00 - val_loss: 28.2356 - val_rmse: 3.5910 - val_accuracy: 0.0063
Epoch 120/200
562/562 [==============================] - 0s 140us/step - loss: 18.2296 - rmse: 3.4088 -
accuracy: 0.0036 - val_loss: 28.5503 - val_rmse: 3.6693 - val_accuracy: 0.0063
Epoch 121/200
562/562 [==============================] - 0s 144us/step - loss: 17.2238 - rmse: 3.2560 -
accuracy: 0.0018 - val_loss: 28.5701 - val_rmse: 3.6526 - val_accuracy: 0.0000e+00
Epoch 122/200
562/562 [==============================] - 0s 147us/step - loss: 16.8991 - rmse: 3.1861 -
accuracy: 0.0036 - val_loss: 29.4686 - val_rmse: 3.8658 - val_accuracy: 0.0000e+00
Epoch 123/200
562/562 [==============================] - 0s 268us/step - loss: 14.4987 - rmse: 2.8625 -
accuracy: 0.0000e+00 - val_loss: 28.4260 - val_rmse: 3.6405 - val_accuracy: 0.0063
Epoch 124/200
562/562 [==============================] - 0s 175us/step - loss: 22.9055 - rmse: 3.7647 -
accuracy: 0.0018 - val_loss: 30.4460 - val_rmse: 3.7820 - val_accuracy: 0.0126
Epoch 125/200
562/562 [==============================] - 0s 176us/step - loss: 14.7426 - rmse: 2.9595 -
accuracy: 0.0000e+00 - val_loss: 27.5172 - val_rmse: 3.5504 - val_accuracy: 0.0126
Epoch 126/200
562/562 [==============================] - 0s 224us/step - loss: 15.2831 - rmse: 2.9081 -
accuracy: 0.0036 - val_loss: 30.2509 - val_rmse: 3.7113 - val_accuracy: 0.0000e+00
Epoch 127/200
562/562 [==============================] - 0s 164us/step - loss: 16.2481 - rmse: 3.1043 -
accuracy: 0.0018 - val_loss: 30.0361 - val_rmse: 3.6584 - val_accuracy: 0.0063
Epoch 128/200
562/562 [==============================] - 0s 152us/step - loss: 13.8471 - rmse: 2.7861 -
accuracy: 0.0000e+00 - val_loss: 30.2985 - val_rmse: 3.8135 - val_accuracy: 0.0000e+00
Epoch 129/200
562/562 [==============================] - 0s 152us/step - loss: 13.3426 - rmse: 2.8493 -
accuracy: 0.0036 - val_loss: 28.9788 - val_rmse: 3.7549 - val_accuracy: 0.0063
Epoch 130/200
562/562 [==============================] - 0s 144us/step - loss: 13.6936 - rmse: 2.8689 -
accuracy: 0.0000e+00 - val_loss: 28.8294 - val_rmse: 3.7286 - val_accuracy: 0.0000e+00
Epoch 131/200
562/562 [==============================] - 0s 147us/step - loss: 15.1049 - rmse: 2.9045 -
accuracy: 0.0018 - val_loss: 29.9326 - val_rmse: 3.7261 - val_accuracy: 0.0000e+00
Epoch 132/200
562/562 [==============================] - 0s 143us/step - loss: 14.1558 - rmse: 2.8066 -
accuracy: 0.0000e+00 - val_loss: 29.0519 - val_rmse: 3.6717 - val_accuracy: 0.0000e+00
Epoch 133/200
562/562 [==============================] - 0s 153us/step - loss: 20.8547 - rmse: 3.5969 -
accuracy: 0.0018 - val_loss: 27.6991 - val_rmse: 3.5928 - val_accuracy: 0.0063
Epoch 134/200
562/562 [==============================] - 0s 143us/step - loss: 17.4648 - rmse: 3.1830 -
accuracy: 0.0036 - val_loss: 30.0779 - val_rmse: 3.6868 - val_accuracy: 0.0063
Epoch 135/200
562/562 [==============================] - 0s 139us/step - loss: 17.5349 - rmse: 3.2318 -
accuracy: 0.0018 - val_loss: 29.0971 - val_rmse: 3.6743 - val_accuracy: 0.0000e+00
Epoch 136/200
562/562 [==============================] - 0s 144us/step - loss: 11.9302 - rmse: 2.5447 -
accuracy: 0.0000e+00 - val_loss: 31.8014 - val_rmse: 3.9115 - val_accuracy: 0.0000e+00
Epoch 137/200
562/562 [==============================] - 0s 150us/step - loss: 23.6604 - rmse: 3.8529 -
accuracy: 0.0018 - val_loss: 29.2610 - val_rmse: 3.6156 - val_accuracy: 0.0000e+00
Epoch 138/200
562/562 [==============================] - 0s 146us/step - loss: 14.9350 - rmse: 2.9713 -
accuracy: 0.0018 - val_loss: 28.9416 - val_rmse: 3.6059 - val_accuracy: 0.0063
Epoch 139/200
562/562 [==============================] - 0s 144us/step - loss: 14.6646 - rmse: 2.8594 -
accuracy: 0.0018 - val_loss: 28.6932 - val_rmse: 3.6310 - val_accuracy: 0.0000e+00
Epoch 140/200
562/562 [==============================] - 0s 146us/step - loss: 14.0115 - rmse: 2.7873 -
accuracy: 0.0000e+00 - val_loss: 28.4701 - val_rmse: 3.8108 - val_accuracy: 0.0000e+00
Epoch 141/200
562/562 [==============================] - 0s 145us/step - loss: 20.2982 - rmse: 3.3993 -
accuracy: 0.0000e+00 - val_loss: 28.2315 - val_rmse: 3.5977 - val_accuracy: 0.0000e+00
Epoch 142/200
562/562 [==============================] - 0s 144us/step - loss: 15.4097 - rmse: 3.0822 -
accuracy: 0.0000e+00 - val_loss: 27.8945 - val_rmse: 3.5427 - val_accuracy: 0.0063
Epoch 143/200

562/562 [==============================] - 0s 144us/step - loss: 24.9450 - rmse: 4.0710 - accuracy: 0.0053 - val_loss: 30.0425 - val_rmse: 3.6771 - val_accuracy: 0.0063
Epoch 144/200
562/562 [==============================] - 0s 148us/step - loss: 17.7256 - rmse: 3.3571 - accuracy: 0.0000e+00 - val_loss: 27.8289 - val_rmse: 3.5415 - val_accuracy: 0.0063
Epoch 145/200
562/562 [==============================] - 0s 145us/step - loss: 15.6777 - rmse: 3.0634 - accuracy: 0.0000e+00 - val_loss: 28.1827 - val_rmse: 3.6201 - val_accuracy: 0.0000e+00
Epoch 146/200
562/562 [==============================] - 0s 142us/step - loss: 16.1903 - rmse: 3.0628 - accuracy: 0.0036 - val_loss: 28.1193 - val_rmse: 3.5683 - val_accuracy: 0.0000e+00
Epoch 147/200
562/562 [==============================] - 0s 149us/step - loss: 20.4086 - rmse: 3.3897 - accuracy: 0.0018 - val_loss: 29.7100 - val_rmse: 3.7111 - val_accuracy: 0.0000e+00
Epoch 148/200
562/562 [==============================] - 0s 146us/step - loss: 14.8347 - rmse: 2.9520 - accuracy: 0.0018 - val_loss: 30.9243 - val_rmse: 4.0048 - val_accuracy: 0.0126
Epoch 149/200
562/562 [==============================] - 0s 140us/step - loss: 16.9680 - rmse: 3.0687 - accuracy: 0.0018 - val_loss: 28.3238 - val_rmse: 3.5711 - val_accuracy: 0.0126
Epoch 150/200
562/562 [==============================] - 0s 142us/step - loss: 14.9320 - rmse: 3.0267 - accuracy: 0.0000e+00 - val_loss: 28.0552 - val_rmse: 3.6153 - val_accuracy: 0.0000e+00
Epoch 151/200
562/562 [==============================] - 0s 144us/step - loss: 17.7831 - rmse: 3.3656 - accuracy: 0.0000e+00 - val_loss: 29.0675 - val_rmse: 3.7122 - val_accuracy: 0.0000e+00
Epoch 152/200
562/562 [==============================] - 0s 150us/step - loss: 10.0286 - rmse: 2.3541 - accuracy: 0.0018 - val_loss: 29.6655 - val_rmse: 3.7462 - val_accuracy: 0.0063
Epoch 153/200
562/562 [==============================] - 0s 153us/step - loss: 15.8858 - rmse: 3.1240 - accuracy: 0.0000e+00 - val_loss: 29.5681 - val_rmse: 3.6333 - val_accuracy: 0.0063
Epoch 154/200
562/562 [==============================] - 0s 143us/step - loss: 17.8312 - rmse: 3.1934 - accuracy: 0.0018 - val_loss: 28.2974 - val_rmse: 3.6048 - val_accuracy: 0.0063
Epoch 155/200
562/562 [==============================] - 0s 141us/step - loss: 16.1547 - rmse: 3.0724 - accuracy: 0.0036 - val_loss: 28.4708 - val_rmse: 3.6683 - val_accuracy: 0.0063
Epoch 156/200
562/562 [==============================] - 0s 150us/step - loss: 18.7648 - rmse: 3.3366 - accuracy: 0.0018 - val_loss: 30.4202 - val_rmse: 3.7931 - val_accuracy: 0.0000e+00
Epoch 157/200
562/562 [==============================] - 0s 146us/step - loss: 15.5164 - rmse: 2.8681 - accuracy: 0.0053 - val_loss: 29.1423 - val_rmse: 3.5347 - val_accuracy: 0.0000e+00
Epoch 158/200
562/562 [==============================] - 0s 143us/step - loss: 17.5484 - rmse: 3.2564 - accuracy: 0.0018 - val_loss: 28.9234 - val_rmse: 3.6504 - val_accuracy: 0.0063
Epoch 159/200
562/562 [==============================] - 0s 146us/step - loss: 12.3620 - rmse: 2.7156 - accuracy: 0.0018 - val_loss: 28.7520 - val_rmse: 3.5313 - val_accuracy: 0.0000e+00
Epoch 160/200
562/562 [==============================] - 0s 144us/step - loss: 16.2213 - rmse: 3.2576 - accuracy: 0.0000e+00 - val_loss: 28.8427 - val_rmse: 3.5741 - val_accuracy: 0.0063
Epoch 161/200
562/562 [==============================] - 0s 144us/step - loss: 14.0616 - rmse: 2.9248 - accuracy: 0.0000e+00 - val_loss: 29.4741 - val_rmse: 3.6642 - val_accuracy: 0.0000e+00
Epoch 162/200
562/562 [==============================] - 0s 147us/step - loss: 12.3700 - rmse: 2.6748 - accuracy: 0.0036 - val_loss: 28.5676 - val_rmse: 3.6293 - val_accuracy: 0.0000e+00
Epoch 163/200
562/562 [==============================] - 0s 150us/step - loss: 12.2465 - rmse: 2.6469 - accuracy: 0.0018 - val_loss: 29.1918 - val_rmse: 3.6003 - val_accuracy: 0.0000e+00
Epoch 164/200
562/562 [==============================] - 0s 145us/step - loss: 12.8325 - rmse: 2.7820 - accuracy: 0.0036 - val_loss: 28.6845 - val_rmse: 3.5381 - val_accuracy: 0.0000e+00
Epoch 165/200
562/562 [==============================] - 0s 143us/step - loss: 13.4427 - rmse: 2.7929 - accuracy: 0.0018 - val_loss: 30.4137 - val_rmse: 3.7313 - val_accuracy: 0.0063
Epoch 166/200
562/562 [==============================] - 0s 145us/step - loss: 15.1271 - rmse: 3.0707 - accuracy: 0.0036 - val_loss: 27.9462 - val_rmse: 3.5811 - val_accuracy: 0.0063
Epoch 167/200

562/562 [==============================] - 0s 156us/step - loss: 13.5945 - rmse: 2.8395 -
accuracy: 0.0053 - val_loss: 28.2197 - val_rmse: 3.5980 - val_accuracy: 0.0000e+00
Epoch 168/200
562/562 [==============================] - 0s 150us/step - loss: 17.6839 - rmse: 3.2833 -
accuracy: 0.0036 - val_loss: 28.7191 - val_rmse: 3.5697 - val_accuracy: 0.0000e+00
Epoch 169/200
562/562 [==============================] - 0s 149us/step - loss: 14.3056 - rmse: 2.9017 -
accuracy: 0.0036 - val_loss: 31.0276 - val_rmse: 3.7984 - val_accuracy: 0.0063
Epoch 170/200
562/562 [==============================] - 0s 165us/step - loss: 17.5383 - rmse: 3.1768 -
accuracy: 0.0018 - val_loss: 28.5602 - val_rmse: 3.5561 - val_accuracy: 0.0063
Epoch 171/200
562/562 [==============================] - 0s 147us/step - loss: 17.7851 - rmse: 3.2739 -
accuracy: 0.0000e+00 - val_loss: 28.9825 - val_rmse: 3.6531 - val_accuracy: 0.0000e+00
Epoch 172/200
562/562 [==============================] - 0s 149us/step - loss: 12.0399 - rmse: 2.6323 -
accuracy: 0.0018 - val_loss: 28.2866 - val_rmse: 3.6119 - val_accuracy: 0.0063
Epoch 173/200
562/562 [==============================] - 0s 142us/step - loss: 14.5856 - rmse: 2.9318 -
accuracy: 0.0018 - val_loss: 28.8722 - val_rmse: 3.6656 - val_accuracy: 0.0000e+00
Epoch 174/200
562/562 [==============================] - 0s 149us/step - loss: 11.2010 - rmse: 2.3581 -
accuracy: 0.0018 - val_loss: 28.2092 - val_rmse: 3.5942 - val_accuracy: 0.0063
Epoch 175/200
562/562 [==============================] - 0s 149us/step - loss: 14.5964 - rmse: 2.8207 -
accuracy: 0.0000e+00 - val_loss: 29.2277 - val_rmse: 3.6632 - val_accuracy: 0.0063
Epoch 176/200
562/562 [==============================] - 0s 144us/step - loss: 13.4619 - rmse: 2.8640 -
accuracy: 0.0018 - val_loss: 28.7719 - val_rmse: 3.6359 - val_accuracy: 0.0063
Epoch 177/200
562/562 [==============================] - 0s 145us/step - loss: 17.3602 - rmse: 3.3278 -
accuracy: 0.0036 - val_loss: 28.8772 - val_rmse: 3.6762 - val_accuracy: 0.0000e+00
Epoch 178/200
562/562 [==============================] - 0s 151us/step - loss: 19.2059 - rmse: 3.4474 -
accuracy: 0.0018 - val_loss: 28.8495 - val_rmse: 3.6483 - val_accuracy: 0.0000e+00
Epoch 179/200
562/562 [==============================] - 0s 149us/step - loss: 14.2182 - rmse: 2.8341 -
accuracy: 0.0036 - val_loss: 30.8469 - val_rmse: 3.7549 - val_accuracy: 0.0000e+00
Epoch 180/200
562/562 [==============================] - 0s 140us/step - loss: 16.9381 - rmse: 2.9729 -
accuracy: 0.0036 - val_loss: 28.8046 - val_rmse: 3.6980 - val_accuracy: 0.0063
Epoch 181/200
562/562 [==============================] - 0s 142us/step - loss: 16.3239 - rmse: 3.1754 -
accuracy: 0.0018 - val_loss: 29.0897 - val_rmse: 3.6947 - val_accuracy: 0.0000e+00
Epoch 182/200
562/562 [==============================] - 0s 147us/step - loss: 17.5258 - rmse: 3.3605 -
accuracy: 0.0018 - val_loss: 29.8383 - val_rmse: 3.7301 - val_accuracy: 0.0063
Epoch 183/200
562/562 [==============================] - 0s 145us/step - loss: 19.2270 - rmse: 3.3859 -
accuracy: 0.0018 - val_loss: 28.9523 - val_rmse: 3.6406 - val_accuracy: 0.0063
Epoch 184/200
562/562 [==============================] - 0s 144us/step - loss: 14.4176 - rmse: 2.8285 -
accuracy: 0.0000e+00 - val_loss: 27.2416 - val_rmse: 3.4572 - val_accuracy: 0.0063
Epoch 185/200
562/562 [==============================] - 0s 144us/step - loss: 18.7987 - rmse: 3.4905 -
accuracy: 0.0036 - val_loss: 26.9526 - val_rmse: 3.5480 - val_accuracy: 0.0063
Epoch 186/200
562/562 [==============================] - 0s 145us/step - loss: 15.9863 - rmse: 3.0707 -
accuracy: 0.0000e+00 - val_loss: 26.6688 - val_rmse: 3.5263 - val_accuracy: 0.0063
Epoch 187/200
562/562 [==============================] - 0s 146us/step - loss: 16.1585 - rmse: 3.1187 -
accuracy: 0.0000e+00 - val_loss: 29.0633 - val_rmse: 3.7924 - val_accuracy: 0.0063
Epoch 188/200
562/562 [==============================] - 0s 143us/step - loss: 13.0204 - rmse: 2.7101 -
accuracy: 0.0036 - val_loss: 28.0845 - val_rmse: 3.5906 - val_accuracy: 0.0000e+00
Epoch 189/200
562/562 [==============================] - 0s 148us/step - loss: 14.1971 - rmse: 2.9091 -
accuracy: 0.0000e+00 - val_loss: 28.1064 - val_rmse: 3.6143 - val_accuracy: 0.0000e+00
Epoch 190/200
562/562 [==============================] - 0s 141us/step - loss: 10.0267 - rmse: 2.3816 -
accuracy: 0.0000e+00 - val_loss: 27.2858 - val_rmse: 3.4548 - val_accuracy: 0.0063
Epoch 191/200

