# 6h Forecast

## Model 1

model = Sequential()  
model.add(LSTM(50, return\_sequences=True, input\_shape=sample\_input\_shape))  
model.add(Dropout(0.2))  
model.add(LSTM(50))  
model.add(Dropout(0.2))  
model.add(Dense(forecast\_horizon))

### Epoc 250 and LR 0.0005

A graph of a model

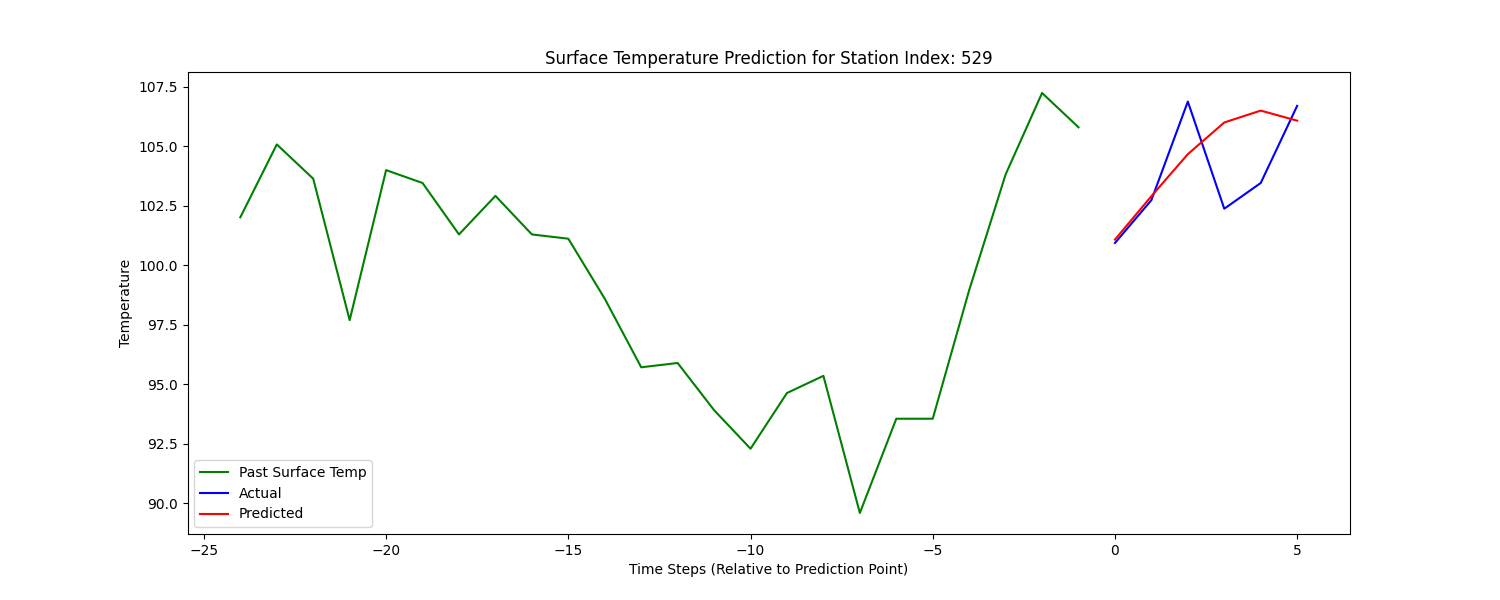
Description automatically generated with medium confidence

A green line graph with white text

Description automatically generated A green line graph with white text

Description automatically generated

A green line graph with white text

Description automatically generated

A green line graph with white text

Description automatically generated A green line graph with white text

Description automatically generated

## Model 2

model = Sequential()  
model.add(Bidirectional(LSTM(100, return\_sequences=True), input\_shape=sample\_input\_shape))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100, return\_sequences=True)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Dense(50, activation='relu'))  
model.add(Dropout(0.3))  
model.add(Dense(forecast\_horizon)) # Assuming your output size is 12  
optimizer = tf.keras.optimizers.Adam(learning\_rate=LR)  
model.compile(optimizer=optimizer, loss='mean\_squared\_error', metrics=['mse', 'mae'])  
  
# Model Training  
history = model.fit(X\_train, Y\_train, epochs=Epoch, batch\_size=32, validation\_data=(X\_val, Y\_val), verbose=1)  
  
# After training the model  
model.save('RNNLSTMV1HourForecast6.h5')

### Epoc 250 and LR 0.0005

A graph with numbers and lines

Description automatically generated

A green line graph with white text

Description automatically generatedA green line graph with white text

Description automatically generated

A green line graph with white text

Description automatically generatedA green line graph with white text

Description automatically generated

A green line graph with white text

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Description automatically generated

# 12h Forecast

## Model 1

model = Sequential()  
model.add(LSTM(50, return\_sequences=True, input\_shape=sample\_input\_shape))  
model.add(Dropout(0.2))  
model.add(LSTM(50))  
model.add(Dropout(0.2))  
model.add(Dense(forecast\_horizon))