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562/562 [==============================] - 0s 157us/step - loss: 14.0595 - rmse: 2.8101 -
accuracy: 0.0000e+00 - val_loss: 30.8896 - val_rmse: 3.7967 - val_accuracy: 0.0000e+00
Epoch 192/200
562/562 [==============================] - 0s 143us/step - loss: 14.1212 - rmse: 2.8459 -
accuracy: 0.0000e+00 - val_loss: 28.5965 - val_rmse: 3.5585 - val_accuracy: 0.0063
Epoch 193/200
562/562 [==============================] - 0s 146us/step - loss: 13.0216 - rmse: 2.6915 -
accuracy: 0.0018 - val_loss: 28.5982 - val_rmse: 3.5454 - val_accuracy: 0.0063
Epoch 194/200
562/562 [==============================] - 0s 143us/step - loss: 13.7295 - rmse: 2.9182 -
accuracy: 0.0000e+00 - val_loss: 28.2134 - val_rmse: 3.5652 - val_accuracy: 0.0000e+00
Epoch 195/200
562/562 [==============================] - 0s 143us/step - loss: 16.9065 - rmse: 3.2239 -
accuracy: 0.0018 - val_loss: 28.9144 - val_rmse: 3.6667 - val_accuracy: 0.0000e+00
Epoch 196/200
562/562 [==============================] - 0s 146us/step - loss: 17.0519 - rmse: 3.3361 -
accuracy: 0.0000e+00 - val_loss: 29.4172 - val_rmse: 3.6253 - val_accuracy: 0.0000e+00
Epoch 197/200
562/562 [==============================] - 0s 145us/step - loss: 12.4284 - rmse: 2.5477 -
accuracy: 0.0036 - val_loss: 28.3094 - val_rmse: 3.5787 - val_accuracy: 0.0000e+00
Epoch 198/200
562/562 [==============================] - 0s 141us/step - loss: 18.6192 - rmse: 3.3643 -
accuracy: 0.0000e+00 - val_loss: 28.7488 - val_rmse: 3.5096 - val_accuracy: 0.0063
Epoch 199/200
562/562 [==============================] - 0s 141us/step - loss: 13.5170 - rmse: 2.8668 -
accuracy: 0.0018 - val_loss: 29.4278 - val_rmse: 3.6090 - val_accuracy: 0.0126
Epoch 200/200
562/562 [==============================] - 0s 139us/step - loss: 14.7871 - rmse: 2.9515 -
accuracy: 0.0036 - val_loss: 29.5585 - val_rmse: 3.6247 - val_accuracy: 0.0000e+00
```

train again

In [58]:

```
df = pd.concat([pd.read_csv('../input/cement-train-test-data/train_data.csv'),pd.read_cs
v('../input/cement-train-test-data/compresive_strength_concrete.csv'),pd.read_csv('../inp
ut/cement-train-test-data/train_data2.csv')])

x_org = df.drop('strength',axis=1).values
y_org = df['strength'].values

X_train, X_test, y_train, y_test = train_test_split(x_org,y_org, test_size=0.22)

sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)

print(X_train.shape, X_test.shape, y_train.shape, y_test.shape)
```

```
(2169, 8) (612, 8) (2169,) (612,)
```

In [59]:

```
model.compile(optimizer=opt,loss='mean_squared_error',metrics=[rmse,'accuracy'])
history2 = model.fit(X_train,y_train,epochs = 200 ,batch_size=32,validation_data=(X_test
,y_test))
```

```
Train on 2169 samples, validate on 612 samples
Epoch 1/200
2169/2169 [==============================] - 1s 271us/step - loss: 33.9488 - rmse: 4.4647
- accuracy: 0.0014 - val_loss: 57.1469 - val_rmse: 5.8116 - val_accuracy: 0.0016
Epoch 2/200
2169/2169 [==============================] - 0s 146us/step - loss: 27.5028 - rmse: 4.0165
- accuracy: 0.0014 - val_loss: 22.0085 - val_rmse: 3.6251 - val_accuracy: 0.0033
Epoch 3/200
2169/2169 [==============================] - 0s 142us/step - loss: 23.5755 - rmse: 3.7272
- accuracy: 0.0014 - val_loss: 20.9309 - val_rmse: 3.3502 - val_accuracy: 0.0016
Epoch 4/200
2169/2169 [==============================] - 0s 144us/step - loss: 23.2859 - rmse: 3.7517
- accuracy: 4.6104e-04 - val_loss: 18.1165 - val_rmse: 3.1521 - val_accuracy: 0.0033
Epoch 5/200
```

Epoch 5/200
2169/2169 [==============================] - 0s 138us/step - loss: 23.0578 - rmse: 3.7304
- accuracy: 0.0014 - val_loss: 16.7344 - val_rmse: 2.9889 - val_accuracy: 0.0033
Epoch 6/200
2169/2169 [==============================] - 0s 145us/step - loss: 20.0821 - rmse: 3.5243
- accuracy: 9.2208e-04 - val_loss: 17.7883 - val_rmse: 3.1704 - val_accuracy: 0.0049
Epoch 7/200
2169/2169 [==============================] - 0s 144us/step - loss: 20.9299 - rmse: 3.5424
- accuracy: 0.0018 - val_loss: 15.6584 - val_rmse: 2.8591 - val_accuracy: 0.0033
Epoch 8/200
2169/2169 [==============================] - 0s 166us/step - loss: 18.8730 - rmse: 3.3884
- accuracy: 4.6104e-04 - val_loss: 15.6984 - val_rmse: 2.7704 - val_accuracy: 0.0016
Epoch 9/200
2169/2169 [==============================] - 0s 138us/step - loss: 19.1955 - rmse: 3.4041
- accuracy: 9.2208e-04 - val_loss: 17.2391 - val_rmse: 3.0511 - val_accuracy: 0.0016
Epoch 10/200
2169/2169 [==============================] - 0s 205us/step - loss: 16.9336 - rmse: 3.2105
- accuracy: 4.6104e-04 - val_loss: 14.8003 - val_rmse: 2.8337 - val_accuracy: 0.0082
Epoch 11/200
2169/2169 [==============================] - 0s 190us/step - loss: 19.4792 - rmse: 3.4827
- accuracy: 4.6104e-04 - val_loss: 14.6365 - val_rmse: 2.7205 - val_accuracy: 0.0016
Epoch 12/200
2169/2169 [==============================] - 0s 149us/step - loss: 18.7134 - rmse: 3.3724
- accuracy: 9.2208e-04 - val_loss: 12.5875 - val_rmse: 2.5255 - val_accuracy: 0.0016
Epoch 13/200
2169/2169 [==============================] - 0s 154us/step - loss: 15.5077 - rmse: 3.0405
- accuracy: 0.0018 - val_loss: 12.5694 - val_rmse: 2.5364 - val_accuracy: 0.0049
Epoch 14/200
2169/2169 [==============================] - 0s 145us/step - loss: 18.5969 - rmse: 3.3501
- accuracy: 0.0032 - val_loss: 13.7571 - val_rmse: 2.7087 - val_accuracy: 0.0033
Epoch 15/200
2169/2169 [==============================] - 0s 151us/step - loss: 16.9460 - rmse: 3.2584
- accuracy: 9.2208e-04 - val_loss: 13.3009 - val_rmse: 2.6298 - val_accuracy: 0.0033
Epoch 16/200
2169/2169 [==============================] - 0s 154us/step - loss: 15.6522 - rmse: 3.0709
- accuracy: 0.0014 - val_loss: 14.2711 - val_rmse: 2.7165 - val_accuracy: 0.0016
Epoch 17/200
2169/2169 [==============================] - 0s 143us/step - loss: 18.4008 - rmse: 3.3677
- accuracy: 0.0018 - val_loss: 12.2633 - val_rmse: 2.4972 - val_accuracy: 0.0049
Epoch 18/200
2169/2169 [==============================] - 0s 135us/step - loss: 17.5131 - rmse: 3.2486
- accuracy: 0.0014 - val_loss: 11.6274 - val_rmse: 2.3503 - val_accuracy: 0.0065
Epoch 19/200
2169/2169 [==============================] - 0s 139us/step - loss: 17.1885 - rmse: 3.2335
- accuracy: 4.6104e-04 - val_loss: 12.7151 - val_rmse: 2.4134 - val_accuracy: 0.0000e+00
Epoch 20/200
2169/2169 [==============================] - 0s 141us/step - loss: 15.3111 - rmse: 3.0243
- accuracy: 4.6104e-04 - val_loss: 10.8369 - val_rmse: 2.2484 - val_accuracy: 0.0016
Epoch 21/200
2169/2169 [==============================] - 0s 137us/step - loss: 17.4913 - rmse: 3.2506
- accuracy: 9.2208e-04 - val_loss: 11.5564 - val_rmse: 2.2784 - val_accuracy: 0.0016
Epoch 22/200
2169/2169 [==============================] - 0s 143us/step - loss: 15.0000 - rmse: 3.0592
- accuracy: 9.2208e-04 - val_loss: 11.9800 - val_rmse: 2.3319 - val_accuracy: 0.0000e+00
Epoch 23/200
2169/2169 [==============================] - 0s 139us/step - loss: 17.9730 - rmse: 3.2966
- accuracy: 0.0023 - val_loss: 12.6678 - val_rmse: 2.4590 - val_accuracy: 0.0016
Epoch 24/200
2169/2169 [==============================] - 0s 143us/step - loss: 16.3676 - rmse: 3.1053
- accuracy: 9.2208e-04 - val_loss: 11.3785 - val_rmse: 2.2961 - val_accuracy: 0.0000e+00
Epoch 25/200
2169/2169 [==============================] - 0s 144us/step - loss: 15.5275 - rmse: 3.0369
- accuracy: 4.6104e-04 - val_loss: 13.7283 - val_rmse: 2.7353 - val_accuracy: 0.0033
Epoch 26/200
2169/2169 [==============================] - 0s 139us/step - loss: 17.4756 - rmse: 3.2764
- accuracy: 9.2208e-04 - val_loss: 11.6508 - val_rmse: 2.3474 - val_accuracy: 0.0016
Epoch 27/200
2169/2169 [==============================] - 0s 150us/step - loss: 14.1556 - rmse: 2.9405
- accuracy: 0.0014 - val_loss: 11.2024 - val_rmse: 2.2858 - val_accuracy: 0.0049
Epoch 28/200
2169/2169 [==============================] - 0s 137us/step - loss: 17.5533 - rmse: 3.2159
- accuracy: 0.0018 - val_loss: 11.1723 - val_rmse: 2.3836 - val_accuracy: 0.0016
Epoch 29/200

Epoch 29/200
2169/2169 [==============================] - 0s 137us/step - loss: 16.6691 - rmse: 3.1413
- accuracy: 4.6104e-04 - val_loss: 11.1247 - val_rmse: 2.2973 - val_accuracy: 0.0033
Epoch 30/200
2169/2169 [==============================] - 0s 137us/step - loss: 14.2645 - rmse: 2.9773
- accuracy: 9.2208e-04 - val_loss: 11.3099 - val_rmse: 2.2515 - val_accuracy: 0.0033
Epoch 31/200
2169/2169 [==============================] - 0s 136us/step - loss: 15.2524 - rmse: 3.0532
- accuracy: 0.0000e+00 - val_loss: 10.7462 - val_rmse: 2.2013 - val_accuracy: 0.0033
Epoch 32/200
2169/2169 [==============================] - 0s 137us/step - loss: 14.0082 - rmse: 2.8880
- accuracy: 4.6104e-04 - val_loss: 11.2758 - val_rmse: 2.2958 - val_accuracy: 0.0033
Epoch 33/200
2169/2169 [==============================] - 0s 142us/step - loss: 16.1349 - rmse: 3.1739
- accuracy: 0.0018 - val_loss: 10.6691 - val_rmse: 2.2525 - val_accuracy: 0.0033
Epoch 34/200
2169/2169 [==============================] - 0s 136us/step - loss: 16.9432 - rmse: 3.2572
- accuracy: 0.0014 - val_loss: 11.3143 - val_rmse: 2.2663 - val_accuracy: 0.0000e+00
Epoch 35/200
2169/2169 [==============================] - 0s 143us/step - loss: 14.8529 - rmse: 2.9767
- accuracy: 0.0014 - val_loss: 12.4613 - val_rmse: 2.4017 - val_accuracy: 0.0000e+00
Epoch 36/200
2169/2169 [==============================] - 0s 138us/step - loss: 17.4706 - rmse: 3.2792
- accuracy: 0.0000e+00 - val_loss: 10.7287 - val_rmse: 2.2670 - val_accuracy: 0.0033
Epoch 37/200
2169/2169 [==============================] - 0s 148us/step - loss: 15.0650 - rmse: 2.9900
- accuracy: 0.0014 - val_loss: 10.4007 - val_rmse: 2.2027 - val_accuracy: 0.0033
Epoch 38/200
2169/2169 [==============================] - 0s 140us/step - loss: 16.0612 - rmse: 3.1231
- accuracy: 0.0018 - val_loss: 10.4400 - val_rmse: 2.2312 - val_accuracy: 0.0000e+00
Epoch 39/200
2169/2169 [==============================] - 1s 287us/step - loss: 16.6752 - rmse: 3.2371
- accuracy: 4.6104e-04 - val_loss: 10.8377 - val_rmse: 2.3136 - val_accuracy: 0.0033
Epoch 40/200
2169/2169 [==============================] - 1s 291us/step - loss: 16.1122 - rmse: 3.1311
- accuracy: 0.0018 - val_loss: 11.6818 - val_rmse: 2.3523 - val_accuracy: 0.0049
Epoch 41/200
2169/2169 [==============================] - 0s 165us/step - loss: 16.5158 - rmse: 3.1461
- accuracy: 0.0014 - val_loss: 10.0419 - val_rmse: 2.1008 - val_accuracy: 0.0033
Epoch 42/200
2169/2169 [==============================] - 0s 137us/step - loss: 15.1188 - rmse: 3.0530
- accuracy: 0.0014 - val_loss: 10.4523 - val_rmse: 2.2394 - val_accuracy: 0.0033
Epoch 43/200
2169/2169 [==============================] - 1s 328us/step - loss: 16.2536 - rmse: 3.1249
- accuracy: 9.2208e-04 - val_loss: 10.3030 - val_rmse: 2.1788 - val_accuracy: 0.0065
Epoch 44/200
2169/2169 [==============================] - 0s 186us/step - loss: 15.2738 - rmse: 3.0382
- accuracy: 0.0023 - val_loss: 10.1889 - val_rmse: 2.1233 - val_accuracy: 0.0016
Epoch 45/200
2169/2169 [==============================] - 0s 145us/step - loss: 14.4072 - rmse: 2.9448
- accuracy: 9.2208e-04 - val_loss: 9.9003 - val_rmse: 2.1823 - val_accuracy: 0.0033
Epoch 46/200
2169/2169 [==============================] - 0s 168us/step - loss: 14.3618 - rmse: 2.9618
- accuracy: 0.0014 - val_loss: 10.4822 - val_rmse: 2.1437 - val_accuracy: 0.0049
Epoch 47/200
2169/2169 [==============================] - 0s 146us/step - loss: 14.7994 - rmse: 3.0149
- accuracy: 4.6104e-04 - val_loss: 10.0905 - val_rmse: 2.1878 - val_accuracy: 0.0016
Epoch 48/200
2169/2169 [==============================] - 0s 138us/step - loss: 17.3489 - rmse: 3.2811
- accuracy: 9.2208e-04 - val_loss: 12.4185 - val_rmse: 2.5938 - val_accuracy: 0.0033
Epoch 49/200
2169/2169 [==============================] - 0s 147us/step - loss: 15.1281 - rmse: 3.0105
- accuracy: 4.6104e-04 - val_loss: 12.3407 - val_rmse: 2.4582 - val_accuracy: 0.0000e+00
Epoch 50/200
2169/2169 [==============================] - 0s 136us/step - loss: 14.4046 - rmse: 2.9338
- accuracy: 4.6104e-04 - val_loss: 10.1640 - val_rmse: 2.1546 - val_accuracy: 0.0000e+00
Epoch 51/200
2169/2169 [==============================] - 0s 139us/step - loss: 13.6093 - rmse: 2.9311
- accuracy: 4.6104e-04 - val_loss: 9.7450 - val_rmse: 2.0734 - val_accuracy: 0.0049
Epoch 52/200
2169/2169 [==============================] - 0s 158us/step - loss: 16.6457 - rmse: 3.1977
- accuracy: 4.6104e-04 - val_loss: 11.5217 - val_rmse: 2.1383 - val_accuracy: 0.0033
Epoch 53/200

Epoch 53/200
2169/2169 [==============================] - 0s 136us/step - loss: 16.0697 - rmse: 3.1679 - accuracy: 4.6104e-04 - val_loss: 9.8367 - val_rmse: 2.0817 - val_accuracy: 0.0000e+00
Epoch 54/200
2169/2169 [==============================] - 0s 139us/step - loss: 14.1573 - rmse: 2.9335 - accuracy: 9.2208e-04 - val_loss: 10.8046 - val_rmse: 2.3248 - val_accuracy: 0.0082
Epoch 55/200
2169/2169 [==============================] - 0s 139us/step - loss: 15.0620 - rmse: 3.0338 - accuracy: 0.0018 - val_loss: 10.0693 - val_rmse: 2.1125 - val_accuracy: 0.0016
Epoch 56/200
2169/2169 [==============================] - 0s 144us/step - loss: 13.4874 - rmse: 2.8745 - accuracy: 0.0014 - val_loss: 9.5024 - val_rmse: 2.1300 - val_accuracy: 0.0000e+00
Epoch 57/200
2169/2169 [==============================] - 0s 137us/step - loss: 16.1205 - rmse: 3.0835 - accuracy: 0.0014 - val_loss: 11.2746 - val_rmse: 2.1951 - val_accuracy: 0.0016
Epoch 58/200
2169/2169 [==============================] - 0s 170us/step - loss: 14.3497 - rmse: 2.8787 - accuracy: 0.0014 - val_loss: 10.3340 - val_rmse: 2.1784 - val_accuracy: 0.0065
Epoch 59/200
2169/2169 [==============================] - 0s 154us/step - loss: 11.4615 - rmse: 2.6009 - accuracy: 9.2208e-04 - val_loss: 10.6812 - val_rmse: 2.2032 - val_accuracy: 0.0000e+00
Epoch 60/200
2169/2169 [==============================] - 0s 142us/step - loss: 16.2819 - rmse: 3.1449 - accuracy: 0.0018 - val_loss: 9.9476 - val_rmse: 2.0446 - val_accuracy: 0.0016
Epoch 61/200
2169/2169 [==============================] - 0s 149us/step - loss: 14.1310 - rmse: 2.8741 - accuracy: 4.6104e-04 - val_loss: 10.2512 - val_rmse: 2.2009 - val_accuracy: 0.0049
Epoch 62/200
2169/2169 [==============================] - 0s 153us/step - loss: 13.6920 - rmse: 2.8960 - accuracy: 9.2208e-04 - val_loss: 9.2775 - val_rmse: 1.9812 - val_accuracy: 0.0000e+00
Epoch 63/200
2169/2169 [==============================] - 0s 145us/step - loss: 15.7010 - rmse: 3.0429 - accuracy: 0.0014 - val_loss: 10.0210 - val_rmse: 2.0572 - val_accuracy: 0.0033
Epoch 64/200
2169/2169 [==============================] - 0s 139us/step - loss: 13.0273 - rmse: 2.7797 - accuracy: 0.0032 - val_loss: 11.4866 - val_rmse: 2.2762 - val_accuracy: 0.0016
Epoch 65/200
2169/2169 [==============================] - 0s 155us/step - loss: 12.8519 - rmse: 2.8163 - accuracy: 0.0014 - val_loss: 9.9826 - val_rmse: 2.0660 - val_accuracy: 0.0016
Epoch 66/200
2169/2169 [==============================] - 0s 147us/step - loss: 12.8532 - rmse: 2.7683 - accuracy: 0.0023 - val_loss: 9.7936 - val_rmse: 2.0979 - val_accuracy: 0.0000e+00
Epoch 67/200
2169/2169 [==============================] - 0s 142us/step - loss: 14.7028 - rmse: 3.0353 - accuracy: 0.0014 - val_loss: 9.4660 - val_rmse: 2.0705 - val_accuracy: 0.0049
Epoch 68/200
2169/2169 [==============================] - 0s 136us/step - loss: 15.7510 - rmse: 3.1247 - accuracy: 9.2208e-04 - val_loss: 11.9475 - val_rmse: 2.4931 - val_accuracy: 0.0000e+00
Epoch 69/200
2169/2169 [==============================] - 0s 146us/step - loss: 15.0556 - rmse: 3.0568 - accuracy: 9.2208e-04 - val_loss: 9.3261 - val_rmse: 2.0178 - val_accuracy: 0.0033
Epoch 70/200
2169/2169 [==============================] - 0s 143us/step - loss: 16.2279 - rmse: 3.1420 - accuracy: 0.0023 - val_loss: 8.7029 - val_rmse: 1.9543 - val_accuracy: 0.0000e+00
Epoch 71/200
2169/2169 [==============================] - 0s 144us/step - loss: 13.9325 - rmse: 2.9352 - accuracy: 0.0028 - val_loss: 9.0259 - val_rmse: 1.9109 - val_accuracy: 0.0033
Epoch 72/200
2169/2169 [==============================] - 0s 156us/step - loss: 12.1091 - rmse: 2.7124 - accuracy: 0.0018 - val_loss: 9.0353 - val_rmse: 2.0113 - val_accuracy: 0.0065
Epoch 73/200
2169/2169 [==============================] - 0s 167us/step - loss: 11.6872 - rmse: 2.6435 - accuracy: 0.0018 - val_loss: 9.5279 - val_rmse: 2.0397 - val_accuracy: 0.0000e+00
Epoch 74/200
2169/2169 [==============================] - 0s 140us/step - loss: 11.5939 - rmse: 2.6652 - accuracy: 0.0028 - val_loss: 8.3395 - val_rmse: 1.8829 - val_accuracy: 0.0033
Epoch 75/200
2169/2169 [==============================] - 0s 190us/step - loss: 14.3907 - rmse: 2.9316 - accuracy: 0.0023 - val_loss: 10.1686 - val_rmse: 2.2504 - val_accuracy: 0.0000e+00
Epoch 76/200
2169/2169 [==============================] - 0s 201us/step - loss: 16.3368 - rmse: 3.2427 - accuracy: 0.0018 - val_loss: 9.6555 - val_rmse: 2.0532 - val_accuracy: 0.0033
Epoch 77/200

Epoch 77/200
2169/2169 [==============================] - 0s 152us/step - loss: 16.6590 - rmse: 3.0566 - accuracy: 4.6104e-04 - val_loss: 8.8842 - val_rmse: 1.8524 - val_accuracy: 0.0000e+00
Epoch 78/200
2169/2169 [==============================] - 0s 153us/step - loss: 12.9620 - rmse: 2.8010 - accuracy: 4.6104e-04 - val_loss: 11.4294 - val_rmse: 2.2121 - val_accuracy: 0.0000e+00
Epoch 79/200
2169/2169 [==============================] - 0s 146us/step - loss: 15.4006 - rmse: 3.0127 - accuracy: 0.0014 - val_loss: 9.2856 - val_rmse: 1.9736 - val_accuracy: 0.0000e+00
Epoch 80/200
2169/2169 [==============================] - 0s 154us/step - loss: 13.5066 - rmse: 2.9077 - accuracy: 0.0018 - val_loss: 9.8553 - val_rmse: 2.1159 - val_accuracy: 0.0033
Epoch 81/200
2169/2169 [==============================] - 0s 150us/step - loss: 15.4276 - rmse: 3.0345 - accuracy: 0.0014 - val_loss: 8.7596 - val_rmse: 1.9368 - val_accuracy: 0.0016
Epoch 82/200
2169/2169 [==============================] - 0s 147us/step - loss: 14.4111 - rmse: 2.9925 - accuracy: 0.0018 - val_loss: 8.8346 - val_rmse: 1.8357 - val_accuracy: 0.0033
Epoch 83/200
2169/2169 [==============================] - 0s 144us/step - loss: 11.9030 - rmse: 2.6946 - accuracy: 0.0018 - val_loss: 8.9227 - val_rmse: 2.0358 - val_accuracy: 0.0016
Epoch 84/200
2169/2169 [==============================] - 0s 144us/step - loss: 11.8070 - rmse: 2.6731 - accuracy: 0.0014 - val_loss: 8.7343 - val_rmse: 1.9235 - val_accuracy: 0.0049
Epoch 85/200
2169/2169 [==============================] - 0s 138us/step - loss: 12.7546 - rmse: 2.7680 - accuracy: 0.0018 - val_loss: 9.0302 - val_rmse: 1.9432 - val_accuracy: 0.0049
Epoch 86/200
2169/2169 [==============================] - 0s 137us/step - loss: 14.0123 - rmse: 2.8624 - accuracy: 0.0018 - val_loss: 8.5893 - val_rmse: 1.9416 - val_accuracy: 0.0049
Epoch 87/200
2169/2169 [==============================] - 0s 147us/step - loss: 14.6715 - rmse: 2.9814 - accuracy: 9.2208e-04 - val_loss: 9.1912 - val_rmse: 2.0594 - val_accuracy: 0.0082
Epoch 88/200
2169/2169 [==============================] - 0s 138us/step - loss: 13.6675 - rmse: 2.8713 - accuracy: 0.0014 - val_loss: 8.2057 - val_rmse: 1.8709 - val_accuracy: 0.0065
Epoch 89/200
2169/2169 [==============================] - 0s 137us/step - loss: 10.4961 - rmse: 2.4899 - accuracy: 0.0014 - val_loss: 8.2483 - val_rmse: 1.8573 - val_accuracy: 0.0016
Epoch 90/200
2169/2169 [==============================] - 0s 142us/step - loss: 14.0677 - rmse: 2.8869 - accuracy: 0.0018 - val_loss: 10.1165 - val_rmse: 1.9564 - val_accuracy: 0.0016
Epoch 91/200
2169/2169 [==============================] - 0s 151us/step - loss: 12.5504 - rmse: 2.7853 - accuracy: 0.0018 - val_loss: 9.4261 - val_rmse: 1.9702 - val_accuracy: 0.0016
Epoch 92/200
2169/2169 [==============================] - 0s 142us/step - loss: 13.5286 - rmse: 2.8769 - accuracy: 0.0014 - val_loss: 8.6691 - val_rmse: 1.8789 - val_accuracy: 0.0049
Epoch 93/200
2169/2169 [==============================] - 0s 146us/step - loss: 13.7860 - rmse: 2.8838 - accuracy: 4.6104e-04 - val_loss: 8.3998 - val_rmse: 1.8565 - val_accuracy: 0.0000e+00
Epoch 94/200
2169/2169 [==============================] - 0s 142us/step - loss: 12.6905 - rmse: 2.7627 - accuracy: 0.0028 - val_loss: 9.6515 - val_rmse: 1.9884 - val_accuracy: 0.0016
Epoch 95/200
2169/2169 [==============================] - 0s 138us/step - loss: 13.5907 - rmse: 2.8603 - accuracy: 0.0014 - val_loss: 7.5944 - val_rmse: 1.7655 - val_accuracy: 0.0049
Epoch 96/200
2169/2169 [==============================] - 0s 148us/step - loss: 17.8528 - rmse: 3.2819 - accuracy: 0.0014 - val_loss: 8.8864 - val_rmse: 1.8005 - val_accuracy: 0.0049
Epoch 97/200
2169/2169 [==============================] - 0s 139us/step - loss: 14.6704 - rmse: 2.9726 - accuracy: 9.2208e-04 - val_loss: 8.1757 - val_rmse: 1.7739 - val_accuracy: 0.0033
Epoch 98/200
2169/2169 [==============================] - 0s 139us/step - loss: 15.6114 - rmse: 3.1064 - accuracy: 0.0028 - val_loss: 7.7886 - val_rmse: 1.8204 - val_accuracy: 0.0016