### Epoc 250 and LR 0.0005

A graph of a graph

Description automatically generated with medium confidence

A graph with different colored lines

Description automatically generatedA graph with lines and numbers

Description automatically generated with medium confidence

A graph showing a line

Description automatically generated with medium confidenceA graph with green and red lines

Description automatically generated

A graph with green line and red line

Description automatically generatedA graph with green and red lines

Description automatically generated

## Model 2

model = Sequential()  
model.add(Bidirectional(LSTM(100, return\_sequences=True), input\_shape=sample\_input\_shape))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100, return\_sequences=True)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Dense(50, activation='relu'))  
model.add(Dropout(0.3))  
model.add(Dense(forecast\_horizon)) # Assuming your output size is 12  
optimizer = tf.keras.optimizers.Adam(learning\_rate=LR)  
model.compile(optimizer=optimizer, loss='mean\_squared\_error', metrics=['mse', 'mae'])  
  
# Model Training  
history = model.fit(X\_train, Y\_train, epochs=Epoch, batch\_size=32, validation\_data=(X\_val, Y\_val), verbose=1)  
  
# After training the model  
model.save('RNNLSTMV1HourForecast6.h5')

### Epoc 250 and LR 0.0005

A graph of a graph

Description automatically generated with medium confidence

A graph with different colored lines

Description automatically generated A graph with lines and points

Description automatically generated with medium confidence

A graph showing a line

Description automatically generated with medium confidence A graph with green lines and red lines

Description automatically generated

A graph with a line and a line

Description automatically generated with medium confidence A graph with different colored lines

Description automatically generated

# 24h Forecast

## Model 1

model = Sequential()  
model.add(LSTM(50, return\_sequences=True, input\_shape=sample\_input\_shape))  
model.add(Dropout(0.2))  
model.add(LSTM(50))  
model.add(Dropout(0.2))  
model.add(Dense(forecast\_horizon))

### Epoc 250 and LR 0.0005

A graph of a graph

Description automatically generated with medium confidence

A graph showing different colored lines

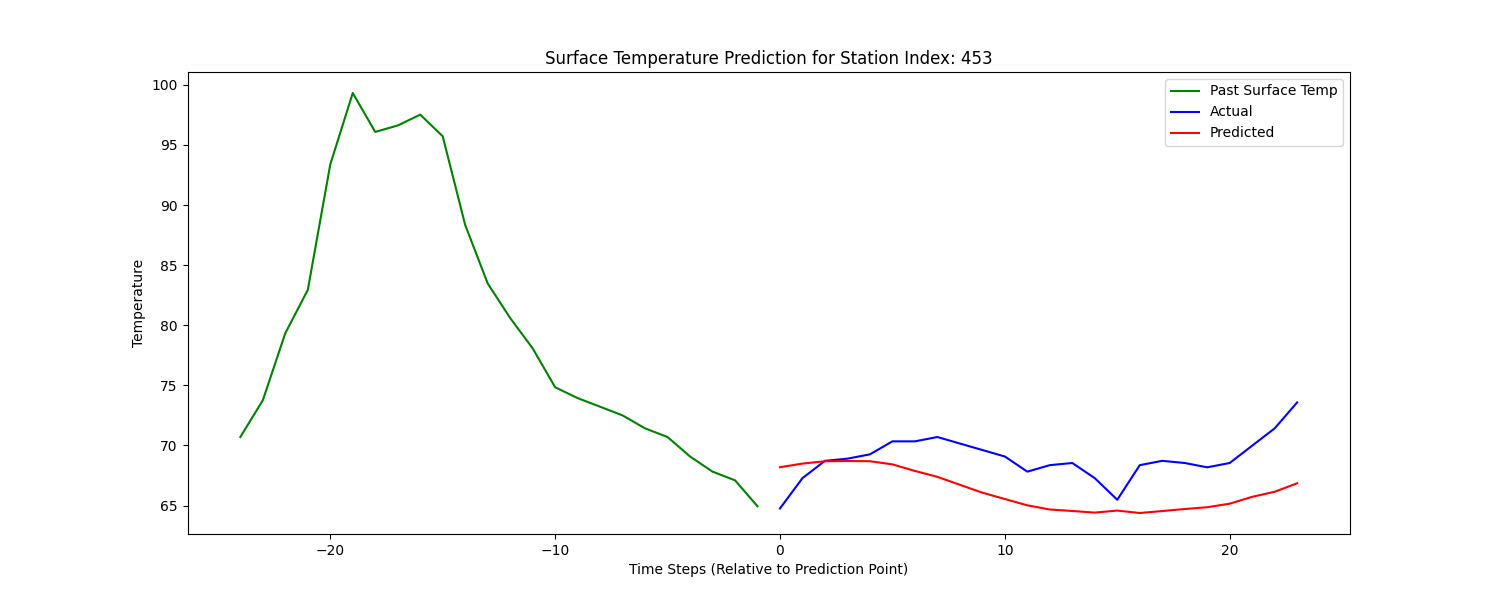
Description automatically generated A graph of a graph