Epoch 99/200
2169/2169 [==============================] - 0s 144us/step - loss: 13.0184 - rmse: 2.8171 - accuracy: 9.2208e-04 - val_loss: 9.5016 - val_rmse: 2.1226 - val_accuracy: 0.0016
Epoch 100/200
2169/2169 [==============================] - 0s 139us/step - loss: 12.8440 - rmse: 2.7527 - accuracy: 0.0028 - val_loss: 9.0110 - val_rmse: 2.0061 - val_accuracy: 0.0033
Epoch 101/200

Epoch 101/200
2169/2169 [==============================] - 0s 146us/step - loss: 15.9049 - rmse: 3.1129
- accuracy: 0.0014 - val_loss: 8.8962 - val_rmse: 1.9988 - val_accuracy: 0.0016
Epoch 102/200
2169/2169 [==============================] - 0s 140us/step - loss: 11.0566 - rmse: 2.5940
- accuracy: 0.0037 - val_loss: 8.1961 - val_rmse: 1.9430 - val_accuracy: 0.0016
Epoch 103/200
2169/2169 [==============================] - 0s 137us/step - loss: 11.5514 - rmse: 2.6156
- accuracy: 0.0028 - val_loss: 9.1684 - val_rmse: 2.0582 - val_accuracy: 0.0000e+00
Epoch 104/200
2169/2169 [==============================] - 0s 136us/step - loss: 14.4807 - rmse: 2.9774
- accuracy: 0.0023 - val_loss: 9.3596 - val_rmse: 1.9797 - val_accuracy: 0.0065
Epoch 105/200
2169/2169 [==============================] - 0s 134us/step - loss: 15.2731 - rmse: 3.0236
- accuracy: 0.0032 - val_loss: 7.5554 - val_rmse: 1.7357 - val_accuracy: 0.0049
Epoch 106/200
2169/2169 [==============================] - 0s 147us/step - loss: 13.5933 - rmse: 2.9373
- accuracy: 9.2208e-04 - val_loss: 9.0274 - val_rmse: 1.8949 - val_accuracy: 0.0049
Epoch 107/200
2169/2169 [==============================] - 0s 162us/step - loss: 13.5443 - rmse: 2.9481
- accuracy: 4.6104e-04 - val_loss: 9.2942 - val_rmse: 1.9335 - val_accuracy: 0.0033
Epoch 108/200
2169/2169 [==============================] - 0s 135us/step - loss: 15.5642 - rmse: 3.0868
- accuracy: 0.0023 - val_loss: 8.2920 - val_rmse: 1.8512 - val_accuracy: 0.0065
Epoch 109/200
2169/2169 [==============================] - 0s 167us/step - loss: 13.2257 - rmse: 2.8362
- accuracy: 0.0014 - val_loss: 8.6645 - val_rmse: 1.9443 - val_accuracy: 0.0016
Epoch 110/200
2169/2169 [==============================] - 0s 197us/step - loss: 15.3417 - rmse: 3.0853
- accuracy: 9.2208e-04 - val_loss: 8.6699 - val_rmse: 1.9050 - val_accuracy: 0.0016
Epoch 111/200
2169/2169 [==============================] - 0s 137us/step - loss: 11.3479 - rmse: 2.6240
- accuracy: 0.0028 - val_loss: 8.8968 - val_rmse: 1.8458 - val_accuracy: 0.0049
Epoch 112/200
2169/2169 [==============================] - 0s 142us/step - loss: 12.9710 - rmse: 2.8178
- accuracy: 9.2208e-04 - val_loss: 7.8575 - val_rmse: 1.8515 - val_accuracy: 0.0000e+00
Epoch 113/200
2169/2169 [==============================] - 0s 141us/step - loss: 14.4396 - rmse: 2.9609
- accuracy: 4.6104e-04 - val_loss: 9.1794 - val_rmse: 1.9303 - val_accuracy: 0.0065
Epoch 114/200
2169/2169 [==============================] - 0s 139us/step - loss: 12.5646 - rmse: 2.7564
- accuracy: 4.6104e-04 - val_loss: 8.5092 - val_rmse: 1.7930 - val_accuracy: 0.0082
Epoch 115/200
2169/2169 [==============================] - 0s 145us/step - loss: 12.1298 - rmse: 2.7393
- accuracy: 0.0018 - val_loss: 9.9913 - val_rmse: 2.0941 - val_accuracy: 0.0016
Epoch 116/200
2169/2169 [==============================] - 0s 142us/step - loss: 13.6804 - rmse: 2.8351
- accuracy: 0.0014 - val_loss: 7.7775 - val_rmse: 1.6452 - val_accuracy: 0.0000e+00
Epoch 117/200
2169/2169 [==============================] - 0s 136us/step - loss: 10.2241 - rmse: 2.4866
- accuracy: 0.0014 - val_loss: 7.7828 - val_rmse: 1.7569 - val_accuracy: 0.0016
Epoch 118/200
2169/2169 [==============================] - 0s 142us/step - loss: 14.8962 - rmse: 3.0490
- accuracy: 0.0018 - val_loss: 8.6665 - val_rmse: 1.9207 - val_accuracy: 0.0000e+00
Epoch 119/200
2169/2169 [==============================] - 0s 138us/step - loss: 12.6952 - rmse: 2.7676
- accuracy: 0.0018 - val_loss: 9.0410 - val_rmse: 2.0161 - val_accuracy: 0.0016
Epoch 120/200
2169/2169 [==============================] - 0s 146us/step - loss: 12.2231 - rmse: 2.6990
- accuracy: 0.0014 - val_loss: 7.8212 - val_rmse: 1.7614 - val_accuracy: 0.0065
Epoch 121/200
2169/2169 [==============================] - 0s 139us/step - loss: 13.9540 - rmse: 2.8603
- accuracy: 9.2208e-04 - val_loss: 8.3106 - val_rmse: 1.7603 - val_accuracy: 0.0049
Epoch 122/200
2169/2169 [==============================] - 0s 140us/step - loss: 13.1366 - rmse: 2.8364
- accuracy: 0.0023 - val_loss: 8.1839 - val_rmse: 1.8016 - val_accuracy: 0.0016
Epoch 123/200
2169/2169 [==============================] - 0s 142us/step - loss: 14.3898 - rmse: 3.0299
- accuracy: 0.0014 - val_loss: 8.2872 - val_rmse: 1.8550 - val_accuracy: 0.0016
Epoch 124/200
2169/2169 [==============================] - 0s 137us/step - loss: 12.2231 - rmse: 2.7253
- accuracy: 0.0023 - val_loss: 8.7663 - val_rmse: 1.8959 - val_accuracy: 0.0033
Epoch 125/200

Epoch 125/200
2169/2169 [==============================] - 0s 146us/step - loss: 13.5629 - rmse: 2.8456
- accuracy: 0.0000e+00 - val_loss: 8.9272 - val_rmse: 1.9445 - val_accuracy: 0.0000e+00
Epoch 126/200
2169/2169 [==============================] - 0s 138us/step - loss: 12.8425 - rmse: 2.8139
- accuracy: 0.0028 - val_loss: 8.8139 - val_rmse: 1.9652 - val_accuracy: 0.0033
Epoch 127/200
2169/2169 [==============================] - 0s 149us/step - loss: 13.4020 - rmse: 2.8481
- accuracy: 0.0014 - val_loss: 7.8733 - val_rmse: 1.7145 - val_accuracy: 0.0065
Epoch 128/200
2169/2169 [==============================] - 0s 146us/step - loss: 14.6648 - rmse: 2.9568
- accuracy: 0.0014 - val_loss: 9.1705 - val_rmse: 1.8929 - val_accuracy: 0.0016
Epoch 129/200
2169/2169 [==============================] - 0s 138us/step - loss: 10.2249 - rmse: 2.4294
- accuracy: 9.2208e-04 - val_loss: 8.2926 - val_rmse: 1.9314 - val_accuracy: 0.0033
Epoch 130/200
2169/2169 [==============================] - 0s 140us/step - loss: 12.5788 - rmse: 2.8026
- accuracy: 0.0018 - val_loss: 8.3955 - val_rmse: 1.7607 - val_accuracy: 0.0000e+00
Epoch 131/200
2169/2169 [==============================] - 0s 145us/step - loss: 12.5878 - rmse: 2.7233
- accuracy: 0.0018 - val_loss: 8.7917 - val_rmse: 1.8678 - val_accuracy: 0.0000e+00
Epoch 132/200
2169/2169 [==============================] - 0s 146us/step - loss: 14.9081 - rmse: 3.0105
- accuracy: 0.0014 - val_loss: 7.9763 - val_rmse: 1.7644 - val_accuracy: 0.0049
Epoch 133/200
2169/2169 [==============================] - 0s 135us/step - loss: 14.6706 - rmse: 3.0205
- accuracy: 0.0014 - val_loss: 8.8760 - val_rmse: 2.0167 - val_accuracy: 0.0049
Epoch 134/200
2169/2169 [==============================] - 0s 140us/step - loss: 12.4064 - rmse: 2.6307
- accuracy: 9.2208e-04 - val_loss: 7.7077 - val_rmse: 1.7403 - val_accuracy: 0.0016
Epoch 135/200
2169/2169 [==============================] - 0s 140us/step - loss: 11.8212 - rmse: 2.6544
- accuracy: 0.0041 - val_loss: 8.3622 - val_rmse: 1.9215 - val_accuracy: 0.0033
Epoch 136/200
2169/2169 [==============================] - 0s 146us/step - loss: 13.0758 - rmse: 2.8553
- accuracy: 0.0018 - val_loss: 8.7875 - val_rmse: 1.8786 - val_accuracy: 0.0065
Epoch 137/200
2169/2169 [==============================] - 0s 143us/step - loss: 10.9908 - rmse: 2.5621
- accuracy: 0.0028 - val_loss: 8.7037 - val_rmse: 1.8457 - val_accuracy: 0.0049
Epoch 138/200
2169/2169 [==============================] - 0s 143us/step - loss: 14.7877 - rmse: 3.0057
- accuracy: 0.0014 - val_loss: 7.9504 - val_rmse: 1.7508 - val_accuracy: 0.0033
Epoch 139/200
2169/2169 [==============================] - 0s 143us/step - loss: 12.9391 - rmse: 2.8605
- accuracy: 0.0014 - val_loss: 9.5305 - val_rmse: 1.9073 - val_accuracy: 0.0016
Epoch 140/200
2169/2169 [==============================] - 0s 141us/step - loss: 11.1805 - rmse: 2.5690
- accuracy: 0.0023 - val_loss: 8.7162 - val_rmse: 1.8740 - val_accuracy: 0.0065
Epoch 141/200
2169/2169 [==============================] - 0s 161us/step - loss: 11.8386 - rmse: 2.7022
- accuracy: 0.0014 - val_loss: 8.3963 - val_rmse: 1.8646 - val_accuracy: 0.0065
Epoch 142/200
2169/2169 [==============================] - 0s 144us/step - loss: 17.8196 - rmse: 3.2666
- accuracy: 9.2208e-04 - val_loss: 8.6046 - val_rmse: 1.8408 - val_accuracy: 0.0016
Epoch 143/200
2169/2169 [==============================] - 0s 150us/step - loss: 12.1495 - rmse: 2.6699
- accuracy: 0.0023 - val_loss: 9.1763 - val_rmse: 1.8921 - val_accuracy: 0.0000e+00
Epoch 144/200
2169/2169 [==============================] - 0s 211us/step - loss: 11.0552 - rmse: 2.5768
- accuracy: 0.0018 - val_loss: 8.6144 - val_rmse: 1.8301 - val_accuracy: 0.0049
Epoch 145/200
2169/2169 [==============================] - 0s 184us/step - loss: 15.6919 - rmse: 3.0169
- accuracy: 0.0014 - val_loss: 8.6800 - val_rmse: 1.8456 - val_accuracy: 0.0016
Epoch 146/200
2169/2169 [==============================] - 0s 174us/step - loss: 12.1451 - rmse: 2.6745
- accuracy: 0.0023 - val_loss: 8.2204 - val_rmse: 1.8651 - val_accuracy: 0.0033
Epoch 147/200
2169/2169 [==============================] - 0s 154us/step - loss: 12.2495 - rmse: 2.7003
- accuracy: 0.0014 - val_loss: 7.7990 - val_rmse: 1.6776 - val_accuracy: 0.0033
Epoch 148/200
2169/2169 [==============================] - 0s 136us/step - loss: 12.7068 - rmse: 2.8054
- accuracy: 0.0018 - val_loss: 8.1096 - val_rmse: 1.8166 - val_accuracy: 0.0082
Epoch 149/200

Epoch 149/200
2169/2169 [==============================] - 0s 134us/step - loss: 14.1902 - rmse: 2.9446 - accuracy: 4.6104e-04 - val_loss: 7.9287 - val_rmse: 1.7805 - val_accuracy: 0.0049
Epoch 150/200
2169/2169 [==============================] - 0s 145us/step - loss: 11.6814 - rmse: 2.6834 - accuracy: 0.0018 - val_loss: 7.5189 - val_rmse: 1.6703 - val_accuracy: 0.0016
Epoch 151/200
2169/2169 [==============================] - 0s 137us/step - loss: 12.1600 - rmse: 2.6901 - accuracy: 9.2208e-04 - val_loss: 8.9943 - val_rmse: 1.8808 - val_accuracy: 0.0016
Epoch 152/200
2169/2169 [==============================] - 0s 138us/step - loss: 11.7162 - rmse: 2.6698 - accuracy: 0.0032 - val_loss: 7.9594 - val_rmse: 1.7384 - val_accuracy: 0.0049
Epoch 153/200
2169/2169 [==============================] - 0s 136us/step - loss: 13.5047 - rmse: 2.8801 - accuracy: 0.0018 - val_loss: 8.2614 - val_rmse: 1.8281 - val_accuracy: 0.0016
Epoch 154/200
2169/2169 [==============================] - 0s 143us/step - loss: 11.7981 - rmse: 2.6336 - accuracy: 9.2208e-04 - val_loss: 7.5787 - val_rmse: 1.7968 - val_accuracy: 0.0049
Epoch 155/200
2169/2169 [==============================] - 0s 149us/step - loss: 10.8314 - rmse: 2.5976 - accuracy: 0.0018 - val_loss: 9.2782 - val_rmse: 1.8639 - val_accuracy: 0.0049
Epoch 156/200
2169/2169 [==============================] - 0s 151us/step - loss: 13.4928 - rmse: 2.7916 - accuracy: 9.2208e-04 - val_loss: 7.8164 - val_rmse: 1.8503 - val_accuracy: 0.0049
Epoch 157/200
2169/2169 [==============================] - 0s 137us/step - loss: 11.3946 - rmse: 2.6050 - accuracy: 9.2208e-04 - val_loss: 7.6919 - val_rmse: 1.6557 - val_accuracy: 0.0049
Epoch 158/200
2169/2169 [==============================] - 0s 136us/step - loss: 12.6857 - rmse: 2.8244 - accuracy: 4.6104e-04 - val_loss: 8.6132 - val_rmse: 1.8023 - val_accuracy: 0.0049
Epoch 159/200
2169/2169 [==============================] - 0s 143us/step - loss: 14.3823 - rmse: 2.9907 - accuracy: 0.0018 - val_loss: 8.5444 - val_rmse: 1.8130 - val_accuracy: 0.0065
Epoch 160/200
2169/2169 [==============================] - 0s 142us/step - loss: 13.0009 - rmse: 2.8439 - accuracy: 0.0018 - val_loss: 8.2586 - val_rmse: 1.7786 - val_accuracy: 0.0065
Epoch 161/200
2169/2169 [==============================] - 0s 138us/step - loss: 13.0344 - rmse: 2.7666 - accuracy: 0.0018 - val_loss: 7.8073 - val_rmse: 1.8327 - val_accuracy: 0.0049
Epoch 162/200
2169/2169 [==============================] - 0s 139us/step - loss: 12.8313 - rmse: 2.8200 - accuracy: 9.2208e-04 - val_loss: 7.8717 - val_rmse: 1.8249 - val_accuracy: 0.0033
Epoch 163/200
2169/2169 [==============================] - 0s 146us/step - loss: 12.6145 - rmse: 2.7975 - accuracy: 0.0014 - val_loss: 8.3952 - val_rmse: 1.9656 - val_accuracy: 0.0000e+00
Epoch 164/200
2169/2169 [==============================] - 0s 140us/step - loss: 12.0762 - rmse: 2.7603 - accuracy: 9.2208e-04 - val_loss: 7.8073 - val_rmse: 1.7672 - val_accuracy: 0.0033
Epoch 165/200
2169/2169 [==============================] - 0s 143us/step - loss: 13.2912 - rmse: 2.8240 - accuracy: 0.0018 - val_loss: 8.9617 - val_rmse: 1.7885 - val_accuracy: 0.0049
Epoch 166/200
2169/2169 [==============================] - 0s 137us/step - loss: 13.3191 - rmse: 2.9013 - accuracy: 0.0014 - val_loss: 8.4202 - val_rmse: 1.8001 - val_accuracy: 0.0049
Epoch 167/200
2169/2169 [==============================] - 0s 134us/step - loss: 14.1272 - rmse: 2.9091 - accuracy: 0.0023 - val_loss: 7.9834 - val_rmse: 1.7759 - val_accuracy: 0.0016
Epoch 168/200
2169/2169 [==============================] - 0s 137us/step - loss: 14.6946 - rmse: 2.9968 - accuracy: 0.0028 - val_loss: 7.7087 - val_rmse: 1.6842 - val_accuracy: 0.0049
Epoch 169/200
2169/2169 [==============================] - 0s 141us/step - loss: 13.4384 - rmse: 2.8453 - accuracy: 0.0028 - val_loss: 7.4108 - val_rmse: 1.7221 - val_accuracy: 0.0000e+00
Epoch 170/200
2169/2169 [==============================] - 0s 141us/step - loss: 12.0969 - rmse: 2.6833 - accuracy: 9.2208e-04 - val_loss: 7.7248 - val_rmse: 1.7092 - val_accuracy: 0.0049
Epoch 171/200
2169/2169 [==============================] - 0s 138us/step - loss: 10.2350 - rmse: 2.4717 - accuracy: 9.2208e-04 - val_loss: 9.0264 - val_rmse: 1.9833 - val_accuracy: 0.0016
Epoch 172/200
2169/2169 [==============================] - 0s 143us/step - loss: 13.6867 - rmse: 2.7603 - accuracy: 0.0018 - val_loss: 7.8962 - val_rmse: 1.6981 - val_accuracy: 0.0016
Epoch 173/200

Epoch 173/200
2169/2169 [==============================] - 0s 138us/step - loss: 12.1611 - rmse: 2.7889
- accuracy: 0.0028 - val_loss: 7.2178 - val_rmse: 1.6753 - val_accuracy: 0.0049
Epoch 174/200
2169/2169 [==============================] - 0s 135us/step - loss: 12.7868 - rmse: 2.6897
- accuracy: 0.0014 - val_loss: 7.8378 - val_rmse: 1.7166 - val_accuracy: 0.0033
Epoch 175/200
2169/2169 [==============================] - 0s 145us/step - loss: 11.7154 - rmse: 2.6595
- accuracy: 0.0028 - val_loss: 7.4815 - val_rmse: 1.6349 - val_accuracy: 0.0033
Epoch 176/200
2169/2169 [==============================] - 0s 160us/step - loss: 12.9235 - rmse: 2.7334
- accuracy: 0.0018 - val_loss: 7.5900 - val_rmse: 1.7363 - val_accuracy: 0.0049
Epoch 177/200
2169/2169 [==============================] - 0s 133us/step - loss: 13.6078 - rmse: 2.9253
- accuracy: 0.0014 - val_loss: 7.3802 - val_rmse: 1.6531 - val_accuracy: 0.0033
Epoch 178/200
2169/2169 [==============================] - 0s 165us/step - loss: 13.8338 - rmse: 2.9430
- accuracy: 0.0014 - val_loss: 7.8606 - val_rmse: 1.6569 - val_accuracy: 0.0049
Epoch 179/200
2169/2169 [==============================] - 0s 203us/step - loss: 10.3124 - rmse: 2.4382
- accuracy: 0.0018 - val_loss: 8.9605 - val_rmse: 1.9221 - val_accuracy: 0.0000e+00
Epoch 180/200
2169/2169 [==============================] - 0s 144us/step - loss: 12.1945 - rmse: 2.7105
- accuracy: 0.0023 - val_loss: 7.7492 - val_rmse: 1.6665 - val_accuracy: 0.0049
Epoch 181/200
2169/2169 [==============================] - 0s 149us/step - loss: 10.9736 - rmse: 2.6171
- accuracy: 9.2208e-04 - val_loss: 6.9602 - val_rmse: 1.6213 - val_accuracy: 0.0000e+00
Epoch 182/200
2169/2169 [==============================] - 0s 150us/step - loss: 15.3425 - rmse: 3.0631
- accuracy: 0.0014 - val_loss: 11.4653 - val_rmse: 2.2505 - val_accuracy: 0.0049
Epoch 183/200
2169/2169 [==============================] - 0s 147us/step - loss: 12.8354 - rmse: 2.7530
- accuracy: 0.0018 - val_loss: 7.8640 - val_rmse: 1.6966 - val_accuracy: 0.0033
Epoch 184/200
2169/2169 [==============================] - 0s 152us/step - loss: 13.3274 - rmse: 2.9106
- accuracy: 9.2208e-04 - val_loss: 7.3209 - val_rmse: 1.6193 - val_accuracy: 0.0049
Epoch 185/200
2169/2169 [==============================] - 0s 152us/step - loss: 12.9870 - rmse: 2.7683
- accuracy: 0.0018 - val_loss: 7.2678 - val_rmse: 1.7202 - val_accuracy: 0.0000e+00
Epoch 186/200
2169/2169 [==============================] - 0s 136us/step - loss: 8.2900 - rmse: 2.1840
- accuracy: 0.0018 - val_loss: 7.4786 - val_rmse: 1.7248 - val_accuracy: 0.0098
Epoch 187/200
2169/2169 [==============================] - 0s 142us/step - loss: 11.9688 - rmse: 2.6918
- accuracy: 9.2208e-04 - val_loss: 7.4408 - val_rmse: 1.6626 - val_accuracy: 0.0033
Epoch 188/200
2169/2169 [==============================] - 0s 147us/step - loss: 12.5202 - rmse: 2.7101
- accuracy: 0.0032 - val_loss: 8.4094 - val_rmse: 1.8051 - val_accuracy: 0.0000e+00
Epoch 189/200
2169/2169 [==============================] - 0s 137us/step - loss: 12.4029 - rmse: 2.7351
- accuracy: 0.0014 - val_loss: 7.5177 - val_rmse: 1.6365 - val_accuracy: 0.0049
Epoch 190/200
2169/2169 [==============================] - 0s 141us/step - loss: 12.7180 - rmse: 2.8022
- accuracy: 4.6104e-04 - val_loss: 8.0561 - val_rmse: 1.7368 - val_accuracy: 0.0000e+00
Epoch 191/200
2169/2169 [==============================] - 0s 146us/step - loss: 12.1062 - rmse: 2.6927
- accuracy: 0.0014 - val_loss: 7.2433 - val_rmse: 1.7373 - val_accuracy: 0.0016
Epoch 192/200
2169/2169 [==============================] - 0s 138us/step - loss: 11.8650 - rmse: 2.7116
- accuracy: 0.0018 - val_loss: 8.0411 - val_rmse: 1.6941 - val_accuracy: 0.0000e+00
Epoch 193/200
2169/2169 [==============================] - 0s 140us/step - loss: 13.0836 - rmse: 2.7769
- accuracy: 9.2208e-04 - val_loss: 7.1435 - val_rmse: 1.7153 - val_accuracy: 0.0033
Epoch 194/200
2169/2169 [==============================] - 0s 136us/step - loss: 18.4640 - rmse: 3.4033
- accuracy: 0.0000e+00 - val_loss: 6.5641 - val_rmse: 1.6340 - val_accuracy: 0.0033
Epoch 195/200
2169/2169 [==============================] - 0s 136us/step - loss: 13.5181 - rmse: 2.8428
- accuracy: 0.0014 - val_loss: 8.1655 - val_rmse: 1.7929 - val_accuracy: 0.0049
Epoch 196/200
2169/2169 [==============================] - 0s 138us/step - loss: 11.0638 - rmse: 2.5332
- accuracy: 0.0032 - val_loss: 7.5224 - val_rmse: 1.6491 - val_accuracy: 0.0049
Epoch 197/200

```
Epoch 197/200
2169/2169 [==============================] - 0s 137us/step - loss: 9.0188 - rmse: 2.2928
- accuracy: 0.0014 - val_loss: 8.2269 - val_rmse: 1.7165 - val_accuracy: 0.0016
Epoch 198/200
2169/2169 [==============================] - 0s 140us/step - loss: 14.4380 - rmse: 2.9874
- accuracy: 4.6104e-04 - val_loss: 8.0238 - val_rmse: 1.8068 - val_accuracy: 0.0049
Epoch 199/200
2169/2169 [==============================] - 0s 139us/step - loss: 14.0657 - rmse: 2.9109
- accuracy: 0.0023 - val_loss: 7.5753 - val_rmse: 1.6635 - val_accuracy: 0.0000e+00
Epoch 200/200
2169/2169 [==============================] - 0s 140us/step - loss: 9.6840 - rmse: 2.3564
- accuracy: 0.0028 - val_loss: 7.5918 - val_rmse: 1.7343 - val_accuracy: 0.0016
```

train again

In [60]:

```
df = pd.concat([pd.read_csv('../input/cement-train-test-data/compresive_strength_concrete.csv'),pd.read_csv('../input/cement-train-test-data/train_data2.csv')])

x_org = df.drop('strength',axis=1).values
y_org = df['strength'].values

X_train, X_test, y_train, y_test = train_test_split(x_org,y_org, test_size=0.22)

sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)

print(X_train.shape, X_test.shape, y_train.shape, y_test.shape)
```

```
(1606, 8) (454, 8) (1606,) (454,)
```

In [61]:

```
model.compile(optimizer=opt,loss='mean_squared_error',metrics=[rmse,'accuracy'])
history3 = model.fit(X_train,y_train,epochs = 200 ,batch_size=32,validation_data=(X_test,y_test))
```