Description automatically generated with medium confidence

A graph with lines and a line in the middle

Description automatically generated with medium confidence A graph showing the value of a stock market

Description automatically generated with medium confidence

 A graph of a graph

Description automatically generated with medium confidence

## Model 2

model = Sequential()  
model.add(Bidirectional(LSTM(100, return\_sequences=True), input\_shape=sample\_input\_shape))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100, return\_sequences=True)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Bidirectional(LSTM(100)))  
model.add(Dropout(0.3))  
model.add(BatchNormalization())  
model.add(Dense(50, activation='relu'))  
model.add(Dropout(0.3))  
model.add(Dense(forecast\_horizon)) # Assuming your output size is 12  
optimizer = tf.keras.optimizers.Adam(learning\_rate=LR)  
model.compile(optimizer=optimizer, loss='mean\_squared\_error', metrics=['mse', 'mae'])  
  
# Model Training  
history = model.fit(X\_train, Y\_train, epochs=Epoch, batch\_size=32, validation\_data=(X\_val, Y\_val), verbose=1)  
  
# After training the model  
model.save('RNNLSTMV1HourForecast6.h5')

### Epoc 250 and LR 0.0005

A graph with numbers and lines

Description automatically generated

A graph showing a line graph

Description automatically generated with medium confidence A graph of a graph

Description automatically generated with medium confidence  
A graph showing a line of a graph

Description automatically generated with medium confidence A graph showing the growth of the stock market

Description automatically generated with medium confidence

A graph with lines and numbers

Description automatically generated with medium confidence

# Model evaluation:

Training model: Simple LSTM

Epoch 1/100

165/165 [==============================] - 4s 13ms/step - loss: 4592.1411 - mse: 4592.1411 - mae: 60.4380 - val\_loss: 4470.7998 - val\_mse: 4470.7998 - val\_mae: 59.3097

Epoch 2/100

165/165 [==============================] - 2s 10ms/step - loss: 4465.6079 - mse: 4465.6079 - mae: 59.3964 - val\_loss: 4349.3413 - val\_mse: 4349.3413 - val\_mae: 58.2881

Epoch 3/100

165/165 [==============================] - 2s 10ms/step - loss: 4344.6279 - mse: 4344.6279 - mae: 58.3823 - val\_loss: 4231.3330 - val\_mse: 4231.3330 - val\_mae: 57.2797

Epoch 4/100

165/165 [==============================] - 2s 10ms/step - loss: 4219.3262 - mse: 4219.3262 - mae: 57.3177 - val\_loss: 4106.1421 - val\_mse: 4106.1421 - val\_mae: 56.1916

Epoch 5/100

165/165 [==============================] - 2s 10ms/step - loss: 4100.0986 - mse: 4100.0986 - mae: 56.2821 - val\_loss: 3990.8752 - val\_mse: 3990.8752 - val\_mae: 55.1729

Epoch 6/100

165/165 [==============================] - 2s 10ms/step - loss: 3985.5239 - mse: 3985.5239 - mae: 55.2727 - val\_loss: 3879.4341 - val\_mse: 3879.4341 - val\_mae: 54.1721

Epoch 7/100

165/165 [==============================] - 2s 10ms/step - loss: 3874.2578 - mse: 3874.2578 - mae: 54.2795 - val\_loss: 3770.7361 - val\_mse: 3770.7361 - val\_mae: 53.1808

Epoch 8/100

165/165 [==============================] - 2s 10ms/step - loss: 3763.7939 - mse: 3763.7939 - mae: 53.2784 - val\_loss: 3653.9360 - val\_mse: 3653.9360 - val\_mae: 52.0973

Epoch 9/100

165/165 [==============================] - 2s 9ms/step - loss: 3640.6030 - mse: 3640.6030 - mae: 52.1380 - val\_loss: 3535.5437 - val\_mse: 3535.5437 - val\_mae: 50.9811

Epoch 10/100

165/165 [==============================] - 2s 10ms/step - loss: 3526.0747 - mse: 3526.0747 - mae: 51.0611 - val\_loss: 3425.7244 - val\_mse: 3425.7244 - val\_mae: 49.9315

Epoch 11/100

165/165 [==============================] - 2s 10ms/step - loss: 3417.7000 - mse: 3417.7000 - mae: 50.0307 - val\_loss: 3321.1191 - val\_mse: 3321.1191 - val\_mae: 48.9182

Epoch 12/100

165/165 [==============================] - 2s 10ms/step - loss: 3313.5210 - mse: 3313.5210 - mae: 49.0282 - val\_loss: 3220.2046 - val\_mse: 3220.2046 - val\_mae: 47.9275

Epoch 13/100

165/165 [==============================] - 2s 10ms/step - loss: 3212.8394 - mse: 3212.8394 - mae: 48.0480 - val\_loss: 3122.4175 - val\_mse: 3122.4175 - val\_mae: 46.9543

Epoch 14/100

165/165 [==============================] - 2s 9ms/step - loss: 3115.3931 - mse: 3115.3931 - mae: 47.0836 - val\_loss: 3027.6851 - val\_mse: 3027.6851 - val\_mae: 45.9998

Epoch 15/100

165/165 [==============================] - 2s 10ms/step - loss: 3020.9529 - mse: 3020.9529 - mae: 46.1395 - val\_loss: 2935.9614 - val\_mse: 2935.9614 - val\_mae: 45.0651

Epoch 16/100

165/165 [==============================] - 2s 10ms/step - loss: 2929.3022 - mse: 2929.3022 - mae: 45.2096 - val\_loss: 2847.0024 - val\_mse: 2847.0024 - val\_mae: 44.1498

Epoch 17/100

165/165 [==============================] - 2s 11ms/step - loss: 2840.3943 - mse: 2840.3943 - mae: 44.2962 - val\_loss: 2760.5046 - val\_mse: 2760.5046 - val\_mae: 43.2522

Epoch 18/100

165/165 [==============================] - 2s 10ms/step - loss: 2754.1023 - mse: 2754.1023 - mae: 43.4127 - val\_loss: 2676.6904 - val\_mse: 2676.6904 - val\_mae: 42.3757

Epoch 19/100

165/165 [==============================] - 2s 10ms/step - loss: 2670.3462 - mse: 2670.3462 - mae: 42.5442 - val\_loss: 2595.4094 - val\_mse: 2595.4094 - val\_mae: 41.5224

Epoch 20/100

165/165 [==============================] - 2s 10ms/step - loss: 2589.0671 - mse: 2589.0671 - mae: 41.7005 - val\_loss: 2516.4702 - val\_mse: 2516.4702 - val\_mae: 40.6934

Epoch 21/100

165/165 [==============================] - 2s 10ms/step - loss: 2510.1477 - mse: 2510.1477 - mae: 40.8846 - val\_loss: 2439.9805 - val\_mse: 2439.9805 - val\_mae: 39.8898

Epoch 22/100

165/165 [==============================] - 2s 10ms/step - loss: 2433.6042 - mse: 2433.6042 - mae: 40.0841 - val\_loss: 2365.7214 - val\_mse: 2365.7214 - val\_mae: 39.1113

Epoch 23/100

165/165 [==============================] - 2s 10ms/step - loss: 2359.3989 - mse: 2359.3989 - mae: 39.3145 - val\_loss: 2293.8872 - val\_mse: 2293.8872 - val\_mae: 38.3663

Epoch 24/100

165/165 [==============================] - 2s 10ms/step - loss: 2287.5115 - mse: 2287.5115 - mae: 38.5740 - val\_loss: 2224.2649 - val\_mse: 2224.2649 - val\_mae: 37.6560

Epoch 25/100

165/165 [==============================] - 2s 10ms/step - loss: 2217.8945 - mse: 2217.8945 - mae: 37.8704 - val\_loss: 2157.0283 - val\_mse: 2157.0283 - val\_mae: 36.9821

Epoch 26/100

165/165 [==============================] - 2s 10ms/step - loss: 2148.7366 - mse: 2148.7366 - mae: 37.1351 - val\_loss: 2089.0762 - val\_mse: 2089.0762 - val\_mae: 36.2356

Epoch 27/100

165/165 [==============================] - 2s 11ms/step - loss: 2082.3101 - mse: 2082.3101 - mae: 36.4516 - val\_loss: 2025.4147 - val\_mse: 2025.4147 - val\_mae: 35.5979

Epoch 28/100

165/165 [==============================] - 2s 10ms/step - loss: 2018.4292 - mse: 2018.4292 - mae: 35.8185 - val\_loss: 1963.5918 - val\_mse: 1963.5918 - val\_mae: 34.9936

Epoch 29/100

165/165 [==============================] - 2s 10ms/step - loss: 1956.6027 - mse: 1956.6027 - mae: 35.2077 - val\_loss: 1903.8069 - val\_mse: 1903.8069 - val\_mae: 34.4072

Epoch 30/100

165/165 [==============================] - 2s 10ms/step - loss: 1896.7728 - mse: 1896.7728 - mae: 34.6330 - val\_loss: 1845.9636 - val\_mse: 1845.9636 - val\_mae: 33.8574

Epoch 31/100

165/165 [==============================] - 2s 10ms/step - loss: 1838.8500 - mse: 1838.8500 - mae: 34.0773 - val\_loss: 1790.1664 - val\_mse: 1790.1664 - val\_mae: 33.3419

Epoch 32/100

165/165 [==============================] - 2s 10ms/step - loss: 1782.9585 - mse: 1782.9585 - mae: 33.5663 - val\_loss: 1736.2792 - val\_mse: 1736.2792 - val\_mae: 32.8692

Epoch 33/100

165/165 [==============================] - 2s 10ms/step - loss: 1728.9828 - mse: 1728.9828 - mae: 33.0749 - val\_loss: 1684.4232 - val\_mse: 1684.4232 - val\_mae: 32.4042