```
Train on 1606 samples, validate on 454 samples
Epoch 1/200
1606/1606 [==============================] - 1s 330us/step - loss: 24.9364 - rmse: 3.7945
- accuracy: 0.0000e+00 - val_loss: 34.8644 - val_rmse: 4.6427 - val_accuracy: 0.0000e+00
Epoch 2/200
1606/1606 [==============================] - 0s 140us/step - loss: 22.2799 - rmse: 3.6169
- accuracy: 0.0019 - val_loss: 31.0306 - val_rmse: 4.2076 - val_accuracy: 0.0000e+00
Epoch 3/200
1606/1606 [==============================] - 0s 137us/step - loss: 20.4757 - rmse: 3.4571
- accuracy: 0.0012 - val_loss: 11.8311 - val_rmse: 2.5959 - val_accuracy: 0.0044
Epoch 4/200
1606/1606 [==============================] - 0s 140us/step - loss: 18.1773 - rmse: 3.2303
- accuracy: 6.2266e-04 - val_loss: 11.0329 - val_rmse: 2.3911 - val_accuracy: 0.0022
Epoch 5/200
1606/1606 [==============================] - 0s 139us/step - loss: 18.6807 - rmse: 3.4363
- accuracy: 0.0019 - val_loss: 10.2254 - val_rmse: 2.3682 - val_accuracy: 0.0000e+00
Epoch 6/200
1606/1606 [==============================] - 0s 146us/step - loss: 16.6587 - rmse: 3.0763
- accuracy: 6.2266e-04 - val_loss: 11.2672 - val_rmse: 2.4770 - val_accuracy: 0.0000e+00
Epoch 7/200
1606/1606 [==============================] - 0s 143us/step - loss: 17.4982 - rmse: 3.2442
- accuracy: 0.0000e+00 - val_loss: 10.0663 - val_rmse: 2.2879 - val_accuracy: 0.0044
Epoch 8/200
1606/1606 [==============================] - 0s 150us/step - loss: 19.7660 - rmse: 3.4709
- accuracy: 0.0000e+00 - val_loss: 8.3660 - val_rmse: 2.1432 - val_accuracy: 0.0022
Epoch 9/200
1606/1606 [==============================] - 0s 182us/step - loss: 14.7623 - rmse: 2.8876
- accuracy: 6.2266e-04 - val_loss: 8.8439 - val_rmse: 2.2063 - val_accuracy: 0.0022
Epoch 10/200
1606/1606 [==============================] - 0s 142us/step - loss: 13.5056 - rmse: 2.8249
- accuracy: 6.2266e-04 - val_loss: 8.2215 - val_rmse: 2.1114 - val_accuracy: 0.0000e+00
Epoch 11/200
```

1606/1606 [==============================] - 0s 139us/step - loss: 12.2221 - rmse: 2.6953 - accuracy: 6.2266e-04 - val_loss: 6.9228 - val_rmse: 1.8647 - val_accuracy: 0.0000e+00
Epoch 12/200
1606/1606 [==============================] - 0s 189us/step - loss: 14.6822 - rmse: 2.9168 - accuracy: 0.0019 - val_loss: 7.1385 - val_rmse: 1.9574 - val_accuracy: 0.0000e+00
Epoch 13/200
1606/1606 [==============================] - 0s 210us/step - loss: 14.0567 - rmse: 2.9197 - accuracy: 0.0000e+00 - val_loss: 7.6001 - val_rmse: 1.9342 - val_accuracy: 0.0000e+00
Epoch 14/200
1606/1606 [==============================] - 0s 151us/step - loss: 19.7155 - rmse: 3.4750 - accuracy: 0.0012 - val_loss: 10.1058 - val_rmse: 2.2877 - val_accuracy: 0.0000e+00
Epoch 15/200
1606/1606 [==============================] - 0s 153us/step - loss: 15.7457 - rmse: 3.0944 - accuracy: 0.0025 - val_loss: 6.5621 - val_rmse: 1.8243 - val_accuracy: 0.0022
Epoch 16/200
1606/1606 [==============================] - 0s 144us/step - loss: 15.7024 - rmse: 3.0751 - accuracy: 0.0012 - val_loss: 8.2993 - val_rmse: 2.1677 - val_accuracy: 0.0000e+00
Epoch 17/200
1606/1606 [==============================] - 0s 153us/step - loss: 17.1643 - rmse: 3.2878 - accuracy: 0.0012 - val_loss: 6.6512 - val_rmse: 1.8450 - val_accuracy: 0.0000e+00
Epoch 18/200
1606/1606 [==============================] - 0s 144us/step - loss: 13.9840 - rmse: 2.8486 - accuracy: 0.0019 - val_loss: 8.5504 - val_rmse: 2.1969 - val_accuracy: 0.0088
Epoch 19/200
1606/1606 [==============================] - 0s 143us/step - loss: 14.9490 - rmse: 2.9520 - accuracy: 0.0019 - val_loss: 6.9742 - val_rmse: 1.8617 - val_accuracy: 0.0088
Epoch 20/200
1606/1606 [==============================] - 0s 156us/step - loss: 15.1421 - rmse: 2.9680 - accuracy: 0.0000e+00 - val_loss: 6.9493 - val_rmse: 1.9567 - val_accuracy: 0.0000e+00
Epoch 21/200
1606/1606 [==============================] - 0s 146us/step - loss: 14.7554 - rmse: 2.9894 - accuracy: 0.0019 - val_loss: 6.5434 - val_rmse: 1.8267 - val_accuracy: 0.0022
Epoch 22/200
1606/1606 [==============================] - 0s 144us/step - loss: 18.9978 - rmse: 3.3665 - accuracy: 0.0000e+00 - val_loss: 6.6843 - val_rmse: 1.8786 - val_accuracy: 0.0000e+00
Epoch 23/200
1606/1606 [==============================] - 0s 145us/step - loss: 13.3346 - rmse: 2.7871 - accuracy: 0.0012 - val_loss: 6.0857 - val_rmse: 1.7145 - val_accuracy: 0.0000e+00
Epoch 24/200
1606/1606 [==============================] - 0s 143us/step - loss: 13.5224 - rmse: 2.7094 - accuracy: 0.0019 - val_loss: 6.8569 - val_rmse: 1.8462 - val_accuracy: 0.0000e+00
Epoch 25/200
1606/1606 [==============================] - 1s 320us/step - loss: 15.7138 - rmse: 3.0526 - accuracy: 0.0012 - val_loss: 6.6687 - val_rmse: 1.8119 - val_accuracy: 0.0000e+00
Epoch 26/200
1606/1606 [==============================] - 0s 265us/step - loss: 14.4909 - rmse: 2.8992 - accuracy: 0.0012 - val_loss: 5.8414 - val_rmse: 1.7622 - val_accuracy: 0.0000e+00
Epoch 27/200
1606/1606 [==============================] - 0s 262us/step - loss: 15.1149 - rmse: 3.0348 - accuracy: 0.0025 - val_loss: 6.1571 - val_rmse: 1.7498 - val_accuracy: 0.0066
Epoch 28/200
1606/1606 [==============================] - 0s 173us/step - loss: 13.0796 - rmse: 2.7626 - accuracy: 0.0019 - val_loss: 8.2257 - val_rmse: 2.1869 - val_accuracy: 0.0022
Epoch 29/200
1606/1606 [==============================] - 0s 141us/step - loss: 12.5400 - rmse: 2.6719 - accuracy: 0.0019 - val_loss: 6.0095 - val_rmse: 1.7317 - val_accuracy: 0.0044
Epoch 30/200
1606/1606 [==============================] - 0s 140us/step - loss: 17.1796 - rmse: 3.1999 - accuracy: 6.2266e-04 - val_loss: 5.3932 - val_rmse: 1.6558 - val_accuracy: 0.0000e+00
Epoch 31/200
1606/1606 [==============================] - 0s 148us/step - loss: 14.5107 - rmse: 2.9966 - accuracy: 6.2266e-04 - val_loss: 5.9729 - val_rmse: 1.7539 - val_accuracy: 0.0044
Epoch 32/200
1606/1606 [==============================] - 0s 145us/step - loss: 12.1214 - rmse: 2.6875 - accuracy: 0.0019 - val_loss: 6.1894 - val_rmse: 1.7850 - val_accuracy: 0.0000e+00
Epoch 33/200
1606/1606 [==============================] - 0s 167us/step - loss: 12.9978 - rmse: 2.7402 - accuracy: 0.0019 - val_loss: 7.9927 - val_rmse: 2.0346 - val_accuracy: 0.0022
Epoch 34/200
1606/1606 [==============================] - 0s 145us/step - loss: 15.1357 - rmse: 2.9816 - accuracy: 0.0031 - val_loss: 5.9408 - val_rmse: 1.7704 - val_accuracy: 0.0000e+00
Epoch 35/200

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1606/1606 [==============================] - 0s 147us/step - loss: 12.7293 - rmse: 2.7871
- accuracy: 0.0031 - val_loss: 5.9672 - val_rmse: 1.7275 - val_accuracy: 0.0022
Epoch 36/200
1606/1606 [==============================] - 0s 179us/step - loss: 12.9690 - rmse: 2.6607
- accuracy: 0.0012 - val_loss: 6.1978 - val_rmse: 1.7576 - val_accuracy: 0.0000e+00
Epoch 37/200
1606/1606 [==============================] - 0s 158us/step - loss: 16.3349 - rmse: 3.2914
- accuracy: 6.2266e-04 - val_loss: 6.1318 - val_rmse: 1.7708 - val_accuracy: 0.0000e+00
Epoch 38/200
1606/1606 [==============================] - 0s 150us/step - loss: 15.5313 - rmse: 3.0680
- accuracy: 0.0012 - val_loss: 6.6479 - val_rmse: 1.7968 - val_accuracy: 0.0066
Epoch 39/200
1606/1606 [==============================] - 0s 154us/step - loss: 13.9149 - rmse: 2.8593
- accuracy: 0.0025 - val_loss: 5.4255 - val_rmse: 1.6602 - val_accuracy: 0.0000e+00
Epoch 40/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.0423 - rmse: 2.8015
- accuracy: 0.0000e+00 - val_loss: 6.2908 - val_rmse: 1.8562 - val_accuracy: 0.0000e+00
Epoch 41/200
1606/1606 [==============================] - 0s 166us/step - loss: 14.1937 - rmse: 2.8785
- accuracy: 0.0019 - val_loss: 5.8166 - val_rmse: 1.6711 - val_accuracy: 0.0066
Epoch 42/200
1606/1606 [==============================] - 0s 144us/step - loss: 11.7714 - rmse: 2.6375
- accuracy: 6.2266e-04 - val_loss: 8.1008 - val_rmse: 2.1689 - val_accuracy: 0.0022
Epoch 43/200
1606/1606 [==============================] - 0s 142us/step - loss: 15.7757 - rmse: 3.0484
- accuracy: 0.0019 - val_loss: 6.2371 - val_rmse: 1.6922 - val_accuracy: 0.0000e+00
Epoch 44/200
1606/1606 [==============================] - 0s 170us/step - loss: 14.8403 - rmse: 3.0049
- accuracy: 0.0012 - val_loss: 6.1840 - val_rmse: 1.7795 - val_accuracy: 0.0000e+00
Epoch 45/200
1606/1606 [==============================] - 0s 143us/step - loss: 14.9365 - rmse: 2.9551
- accuracy: 0.0012 - val_loss: 6.8056 - val_rmse: 1.8108 - val_accuracy: 0.0000e+00
Epoch 46/200
1606/1606 [==============================] - 0s 187us/step - loss: 17.5781 - rmse: 3.3187
- accuracy: 0.0000e+00 - val_loss: 5.1533 - val_rmse: 1.6198 - val_accuracy: 0.0044
Epoch 47/200
1606/1606 [==============================] - 0s 143us/step - loss: 13.1662 - rmse: 2.7783
- accuracy: 0.0012 - val_loss: 7.6775 - val_rmse: 1.8839 - val_accuracy: 0.0000e+00
Epoch 48/200
1606/1606 [==============================] - 0s 162us/step - loss: 13.8687 - rmse: 2.8817
- accuracy: 0.0012 - val_loss: 6.4761 - val_rmse: 1.7470 - val_accuracy: 0.0000e+00
Epoch 49/200
1606/1606 [==============================] - 0s 162us/step - loss: 14.4934 - rmse: 2.9815
- accuracy: 0.0000e+00 - val_loss: 6.3893 - val_rmse: 1.7622 - val_accuracy: 0.0000e+00
Epoch 50/200
1606/1606 [==============================] - 0s 182us/step - loss: 14.2377 - rmse: 2.9418
- accuracy: 0.0025 - val_loss: 6.6529 - val_rmse: 1.9246 - val_accuracy: 0.0066
Epoch 51/200
1606/1606 [==============================] - 0s 149us/step - loss: 14.2784 - rmse: 2.8907
- accuracy: 0.0012 - val_loss: 6.1633 - val_rmse: 1.6997 - val_accuracy: 0.0000e+00
Epoch 52/200
1606/1606 [==============================] - 0s 182us/step - loss: 12.1414 - rmse: 2.6812
- accuracy: 0.0012 - val_loss: 6.3602 - val_rmse: 1.7613 - val_accuracy: 0.0000e+00
Epoch 53/200
1606/1606 [==============================] - 0s 206us/step - loss: 15.5042 - rmse: 3.0543
- accuracy: 0.0000e+00 - val_loss: 5.9338 - val_rmse: 1.6146 - val_accuracy: 0.0000e+00
Epoch 54/200
1606/1606 [==============================] - 0s 197us/step - loss: 12.7258 - rmse: 2.7445
- accuracy: 0.0019 - val_loss: 5.6891 - val_rmse: 1.6081 - val_accuracy: 0.0044
Epoch 55/200
1606/1606 [==============================] - 0s 184us/step - loss: 12.1653 - rmse: 2.6790
- accuracy: 6.2266e-04 - val_loss: 6.8068 - val_rmse: 1.8469 - val_accuracy: 0.0044
Epoch 56/200
1606/1606 [==============================] - 0s 152us/step - loss: 15.4522 - rmse: 3.0426
- accuracy: 0.0000e+00 - val_loss: 5.7019 - val_rmse: 1.6209 - val_accuracy: 0.0044
Epoch 57/200
1606/1606 [==============================] - 0s 181us/step - loss: 12.6069 - rmse: 2.6259
- accuracy: 6.2266e-04 - val_loss: 5.8901 - val_rmse: 1.6854 - val_accuracy: 0.0088
Epoch 58/200
1606/1606 [==============================] - 0s 192us/step - loss: 12.2080 - rmse: 2.7066
- accuracy: 0.0012 - val_loss: 7.1810 - val_rmse: 1.8042 - val_accuracy: 0.0022
Epoch 59/200
```

1606/1606 [==============================] - 0s 161us/step - loss: 14.5672 - rmse: 2.9821
- accuracy: 6.2266e-04 - val_loss: 5.7625 - val_rmse: 1.6947 - val_accuracy: 0.0000e+00
Epoch 60/200
1606/1606 [==============================] - 0s 142us/step - loss: 15.5664 - rmse: 3.0989
- accuracy: 0.0025 - val_loss: 5.8482 - val_rmse: 1.7014 - val_accuracy: 0.0000e+00
Epoch 61/200
1606/1606 [==============================] - 0s 148us/step - loss: 11.4886 - rmse: 2.5828
- accuracy: 6.2266e-04 - val_loss: 5.4466 - val_rmse: 1.5706 - val_accuracy: 0.0088
Epoch 62/200
1606/1606 [==============================] - 0s 137us/step - loss: 13.8507 - rmse: 2.9512
- accuracy: 0.0019 - val_loss: 5.7821 - val_rmse: 1.5963 - val_accuracy: 0.0022
Epoch 63/200
1606/1606 [==============================] - 0s 149us/step - loss: 12.2633 - rmse: 2.7139
- accuracy: 0.0012 - val_loss: 7.8085 - val_rmse: 1.9491 - val_accuracy: 0.0000e+00
Epoch 64/200
1606/1606 [==============================] - 0s 176us/step - loss: 16.9247 - rmse: 3.1765
- accuracy: 6.2266e-04 - val_loss: 6.6125 - val_rmse: 1.8175 - val_accuracy: 0.0000e+00
Epoch 65/200
1606/1606 [==============================] - 0s 147us/step - loss: 15.8897 - rmse: 3.1820
- accuracy: 0.0000e+00 - val_loss: 9.9553 - val_rmse: 2.1542 - val_accuracy: 0.0000e+00
Epoch 66/200
1606/1606 [==============================] - 0s 138us/step - loss: 13.6623 - rmse: 2.8773
- accuracy: 6.2266e-04 - val_loss: 6.6578 - val_rmse: 1.8051 - val_accuracy: 0.0066
Epoch 67/200
1606/1606 [==============================] - 0s 137us/step - loss: 11.7388 - rmse: 2.6398
- accuracy: 0.0025 - val_loss: 5.7890 - val_rmse: 1.6584 - val_accuracy: 0.0044
Epoch 68/200
1606/1606 [==============================] - 0s 144us/step - loss: 11.7599 - rmse: 2.4772
- accuracy: 0.0012 - val_loss: 4.9646 - val_rmse: 1.5245 - val_accuracy: 0.0044
Epoch 69/200
1606/1606 [==============================] - 0s 146us/step - loss: 13.9292 - rmse: 2.9183
- accuracy: 6.2266e-04 - val_loss: 5.6098 - val_rmse: 1.6545 - val_accuracy: 0.0022
Epoch 70/200
1606/1606 [==============================] - 0s 143us/step - loss: 14.2664 - rmse: 2.8771
- accuracy: 0.0019 - val_loss: 5.9145 - val_rmse: 1.7541 - val_accuracy: 0.0044
Epoch 71/200
1606/1606 [==============================] - 0s 142us/step - loss: 14.1044 - rmse: 2.8548
- accuracy: 6.2266e-04 - val_loss: 5.8155 - val_rmse: 1.7251 - val_accuracy: 0.0022
Epoch 72/200
1606/1606 [==============================] - 0s 141us/step - loss: 9.8562 - rmse: 2.3644
- accuracy: 0.0019 - val_loss: 6.0189 - val_rmse: 1.7816 - val_accuracy: 0.0022
Epoch 73/200
1606/1606 [==============================] - 0s 147us/step - loss: 13.1989 - rmse: 2.8085
- accuracy: 6.2266e-04 - val_loss: 5.9658 - val_rmse: 1.6088 - val_accuracy: 0.0022
Epoch 74/200
1606/1606 [==============================] - 0s 151us/step - loss: 11.7114 - rmse: 2.5891
- accuracy: 0.0000e+00 - val_loss: 5.7817 - val_rmse: 1.6537 - val_accuracy: 0.0000e+00
Epoch 75/200
1606/1606 [==============================] - 0s 141us/step - loss: 10.9123 - rmse: 2.6035
- accuracy: 0.0019 - val_loss: 5.5082 - val_rmse: 1.6448 - val_accuracy: 0.0066
Epoch 76/200
1606/1606 [==============================] - 0s 142us/step - loss: 12.8014 - rmse: 2.6639
- accuracy: 6.2266e-04 - val_loss: 5.6913 - val_rmse: 1.6927 - val_accuracy: 0.0066
Epoch 77/200
1606/1606 [==============================] - 0s 144us/step - loss: 13.3849 - rmse: 2.8767
- accuracy: 0.0000e+00 - val_loss: 5.3990 - val_rmse: 1.6273 - val_accuracy: 0.0000e+00
Epoch 78/200
1606/1606 [==============================] - 0s 138us/step - loss: 13.2786 - rmse: 2.8895
- accuracy: 0.0000e+00 - val_loss: 5.2201 - val_rmse: 1.5949 - val_accuracy: 0.0000e+00
Epoch 79/200
1606/1606 [==============================] - 0s 141us/step - loss: 16.4509 - rmse: 3.1207
- accuracy: 0.0012 - val_loss: 5.1566 - val_rmse: 1.5730 - val_accuracy: 0.0022
Epoch 80/200
1606/1606 [==============================] - 0s 148us/step - loss: 16.9474 - rmse: 3.1766
- accuracy: 0.0025 - val_loss: 5.7623 - val_rmse: 1.6797 - val_accuracy: 0.0022
Epoch 81/200
1606/1606 [==============================] - 0s 140us/step - loss: 15.5684 - rmse: 2.9507
- accuracy: 0.0025 - val_loss: 5.6698 - val_rmse: 1.7194 - val_accuracy: 0.0000e+00
Epoch 82/200
1606/1606 [==============================] - 0s 145us/step - loss: 14.4746 - rmse: 2.8227
- accuracy: 0.0012 - val_loss: 5.3093 - val_rmse: 1.5893 - val_accuracy: 0.0066
Epoch 83/200