Epoch 34/100

165/165 [==============================] - 2s 10ms/step - loss: 1676.9980 - mse: 1676.9980 - mae: 32.6135 - val\_loss: 1634.3497 - val\_mse: 1634.3497 - val\_mae: 32.0106

Epoch 35/100

165/165 [==============================] - 2s 10ms/step - loss: 1626.8157 - mse: 1626.8157 - mae: 32.1744 - val\_loss: 1585.7357 - val\_mse: 1585.7357 - val\_mae: 31.5661

Epoch 36/100

165/165 [==============================] - 2s 9ms/step - loss: 1577.6458 - mse: 1577.6458 - mae: 31.7281 - val\_loss: 1537.8606 - val\_mse: 1537.8606 - val\_mae: 31.1315

Epoch 37/100

165/165 [==============================] - 2s 10ms/step - loss: 1529.6504 - mse: 1529.6504 - mae: 31.2694 - val\_loss: 1492.1333 - val\_mse: 1492.1333 - val\_mae: 30.7217

Epoch 38/100

165/165 [==============================] - 2s 10ms/step - loss: 1483.8080 - mse: 1483.8080 - mae: 30.8590 - val\_loss: 1448.0485 - val\_mse: 1448.0485 - val\_mae: 30.3571

Epoch 39/100

165/165 [==============================] - 2s 10ms/step - loss: 1439.6035 - mse: 1439.6035 - mae: 30.4510 - val\_loss: 1405.6306 - val\_mse: 1405.6306 - val\_mae: 29.9752

Epoch 40/100

165/165 [==============================] - 2s 10ms/step - loss: 1397.1346 - mse: 1397.1346 - mae: 30.0678 - val\_loss: 1364.6272 - val\_mse: 1364.6272 - val\_mae: 29.6069

Epoch 41/100

165/165 [==============================] - 2s 11ms/step - loss: 1356.2618 - mse: 1356.2618 - mae: 29.6870 - val\_loss: 1325.6218 - val\_mse: 1325.6218 - val\_mae: 29.2661

Epoch 42/100

165/165 [==============================] - 2s 10ms/step - loss: 1317.1986 - mse: 1317.1986 - mae: 29.3320 - val\_loss: 1288.3806 - val\_mse: 1288.3806 - val\_mae: 28.9409

Epoch 43/100

165/165 [==============================] - 2s 11ms/step - loss: 1279.6116 - mse: 1279.6116 - mae: 28.9803 - val\_loss: 1252.6746 - val\_mse: 1252.6746 - val\_mae: 28.6154

Epoch 44/100

165/165 [==============================] - 2s 11ms/step - loss: 1243.6621 - mse: 1243.6621 - mae: 28.6434 - val\_loss: 1218.3617 - val\_mse: 1218.3617 - val\_mae: 28.3200

Epoch 45/100

165/165 [==============================] - 2s 11ms/step - loss: 1209.4241 - mse: 1209.4241 - mae: 28.3221 - val\_loss: 1185.7098 - val\_mse: 1185.7098 - val\_mae: 28.0268

Epoch 46/100

165/165 [==============================] - 2s 11ms/step - loss: 1176.4397 - mse: 1176.4397 - mae: 28.0010 - val\_loss: 1154.8787 - val\_mse: 1154.8787 - val\_mae: 27.7617

Epoch 47/100

165/165 [==============================] - 2s 10ms/step - loss: 1145.7976 - mse: 1145.7976 - mae: 27.7238 - val\_loss: 1126.2006 - val\_mse: 1126.2006 - val\_mae: 27.4983

Epoch 48/100

165/165 [==============================] - 2s 10ms/step - loss: 1115.8473 - mse: 1115.8473 - mae: 27.4334 - val\_loss: 1097.1382 - val\_mse: 1097.1382 - val\_mae: 27.2402

Epoch 49/100

165/165 [==============================] - 2s 10ms/step - loss: 1087.8556 - mse: 1087.8556 - mae: 27.1701 - val\_loss: 1070.7498 - val\_mse: 1070.7498 - val\_mae: 27.0106

Epoch 50/100

165/165 [==============================] - 2s 10ms/step - loss: 1061.2491 - mse: 1061.2491 - mae: 26.9126 - val\_loss: 1045.6748 - val\_mse: 1045.6748 - val\_mae: 26.7808

Epoch 51/100

165/165 [==============================] - 2s 10ms/step - loss: 1036.1317 - mse: 1036.1317 - mae: 26.6651 - val\_loss: 1023.1859 - val\_mse: 1023.1859 - val\_mae: 26.6053

Epoch 52/100

165/165 [==============================] - 2s 10ms/step - loss: 1012.4225 - mse: 1012.4225 - mae: 26.4295 - val\_loss: 999.8409 - val\_mse: 999.8409 - val\_mae: 26.3496

Epoch 53/100

165/165 [==============================] - 2s 10ms/step - loss: 990.2112 - mse: 990.2112 - mae: 26.2084 - val\_loss: 979.8486 - val\_mse: 979.8486 - val\_mae: 26.1757

Epoch 54/100

165/165 [==============================] - 2s 10ms/step - loss: 967.5842 - mse: 967.5842 - mae: 25.9487 - val\_loss: 929.5538 - val\_mse: 929.5538 - val\_mae: 25.2201

Epoch 55/100

165/165 [==============================] - 2s 10ms/step - loss: 914.9483 - mse: 914.9483 - mae: 24.9410 - val\_loss: 895.9838 - val\_mse: 895.9838 - val\_mae: 24.6811

Epoch 56/100

165/165 [==============================] - 2s 10ms/step - loss: 869.7249 - mse: 869.7249 - mae: 24.0382 - val\_loss: 841.4947 - val\_mse: 841.4947 - val\_mae: 23.5351

Epoch 57/100

165/165 [==============================] - 2s 10ms/step - loss: 828.9132 - mse: 828.9132 - mae: 23.3086 - val\_loss: 812.8227 - val\_mse: 812.8227 - val\_mae: 23.1533

Epoch 58/100

165/165 [==============================] - 2s 10ms/step - loss: 801.7086 - mse: 801.7086 - mae: 22.9516 - val\_loss: 787.4327 - val\_mse: 787.4327 - val\_mae: 22.7938

Epoch 59/100

165/165 [==============================] - 2s 10ms/step - loss: 777.4089 - mse: 777.4089 - mae: 22.6280 - val\_loss: 764.7045 - val\_mse: 764.7045 - val\_mae: 22.5138

Epoch 60/100

165/165 [==============================] - 2s 9ms/step - loss: 755.0782 - mse: 755.0782 - mae: 22.3473 - val\_loss: 745.2545 - val\_mse: 745.2545 - val\_mae: 22.2504

Epoch 61/100

165/165 [==============================] - 2s 10ms/step - loss: 734.6807 - mse: 734.6807 - mae: 22.1015 - val\_loss: 725.3399 - val\_mse: 725.3399 - val\_mae: 22.0428

Epoch 62/100

165/165 [==============================] - 2s 10ms/step - loss: 715.5732 - mse: 715.5732 - mae: 21.8503 - val\_loss: 706.7448 - val\_mse: 706.7448 - val\_mae: 21.7760

Epoch 63/100

165/165 [==============================] - 2s 10ms/step - loss: 698.1542 - mse: 698.1542 - mae: 21.6311 - val\_loss: 690.7560 - val\_mse: 690.7560 - val\_mae: 21.5995

Epoch 64/100

165/165 [==============================] - 2s 10ms/step - loss: 681.5343 - mse: 681.5343 - mae: 21.4162 - val\_loss: 674.3293 - val\_mse: 674.3293 - val\_mae: 21.3743

Epoch 65/100

165/165 [==============================] - 2s 10ms/step - loss: 666.5627 - mse: 666.5627 - mae: 21.2291 - val\_loss: 662.9765 - val\_mse: 662.9765 - val\_mae: 21.2442

Epoch 66/100

165/165 [==============================] - 2s 11ms/step - loss: 652.4030 - mse: 652.4030 - mae: 21.0427 - val\_loss: 647.5227 - val\_mse: 647.5227 - val\_mae: 21.0686

Epoch 67/100

165/165 [==============================] - 2s 10ms/step - loss: 638.5666 - mse: 638.5666 - mae: 20.8502 - val\_loss: 635.2073 - val\_mse: 635.2073 - val\_mae: 20.8889

Epoch 68/100

165/165 [==============================] - 2s 10ms/step - loss: 626.4128 - mse: 626.4128 - mae: 20.6957 - val\_loss: 622.8611 - val\_mse: 622.8611 - val\_mae: 20.7148

Epoch 69/100

165/165 [==============================] - 2s 10ms/step - loss: 614.7698 - mse: 614.7698 - mae: 20.5362 - val\_loss: 611.3452 - val\_mse: 611.3452 - val\_mae: 20.5528

Epoch 70/100

165/165 [==============================] - 2s 10ms/step - loss: 603.6091 - mse: 603.6091 - mae: 20.3732 - val\_loss: 601.4798 - val\_mse: 601.4798 - val\_mae: 20.4436

Epoch 71/100

165/165 [==============================] - 2s 10ms/step - loss: 594.4153 - mse: 594.4153 - mae: 20.2632 - val\_loss: 591.7657 - val\_mse: 591.7657 - val\_mae: 20.3184

Epoch 72/100

165/165 [==============================] - 2s 10ms/step - loss: 584.2673 - mse: 584.2673 - mae: 20.1088 - val\_loss: 583.8986 - val\_mse: 583.8986 - val\_mae: 20.2204

Epoch 73/100

165/165 [==============================] - 2s 10ms/step - loss: 573.5317 - mse: 573.5317 - mae: 19.9425 - val\_loss: 534.2167 - val\_mse: 534.2167 - val\_mae: 19.0760

Epoch 74/100

165/165 [==============================] - 2s 10ms/step - loss: 525.5040 - mse: 525.5040 - mae: 18.8399 - val\_loss: 519.3488 - val\_mse: 519.3488 - val\_mae: 18.7995