1606/1606 [==============================] - 0s 150us/step - loss: 12.6645 - rmse: 2.7395
- accuracy: 6.2266e-04 - val_loss: 5.3563 - val_rmse: 1.6156 - val_accuracy: 0.0044
Epoch 84/200
1606/1606 [==============================] - 0s 137us/step - loss: 13.4436 - rmse: 2.7981
- accuracy: 6.2266e-04 - val_loss: 5.3548 - val_rmse: 1.5635 - val_accuracy: 0.0022
Epoch 85/200
1606/1606 [==============================] - 0s 154us/step - loss: 14.2684 - rmse: 2.8862
- accuracy: 0.0012 - val_loss: 5.2172 - val_rmse: 1.5938 - val_accuracy: 0.0044
Epoch 86/200
1606/1606 [==============================] - 0s 147us/step - loss: 12.3276 - rmse: 2.6796
- accuracy: 0.0025 - val_loss: 5.6596 - val_rmse: 1.5954 - val_accuracy: 0.0000e+00
Epoch 87/200
1606/1606 [==============================] - 0s 142us/step - loss: 11.2991 - rmse: 2.5404
- accuracy: 0.0019 - val_loss: 5.5145 - val_rmse: 1.6102 - val_accuracy: 0.0044
Epoch 88/200
1606/1606 [==============================] - 0s 150us/step - loss: 13.0863 - rmse: 2.7882
- accuracy: 6.2266e-04 - val_loss: 6.3021 - val_rmse: 1.8706 - val_accuracy: 0.0022
Epoch 89/200
1606/1606 [==============================] - 0s 143us/step - loss: 19.7695 - rmse: 3.3846
- accuracy: 0.0012 - val_loss: 6.1393 - val_rmse: 1.7627 - val_accuracy: 0.0000e+00
Epoch 90/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.7649 - rmse: 2.9357
- accuracy: 0.0012 - val_loss: 4.8943 - val_rmse: 1.5306 - val_accuracy: 0.0044
Epoch 91/200
1606/1606 [==============================] - 0s 141us/step - loss: 11.8514 - rmse: 2.6712
- accuracy: 0.0012 - val_loss: 6.2509 - val_rmse: 1.8463 - val_accuracy: 0.0000e+00
Epoch 92/200
1606/1606 [==============================] - 0s 142us/step - loss: 11.9785 - rmse: 2.7463
- accuracy: 0.0000e+00 - val_loss: 6.3889 - val_rmse: 1.8079 - val_accuracy: 0.0022
Epoch 93/200
1606/1606 [==============================] - 0s 152us/step - loss: 16.3013 - rmse: 3.0869
- accuracy: 0.0012 - val_loss: 5.9831 - val_rmse: 1.6849 - val_accuracy: 0.0088
Epoch 94/200
1606/1606 [==============================] - 0s 175us/step - loss: 10.8995 - rmse: 2.4676
- accuracy: 0.0019 - val_loss: 5.2117 - val_rmse: 1.6208 - val_accuracy: 0.0000e+00
Epoch 95/200
1606/1606 [==============================] - 0s 149us/step - loss: 15.3637 - rmse: 3.0837
- accuracy: 0.0012 - val_loss: 4.9581 - val_rmse: 1.5432 - val_accuracy: 0.0000e+00
Epoch 96/200
1606/1606 [==============================] - 0s 143us/step - loss: 10.6027 - rmse: 2.4265
- accuracy: 6.2266e-04 - val_loss: 6.2886 - val_rmse: 1.7401 - val_accuracy: 0.0066
Epoch 97/200
1606/1606 [==============================] - 0s 177us/step - loss: 12.0745 - rmse: 2.7509
- accuracy: 0.0000e+00 - val_loss: 5.5166 - val_rmse: 1.6070 - val_accuracy: 0.0000e+00
Epoch 98/200
1606/1606 [==============================] - 0s 219us/step - loss: 14.5215 - rmse: 2.9009
- accuracy: 0.0012 - val_loss: 4.9899 - val_rmse: 1.5573 - val_accuracy: 0.0022
Epoch 99/200
1606/1606 [==============================] - 0s 150us/step - loss: 10.7587 - rmse: 2.4738
- accuracy: 0.0012 - val_loss: 5.8416 - val_rmse: 1.6052 - val_accuracy: 0.0066
Epoch 100/200
1606/1606 [==============================] - 0s 146us/step - loss: 12.3428 - rmse: 2.6699
- accuracy: 0.0019 - val_loss: 6.1329 - val_rmse: 1.7619 - val_accuracy: 0.0000e+00
Epoch 101/200
1606/1606 [==============================] - 0s 149us/step - loss: 13.5023 - rmse: 2.7546
- accuracy: 6.2266e-04 - val_loss: 5.2630 - val_rmse: 1.5744 - val_accuracy: 0.0000e+00
Epoch 102/200
1606/1606 [==============================] - 0s 147us/step - loss: 11.2184 - rmse: 2.5270
- accuracy: 0.0019 - val_loss: 5.5736 - val_rmse: 1.6801 - val_accuracy: 0.0022
Epoch 103/200
1606/1606 [==============================] - 0s 135us/step - loss: 16.0605 - rmse: 3.1070
- accuracy: 0.0012 - val_loss: 4.9476 - val_rmse: 1.5467 - val_accuracy: 0.0000e+00
Epoch 104/200
1606/1606 [==============================] - 0s 138us/step - loss: 11.7863 - rmse: 2.5865
- accuracy: 0.0025 - val_loss: 7.3820 - val_rmse: 1.8682 - val_accuracy: 0.0066
Epoch 105/200
1606/1606 [==============================] - 0s 142us/step - loss: 16.1411 - rmse: 3.1018
- accuracy: 0.0019 - val_loss: 6.1543 - val_rmse: 1.7740 - val_accuracy: 0.0000e+00
Epoch 106/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.5506 - rmse: 2.8162
- accuracy: 0.0012 - val_loss: 5.2712 - val_rmse: 1.5917 - val_accuracy: 0.0088
Epoch 107/200

1606/1606 [==============================] - 0s 142us/step - loss: 13.7592 - rmse: 2.8524 - accuracy: 0.0019 - val_loss: 5.7856 - val_rmse: 1.6648 - val_accuracy: 0.0000e+00
Epoch 108/200
1606/1606 [==============================] - 0s 142us/step - loss: 13.2602 - rmse: 2.7790 - accuracy: 0.0012 - val_loss: 6.1414 - val_rmse: 1.6403 - val_accuracy: 0.0044
Epoch 109/200
1606/1606 [==============================] - 0s 146us/step - loss: 11.3027 - rmse: 2.5898 - accuracy: 0.0019 - val_loss: 5.0138 - val_rmse: 1.5258 - val_accuracy: 0.0000e+00
Epoch 110/200
1606/1606 [==============================] - 0s 148us/step - loss: 15.1685 - rmse: 2.9435 - accuracy: 6.2266e-04 - val_loss: 6.0005 - val_rmse: 1.6384 - val_accuracy: 0.0000e+00
Epoch 111/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.9604 - rmse: 2.8888 - accuracy: 0.0019 - val_loss: 6.4477 - val_rmse: 1.8157 - val_accuracy: 0.0022
Epoch 112/200
1606/1606 [==============================] - 0s 141us/step - loss: 11.3643 - rmse: 2.5927 - accuracy: 6.2266e-04 - val_loss: 5.9405 - val_rmse: 1.7287 - val_accuracy: 0.0022
Epoch 113/200
1606/1606 [==============================] - 0s 151us/step - loss: 12.1427 - rmse: 2.6241 - accuracy: 0.0019 - val_loss: 6.5210 - val_rmse: 1.6950 - val_accuracy: 0.0022
Epoch 114/200
1606/1606 [==============================] - 0s 138us/step - loss: 12.9070 - rmse: 2.6362 - accuracy: 0.0019 - val_loss: 6.0132 - val_rmse: 1.7131 - val_accuracy: 0.0044
Epoch 115/200
1606/1606 [==============================] - 0s 146us/step - loss: 12.1378 - rmse: 2.7408 - accuracy: 0.0025 - val_loss: 6.8219 - val_rmse: 1.7609 - val_accuracy: 0.0000e+00
Epoch 116/200
1606/1606 [==============================] - 0s 138us/step - loss: 15.9368 - rmse: 3.0765 - accuracy: 0.0000e+00 - val_loss: 5.7651 - val_rmse: 1.7376 - val_accuracy: 0.0000e+00
Epoch 117/200
1606/1606 [==============================] - 0s 141us/step - loss: 12.4425 - rmse: 2.6740 - accuracy: 6.2266e-04 - val_loss: 5.5679 - val_rmse: 1.5616 - val_accuracy: 0.0022
Epoch 118/200
1606/1606 [==============================] - 0s 140us/step - loss: 14.8875 - rmse: 2.7672 - accuracy: 0.0019 - val_loss: 5.7461 - val_rmse: 1.6389 - val_accuracy: 0.0044
Epoch 119/200
1606/1606 [==============================] - 0s 141us/step - loss: 12.7106 - rmse: 2.7372 - accuracy: 0.0012 - val_loss: 6.0094 - val_rmse: 1.7171 - val_accuracy: 0.0066
Epoch 120/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.9584 - rmse: 2.8908 - accuracy: 0.0025 - val_loss: 5.3426 - val_rmse: 1.6616 - val_accuracy: 0.0022
Epoch 121/200
1606/1606 [==============================] - 0s 138us/step - loss: 11.8939 - rmse: 2.6311 - accuracy: 0.0012 - val_loss: 5.1262 - val_rmse: 1.5799 - val_accuracy: 0.0044
Epoch 122/200
1606/1606 [==============================] - 0s 141us/step - loss: 14.6704 - rmse: 3.0042 - accuracy: 6.2266e-04 - val_loss: 6.2162 - val_rmse: 1.6465 - val_accuracy: 0.0022
Epoch 123/200
1606/1606 [==============================] - 0s 144us/step - loss: 15.0321 - rmse: 3.1266 - accuracy: 0.0031 - val_loss: 5.5046 - val_rmse: 1.5507 - val_accuracy: 0.0066
Epoch 124/200
1606/1606 [==============================] - 0s 139us/step - loss: 14.3734 - rmse: 2.7207 - accuracy: 0.0012 - val_loss: 5.2519 - val_rmse: 1.5787 - val_accuracy: 0.0000e+00
Epoch 125/200
1606/1606 [==============================] - 0s 147us/step - loss: 16.2946 - rmse: 3.2534 - accuracy: 6.2266e-04 - val_loss: 5.5406 - val_rmse: 1.6253 - val_accuracy: 0.0000e+00
Epoch 126/200
1606/1606 [==============================] - 0s 154us/step - loss: 10.3241 - rmse: 2.4104 - accuracy: 6.2266e-04 - val_loss: 5.8005 - val_rmse: 1.6981 - val_accuracy: 0.0044
Epoch 127/200
1606/1606 [==============================] - 0s 153us/step - loss: 12.1573 - rmse: 2.6830 - accuracy: 0.0031 - val_loss: 5.2563 - val_rmse: 1.5935 - val_accuracy: 0.0044
Epoch 128/200
1606/1606 [==============================] - 0s 155us/step - loss: 14.2205 - rmse: 2.8673 - accuracy: 6.2266e-04 - val_loss: 5.2151 - val_rmse: 1.5281 - val_accuracy: 0.0044
Epoch 129/200
1606/1606 [==============================] - 0s 148us/step - loss: 16.1059 - rmse: 3.1787 - accuracy: 0.0012 - val_loss: 5.9867 - val_rmse: 1.7555 - val_accuracy: 0.0022
Epoch 130/200
1606/1606 [==============================] - 0s 148us/step - loss: 15.5750 - rmse: 3.0908 - accuracy: 0.0031 - val_loss: 6.1935 - val_rmse: 1.5919 - val_accuracy: 0.0000e+00
Epoch 131/200

1606/1606 [==============================] - 0s 150us/step - loss: 14.4512 - rmse: 2.9625
- accuracy: 0.0000e+00 - val_loss: 6.1040 - val_rmse: 1.7194 - val_accuracy: 0.0000e+00
Epoch 132/200
1606/1606 [==============================] - 0s 142us/step - loss: 14.9493 - rmse: 2.9609
- accuracy: 6.2266e-04 - val_loss: 4.8207 - val_rmse: 1.5294 - val_accuracy: 0.0044
Epoch 133/200
1606/1606 [==============================] - 0s 140us/step - loss: 10.3821 - rmse: 2.4167
- accuracy: 0.0037 - val_loss: 5.5636 - val_rmse: 1.5972 - val_accuracy: 0.0000e+00
Epoch 134/200
1606/1606 [==============================] - 0s 139us/step - loss: 13.5421 - rmse: 2.7828
- accuracy: 6.2266e-04 - val_loss: 5.8193 - val_rmse: 1.7339 - val_accuracy: 0.0088
Epoch 135/200
1606/1606 [==============================] - 0s 153us/step - loss: 15.2330 - rmse: 3.0229
- accuracy: 0.0000e+00 - val_loss: 5.2728 - val_rmse: 1.5526 - val_accuracy: 0.0022
Epoch 136/200
1606/1606 [==============================] - 0s 160us/step - loss: 11.3889 - rmse: 2.5161
- accuracy: 0.0025 - val_loss: 6.0674 - val_rmse: 1.7126 - val_accuracy: 0.0044
Epoch 137/200
1606/1606 [==============================] - 0s 143us/step - loss: 12.8485 - rmse: 2.8904
- accuracy: 0.0000e+00 - val_loss: 4.6976 - val_rmse: 1.4658 - val_accuracy: 0.0066
Epoch 138/200
1606/1606 [==============================] - 0s 138us/step - loss: 11.6532 - rmse: 2.6631
- accuracy: 0.0025 - val_loss: 5.0218 - val_rmse: 1.5439 - val_accuracy: 0.0044
Epoch 139/200
1606/1606 [==============================] - 0s 146us/step - loss: 12.6894 - rmse: 2.7884
- accuracy: 0.0012 - val_loss: 5.7537 - val_rmse: 1.6446 - val_accuracy: 0.0044
Epoch 140/200
1606/1606 [==============================] - 0s 176us/step - loss: 12.6062 - rmse: 2.7568
- accuracy: 0.0031 - val_loss: 4.6251 - val_rmse: 1.4213 - val_accuracy: 0.0022
Epoch 141/200
1606/1606 [==============================] - 0s 143us/step - loss: 13.6959 - rmse: 2.8445
- accuracy: 0.0019 - val_loss: 6.2684 - val_rmse: 1.7308 - val_accuracy: 0.0066
Epoch 142/200
1606/1606 [==============================] - 0s 140us/step - loss: 14.8985 - rmse: 2.9658
- accuracy: 6.2266e-04 - val_loss: 5.2873 - val_rmse: 1.6027 - val_accuracy: 0.0000e+00
Epoch 143/200
1606/1606 [==============================] - 0s 179us/step - loss: 11.7344 - rmse: 2.6684
- accuracy: 0.0012 - val_loss: 4.8581 - val_rmse: 1.4764 - val_accuracy: 0.0066
Epoch 144/200
1606/1606 [==============================] - 0s 217us/step - loss: 14.0399 - rmse: 2.8347
- accuracy: 6.2266e-04 - val_loss: 5.3445 - val_rmse: 1.6209 - val_accuracy: 0.0022
Epoch 145/200
1606/1606 [==============================] - 0s 148us/step - loss: 12.3342 - rmse: 2.6244
- accuracy: 0.0019 - val_loss: 5.4937 - val_rmse: 1.6052 - val_accuracy: 0.0000e+00
Epoch 146/200
1606/1606 [==============================] - 0s 145us/step - loss: 10.8578 - rmse: 2.5579
- accuracy: 6.2266e-04 - val_loss: 5.6990 - val_rmse: 1.6308 - val_accuracy: 0.0000e+00
Epoch 147/200
1606/1606 [==============================] - 0s 144us/step - loss: 13.5632 - rmse: 2.8122
- accuracy: 0.0012 - val_loss: 5.0796 - val_rmse: 1.5728 - val_accuracy: 0.0000e+00
Epoch 148/200
1606/1606 [==============================] - 0s 145us/step - loss: 11.7835 - rmse: 2.6501
- accuracy: 6.2266e-04 - val_loss: 5.2325 - val_rmse: 1.5362 - val_accuracy: 0.0066
Epoch 149/200
1606/1606 [==============================] - 0s 149us/step - loss: 12.2542 - rmse: 2.6999
- accuracy: 6.2266e-04 - val_loss: 5.7856 - val_rmse: 1.6082 - val_accuracy: 0.0066
Epoch 150/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.4188 - rmse: 2.8801
- accuracy: 0.0012 - val_loss: 4.8400 - val_rmse: 1.4611 - val_accuracy: 0.0022
Epoch 151/200
1606/1606 [==============================] - 0s 146us/step - loss: 14.1329 - rmse: 2.9428
- accuracy: 0.0000e+00 - val_loss: 5.7275 - val_rmse: 1.6512 - val_accuracy: 0.0088
Epoch 152/200
1606/1606 [==============================] - 0s 141us/step - loss: 14.3338 - rmse: 2.9523
- accuracy: 0.0025 - val_loss: 6.1423 - val_rmse: 1.7537 - val_accuracy: 0.0000e+00
Epoch 153/200
1606/1606 [==============================] - 0s 145us/step - loss: 14.4877 - rmse: 3.0279
- accuracy: 6.2266e-04 - val_loss: 4.9347 - val_rmse: 1.5395 - val_accuracy: 0.0044
Epoch 154/200
1606/1606 [==============================] - 0s 142us/step - loss: 15.3787 - rmse: 3.0678
- accuracy: 0.0012 - val_loss: 4.6772 - val_rmse: 1.4786 - val_accuracy: 0.0000e+00
Epoch 155/200

1606/1606 [==============================] - 0s 145us/step - loss: 14.6597 - rmse: 2.9198
- accuracy: 6.2266e-04 - val_loss: 4.8501 - val_rmse: 1.5116 - val_accuracy: 0.0044
Epoch 156/200
1606/1606 [==============================] - 0s 141us/step - loss: 11.7485 - rmse: 2.5138
- accuracy: 0.0000e+00 - val_loss: 6.0796 - val_rmse: 1.7395 - val_accuracy: 0.0110
Epoch 157/200
1606/1606 [==============================] - 0s 138us/step - loss: 12.2798 - rmse: 2.7327
- accuracy: 6.2266e-04 - val_loss: 4.6908 - val_rmse: 1.4830 - val_accuracy: 0.0022
Epoch 158/200
1606/1606 [==============================] - 0s 140us/step - loss: 12.8983 - rmse: 2.7853
- accuracy: 0.0000e+00 - val_loss: 5.5583 - val_rmse: 1.6184 - val_accuracy: 0.0088
Epoch 159/200
1606/1606 [==============================] - 0s 142us/step - loss: 12.1543 - rmse: 2.6598
- accuracy: 0.0012 - val_loss: 5.8594 - val_rmse: 1.6353 - val_accuracy: 0.0044
Epoch 160/200
1606/1606 [==============================] - 0s 145us/step - loss: 14.6081 - rmse: 2.9409
- accuracy: 0.0012 - val_loss: 5.0267 - val_rmse: 1.5059 - val_accuracy: 0.0066
Epoch 161/200
1606/1606 [==============================] - 0s 140us/step - loss: 12.6530 - rmse: 2.8435
- accuracy: 0.0019 - val_loss: 5.0224 - val_rmse: 1.5463 - val_accuracy: 0.0000e+00
Epoch 162/200
1606/1606 [==============================] - 0s 139us/step - loss: 10.6775 - rmse: 2.5096
- accuracy: 6.2266e-04 - val_loss: 5.3544 - val_rmse: 1.6238 - val_accuracy: 0.0022
Epoch 163/200
1606/1606 [==============================] - 0s 141us/step - loss: 14.2505 - rmse: 2.9513
- accuracy: 0.0031 - val_loss: 6.7903 - val_rmse: 1.6549 - val_accuracy: 0.0044
Epoch 164/200
1606/1606 [==============================] - 0s 143us/step - loss: 12.4679 - rmse: 2.6687
- accuracy: 0.0012 - val_loss: 6.3694 - val_rmse: 1.6629 - val_accuracy: 0.0022
Epoch 165/200
1606/1606 [==============================] - 0s 144us/step - loss: 9.4828 - rmse: 2.3115
- accuracy: 0.0012 - val_loss: 5.1515 - val_rmse: 1.5624 - val_accuracy: 0.0000e+00
Epoch 166/200
1606/1606 [==============================] - 0s 144us/step - loss: 12.5758 - rmse: 2.7746
- accuracy: 0.0019 - val_loss: 5.7829 - val_rmse: 1.6816 - val_accuracy: 0.0022
Epoch 167/200
1606/1606 [==============================] - 0s 139us/step - loss: 11.8547 - rmse: 2.5782
- accuracy: 0.0019 - val_loss: 6.2573 - val_rmse: 1.6804 - val_accuracy: 0.0022
Epoch 168/200
1606/1606 [==============================] - 0s 142us/step - loss: 13.9526 - rmse: 2.7918
- accuracy: 0.0025 - val_loss: 6.3746 - val_rmse: 1.7424 - val_accuracy: 0.0088
Epoch 169/200
1606/1606 [==============================] - 0s 141us/step - loss: 12.3668 - rmse: 2.7566
- accuracy: 0.0025 - val_loss: 5.9798 - val_rmse: 1.6277 - val_accuracy: 0.0088
Epoch 170/200
1606/1606 [==============================] - 0s 140us/step - loss: 11.1580 - rmse: 2.5310
- accuracy: 0.0019 - val_loss: 5.7459 - val_rmse: 1.5387 - val_accuracy: 0.0066
Epoch 171/200
1606/1606 [==============================] - 0s 141us/step - loss: 13.3143 - rmse: 2.8417
- accuracy: 0.0012 - val_loss: 6.2894 - val_rmse: 1.7712 - val_accuracy: 0.0044
Epoch 172/200
1606/1606 [==============================] - 0s 140us/step - loss: 12.1449 - rmse: 2.5919
- accuracy: 0.0012 - val_loss: 4.9122 - val_rmse: 1.5295 - val_accuracy: 0.0088
Epoch 173/200
1606/1606 [==============================] - 0s 140us/step - loss: 11.5952 - rmse: 2.5869
- accuracy: 0.0025 - val_loss: 5.8527 - val_rmse: 1.6363 - val_accuracy: 0.0044
Epoch 174/200
1606/1606 [==============================] - 0s 141us/step - loss: 11.3748 - rmse: 2.5209
- accuracy: 0.0012 - val_loss: 5.2499 - val_rmse: 1.6041 - val_accuracy: 0.0066
Epoch 175/200
1606/1606 [==============================] - 0s 138us/step - loss: 14.7045 - rmse: 2.9213
- accuracy: 6.2266e-04 - val_loss: 4.9830 - val_rmse: 1.5420 - val_accuracy: 0.0044
Epoch 176/200
1606/1606 [==============================] - 0s 143us/step - loss: 12.2690 - rmse: 2.7685
- accuracy: 0.0000e+00 - val_loss: 5.1366 - val_rmse: 1.5715 - val_accuracy: 0.0022
Epoch 177/200
1606/1606 [==============================] - 0s 159us/step - loss: 12.4750 - rmse: 2.7382
- accuracy: 6.2266e-04 - val_loss: 6.3174 - val_rmse: 1.6386 - val_accuracy: 0.0066
Epoch 178/200
1606/1606 [==============================] - 0s 151us/step - loss: 12.8253 - rmse: 2.7229
- accuracy: 6.2266e-04 - val_loss: 5.4365 - val_rmse: 1.5378 - val_accuracy: 0.0022
Epoch 179/200

```
1606/1606 [==============================] - 0s 144us/step - loss: 12.1001 - rmse: 2.6812
- accuracy: 0.0000e+00 - val_loss: 5.3630 - val_rmse: 1.5215 - val_accuracy: 0.0000e+00
Epoch 180/200
1606/1606 [==============================] - 0s 164us/step - loss: 14.4693 - rmse: 2.8730
- accuracy: 0.0012 - val_loss: 5.2279 - val_rmse: 1.6136 - val_accuracy: 0.0000e+00
Epoch 181/200
1606/1606 [==============================] - 0s 155us/step - loss: 12.5901 - rmse: 2.6512
- accuracy: 0.0031 - val_loss: 6.9451 - val_rmse: 1.7387 - val_accuracy: 0.0000e+00
Epoch 182/200
1606/1606 [==============================] - 0s 151us/step - loss: 14.7751 - rmse: 3.0374
- accuracy: 0.0000e+00 - val_loss: 5.9657 - val_rmse: 1.5943 - val_accuracy: 0.0022
Epoch 183/200
1606/1606 [==============================] - 0s 145us/step - loss: 14.9736 - rmse: 2.9933
- accuracy: 0.0037 - val_loss: 5.7407 - val_rmse: 1.6680 - val_accuracy: 0.0000e+00
Epoch 184/200
1606/1606 [==============================] - 0s 143us/step - loss: 12.4693 - rmse: 2.6662
- accuracy: 0.0000e+00 - val_loss: 5.3155 - val_rmse: 1.5760 - val_accuracy: 0.0000e+00
Epoch 185/200
1606/1606 [==============================] - 0s 146us/step - loss: 10.7716 - rmse: 2.5642
- accuracy: 0.0000e+00 - val_loss: 5.4602 - val_rmse: 1.5520 - val_accuracy: 0.0022
Epoch 186/200
1606/1606 [==============================] - 0s 179us/step - loss: 14.4251 - rmse: 2.9333
- accuracy: 0.0012 - val_loss: 5.2183 - val_rmse: 1.5782 - val_accuracy: 0.0044
Epoch 187/200
1606/1606 [==============================] - 0s 141us/step - loss: 11.7384 - rmse: 2.6704
- accuracy: 0.0012 - val_loss: 5.3370 - val_rmse: 1.6323 - val_accuracy: 0.0000e+00
Epoch 188/200
1606/1606 [==============================] - 0s 141us/step - loss: 12.1415 - rmse: 2.6583
- accuracy: 0.0012 - val_loss: 7.5463 - val_rmse: 1.7190 - val_accuracy: 0.0044
Epoch 189/200
1606/1606 [==============================] - 0s 206us/step - loss: 15.2224 - rmse: 3.1000
- accuracy: 6.2266e-04 - val_loss: 6.7139 - val_rmse: 1.6978 - val_accuracy: 0.0000e+00
Epoch 190/200
1606/1606 [==============================] - 0s 240us/step - loss: 13.6042 - rmse: 2.9239
- accuracy: 6.2266e-04 - val_loss: 5.2566 - val_rmse: 1.5096 - val_accuracy: 0.0044
Epoch 191/200
1606/1606 [==============================] - 0s 143us/step - loss: 13.7311 - rmse: 2.9442
- accuracy: 6.2266e-04 - val_loss: 5.1832 - val_rmse: 1.4958 - val_accuracy: 0.0110
Epoch 192/200
1606/1606 [==============================] - 0s 150us/step - loss: 13.0606 - rmse: 2.9347
- accuracy: 0.0000e+00 - val_loss: 5.5381 - val_rmse: 1.6215 - val_accuracy: 0.0000e+00
Epoch 193/200
1606/1606 [==============================] - 0s 169us/step - loss: 17.3981 - rmse: 3.2107
- accuracy: 6.2266e-04 - val_loss: 6.2372 - val_rmse: 1.6471 - val_accuracy: 0.0044
Epoch 194/200
1606/1606 [==============================] - 0s 143us/step - loss: 10.1265 - rmse: 2.4472
- accuracy: 0.0000e+00 - val_loss: 5.3290 - val_rmse: 1.5525 - val_accuracy: 0.0022
Epoch 195/200
1606/1606 [==============================] - 0s 170us/step - loss: 12.9328 - rmse: 2.7831
- accuracy: 0.0019 - val_loss: 5.5592 - val_rmse: 1.6151 - val_accuracy: 0.0044
Epoch 196/200
1606/1606 [==============================] - 0s 208us/step - loss: 14.1878 - rmse: 2.8798
- accuracy: 6.2266e-04 - val_loss: 4.6010 - val_rmse: 1.4382 - val_accuracy: 0.0000e+00
Epoch 197/200
1606/1606 [==============================] - 0s 155us/step - loss: 11.4089 - rmse: 2.5966
- accuracy: 0.0019 - val_loss: 5.3311 - val_rmse: 1.4752 - val_accuracy: 0.0066
Epoch 198/200
1606/1606 [==============================] - 0s 150us/step - loss: 15.0597 - rmse: 3.0765
- accuracy: 0.0012 - val_loss: 6.0451 - val_rmse: 1.6411 - val_accuracy: 0.0044
Epoch 199/200
1606/1606 [==============================] - 0s 147us/step - loss: 15.2173 - rmse: 3.0862
- accuracy: 0.0000e+00 - val_loss: 6.4303 - val_rmse: 1.6468 - val_accuracy: 0.0066
Epoch 200/200
1606/1606 [==============================] - 0s 153us/step - loss: 12.0473 - rmse: 2.7278
- accuracy: 0.0000e+00 - val_loss: 4.9208 - val_rmse: 1.5025 - val_accuracy: 0.0066
```

In [62]:

```
from math import sqrt
from sklearn.metrics import mean_squared_error
def score(yact, ypred):
```

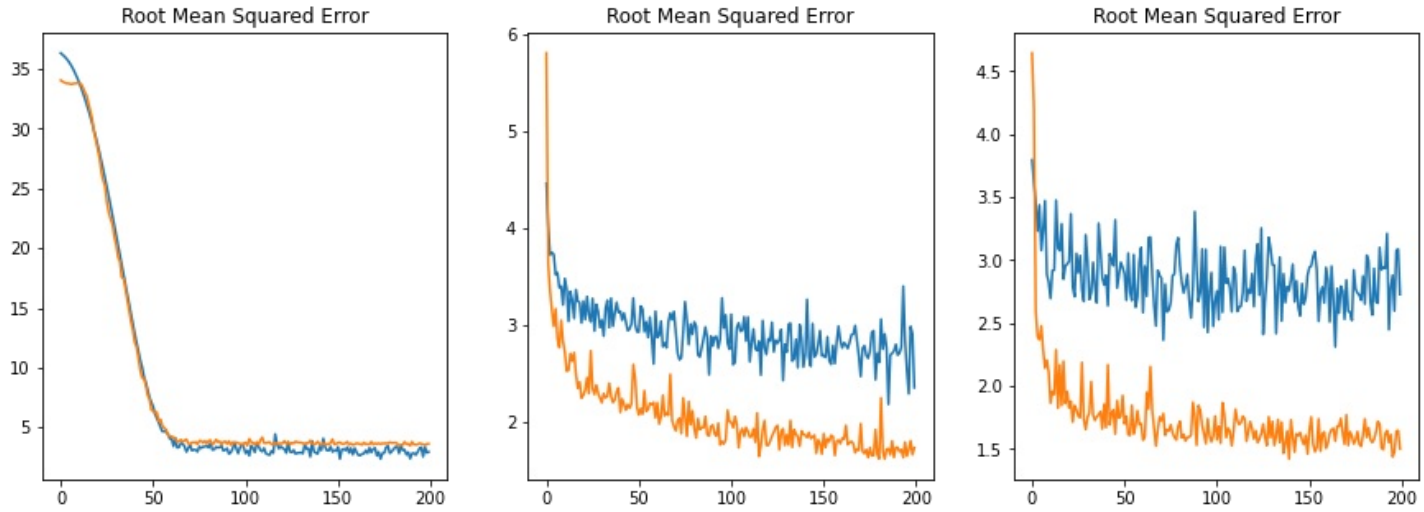
```
    return sqrt(mean_squared_error(yact, ypred))
```

Plotting Loss And Root Mean Square Error For both Training And Test Sets

plt.figure(figsize=(15,5)) plt.plot(history.history['rmse']) plt.plot(history.history['val_rmse']) plt.title('Root Mean Squared Error') plt.show()

In [63]:

```
# Plotting Loss And Root Mean Square Error For both Training And Test Sets
plt.figure(figsize=(15,5))
plt.subplot(1,3,1)
plt.plot(history1.history['rmse'])
plt.plot(history1.history['val_rmse'])
plt.title('Root Mean Squared Error')
plt.subplot(1,3,2)
plt.plot(history2.history['rmse'])
plt.plot(history2.history['val_rmse'])
plt.title('Root Mean Squared Error')
plt.subplot(1,3,3)
plt.plot(history3.history['rmse'])
plt.plot(history3.history['val_rmse'])
plt.title('Root Mean Squared Error')
plt.show()
```



RMSE during the training and validation

In [64]:

```
print(history1.history['val_rmse'], history2.history['val_rmse'], history3.history['val_
rmse'], sep = '\n\n')
```

```
[1.7310706377029 42, 1.4635895490646362, 1.4723232984542847, 1.7286198139190674, 1.7683260
440826416, 1.538948893547058, 1.5697640180587769, 1.5826656818389893, 1.7934093475341797,
1.4329009056091309, 1.6286004781723022, 1.5407685041427612, 1.553349256515503, 1.51713693
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```

In [65]:

```
# Predicting and Finding R Squared Score

ytr_predict = model.predict(X_train)
yte_predict = model.predict(X_test)
ytr_rmse = score(y_train, ytr_predict)
yte_rmse = score(y_test, yte_predict)

print(ytr_rmse, yte_rmse)
```

```
1.7829567755342683 2.218283274807545
```

In [66]:

```
test = pd.read_csv('../input/cement-train-test-data/test_data.csv')
```

In [67]:

```
out = model.predict(sc.transform(test))
out = np.round(out, 4)
out = [x[0] for x in out]
# print(out)
samout = pd.DataFrame({'predicted': out})
samout.to_csv('/kaggle/working/output.csv')
```

In [68]:

```
!cat output.csv
```

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