Epoch 75/100

165/165 [==============================] - 2s 10ms/step - loss: 513.4216 - mse: 513.4216 - mae: 18.6494 - val\_loss: 511.3066 - val\_mse: 511.3066 - val\_mae: 18.6951

Epoch 76/100

165/165 [==============================] - 2s 10ms/step - loss: 504.1172 - mse: 504.1172 - mae: 18.5182 - val\_loss: 500.1160 - val\_mse: 500.1160 - val\_mae: 18.5064

Epoch 77/100

165/165 [==============================] - 2s 9ms/step - loss: 495.1458 - mse: 495.1458 - mae: 18.3929 - val\_loss: 494.0966 - val\_mse: 494.0966 - val\_mae: 18.4996

Epoch 78/100

165/165 [==============================] - 2s 10ms/step - loss: 487.6120 - mse: 487.6120 - mae: 18.2942 - val\_loss: 486.9161 - val\_mse: 486.9161 - val\_mae: 18.4075

Epoch 79/100

165/165 [==============================] - 2s 10ms/step - loss: 480.0920 - mse: 480.0920 - mae: 18.1931 - val\_loss: 477.4335 - val\_mse: 477.4335 - val\_mae: 18.2384

Epoch 80/100

165/165 [==============================] - 2s 11ms/step - loss: 473.7633 - mse: 473.7633 - mae: 18.1144 - val\_loss: 473.2341 - val\_mse: 473.2341 - val\_mae: 18.2249

Epoch 81/100

165/165 [==============================] - 2s 12ms/step - loss: 466.4583 - mse: 466.4583 - mae: 18.0075 - val\_loss: 463.8477 - val\_mse: 463.8477 - val\_mae: 17.9980

Epoch 82/100

165/165 [==============================] - 2s 12ms/step - loss: 459.4284 - mse: 459.4284 - mae: 17.8713 - val\_loss: 458.5269 - val\_mse: 458.5269 - val\_mae: 17.9807

Epoch 83/100

165/165 [==============================] - 2s 12ms/step - loss: 453.4572 - mse: 453.4572 - mae: 17.7842 - val\_loss: 452.9454 - val\_mse: 452.9454 - val\_mae: 17.8845

Epoch 84/100

165/165 [==============================] - 2s 12ms/step - loss: 447.2635 - mse: 447.2635 - mae: 17.6719 - val\_loss: 447.8715 - val\_mse: 447.8715 - val\_mae: 17.8206

Epoch 85/100

165/165 [==============================] - 2s 12ms/step - loss: 441.7424 - mse: 441.7424 - mae: 17.5790 - val\_loss: 444.7513 - val\_mse: 444.7513 - val\_mae: 17.8140

Epoch 86/100

165/165 [==============================] - 2s 12ms/step - loss: 435.9882 - mse: 435.9882 - mae: 17.4767 - val\_loss: 438.3773 - val\_mse: 438.3773 - val\_mae: 17.6490

Epoch 87/100

165/165 [==============================] - 2s 12ms/step - loss: 430.6532 - mse: 430.6532 - mae: 17.3789 - val\_loss: 430.5327 - val\_mse: 430.5327 - val\_mae: 17.5079

Epoch 88/100

165/165 [==============================] - 2s 11ms/step - loss: 425.2657 - mse: 425.2657 - mae: 17.2909 - val\_loss: 427.0403 - val\_mse: 427.0403 - val\_mae: 17.4598

Epoch 89/100

165/165 [==============================] - 2s 12ms/step - loss: 421.3262 - mse: 421.3262 - mae: 17.2259 - val\_loss: 422.5401 - val\_mse: 422.5401 - val\_mae: 17.3869

Epoch 90/100

165/165 [==============================] - 2s 11ms/step - loss: 416.1064 - mse: 416.1064 - mae: 17.1182 - val\_loss: 416.4507 - val\_mse: 416.4507 - val\_mae: 17.1776

Epoch 91/100

165/165 [==============================] - 2s 12ms/step - loss: 410.7934 - mse: 410.7934 - mae: 17.0078 - val\_loss: 411.5436 - val\_mse: 411.5436 - val\_mae: 17.1364

Epoch 92/100

165/165 [==============================] - 2s 12ms/step - loss: 406.6568 - mse: 406.6568 - mae: 16.9280 - val\_loss: 407.1931 - val\_mse: 407.1931 - val\_mae: 17.0497

Epoch 93/100

165/165 [==============================] - 2s 12ms/step - loss: 400.9788 - mse: 400.9788 - mae: 16.8019 - val\_loss: 401.9468 - val\_mse: 401.9468 - val\_mae: 16.9300

Epoch 94/100

165/165 [==============================] - 2s 11ms/step - loss: 397.3735 - mse: 397.3735 - mae: 16.7462 - val\_loss: 397.4901 - val\_mse: 397.4901 - val\_mae: 16.8537

Epoch 95/100

165/165 [==============================] - 2s 11ms/step - loss: 392.9272 - mse: 392.9272 - mae: 16.6481 - val\_loss: 396.6624 - val\_mse: 396.6624 - val\_mae: 16.8222

Epoch 96/100

165/165 [==============================] - 2s 11ms/step - loss: 388.0768 - mse: 388.0768 - mae: 16.5402 - val\_loss: 388.8709 - val\_mse: 388.8709 - val\_mae: 16.6476

Epoch 97/100

165/165 [==============================] - 2s 11ms/step - loss: 384.7502 - mse: 384.7502 - mae: 16.4814 - val\_loss: 387.7086 - val\_mse: 387.7086 - val\_mae: 16.6470

Epoch 98/100

165/165 [==============================] - 2s 11ms/step - loss: 380.1862 - mse: 380.1862 - mae: 16.3651 - val\_loss: 378.8049 - val\_mse: 378.8049 - val\_mae: 16.4208

Epoch 99/100

165/165 [==============================] - 2s 10ms/step - loss: 375.0005 - mse: 375.0005 - mae: 16.2495 - val\_loss: 374.7692 - val\_mse: 374.7692 - val\_mae: 16.3522

Epoch 100/100

165/165 [==============================] - 2s 10ms/step - loss: 372.6638 - mse: 372.6638 - mae: 16.2227 - val\_loss: 370.9192 - val\_mse: 370.9192 - val\_mae: 16.2624

Training model: Stacked LSTM

Epoch 1/100

165/165 [==============================] - 7s 24ms/step - loss: 4348.3945 - mse: 4348.3945 - mae: 58.3828 - val\_loss: 3957.7937 - val\_mse: 3957.7937 - val\_mae: 54.8683

Epoch 2/100

165/165 [==============================] - 3s 19ms/step - loss: 3750.9353 - mse: 3750.9353 - mae: 53.1471 - val\_loss: 3468.3342 - val\_mse: 3468.3342 - val\_mae: 50.3324

Epoch 3/100

165/165 [==============================] - 3s 19ms/step - loss: 3307.5662 - mse: 3307.5662 - mae: 48.9638 - val\_loss: 3069.8508 - val\_mse: 3069.8508 - val\_mae: 46.4191

Epoch 4/100

165/165 [==============================] - 3s 19ms/step - loss: 2935.2449 - mse: 2935.2449 - mae: 45.2688 - val\_loss: 2729.8486 - val\_mse: 2729.8486 - val\_mae: 42.9283

Epoch 5/100

165/165 [==============================] - 3s 20ms/step - loss: 2613.8870 - mse: 2613.8870 - mae: 41.9596 - val\_loss: 2435.8359 - val\_mse: 2435.8359 - val\_mae: 39.8468

Epoch 6/100

165/165 [==============================] - 3s 20ms/step - loss: 2335.2078 - mse: 2335.2078 - mae: 39.0792 - val\_loss: 2180.3936 - val\_mse: 2180.3936 - val\_mae: 37.2168

Epoch 7/100

165/165 [==============================] - 3s 18ms/step - loss: 2093.7200 - mse: 2093.7200 - mae: 36.6522 - val\_loss: 1960.8090 - val\_mse: 1960.8090 - val\_mae: 35.0832

Epoch 8/100

165/165 [==============================] - 3s 18ms/step - loss: 1885.4451 - mse: 1885.4451 - mae: 34.6873 - val\_loss: 1770.8984 - val\_mse: 1770.8984 - val\_mae: 33.3957

Epoch 9/100

165/165 [==============================] - 3s 19ms/step - loss: 1706.9452 - mse: 1706.9452 - mae: 33.1266 - val\_loss: 1611.0079 - val\_mse: 1611.0079 - val\_mae: 32.1298

Epoch 10/100

165/165 [==============================] - 3s 19ms/step - loss: 1555.4739 - mse: 1555.4739 - mae: 31.9084 - val\_loss: 1475.2594 - val\_mse: 1475.2594 - val\_mae: 31.0954

Epoch 11/100

165/165 [==============================] - 3s 18ms/step - loss: 1427.8513 - mse: 1427.8513 - mae: 30.8678 - val\_loss: 1361.6096 - val\_mse: 1361.6096 - val\_mae: 30.2296

Epoch 12/100

165/165 [==============================] - 3s 18ms/step - loss: 1321.5228 - mse: 1321.5228 - mae: 30.0207 - val\_loss: 1268.2971 - val\_mse: 1268.2971 - val\_mae: 29.5222

Epoch 13/100

165/165 [==============================] - 3s 19ms/step - loss: 1234.1217 - mse: 1234.1217 - mae: 29.3006 - val\_loss: 1192.3761 - val\_mse: 1192.3761 - val\_mae: 28.9467

Epoch 14/100

165/165 [==============================] - 3s 19ms/step - loss: 1163.1031 - mse: 1163.1031 - mae: 28.7139 - val\_loss: 1131.6354 - val\_mse: 1131.6354 - val\_mae: 28.4835

Epoch 15/100

165/165 [==============================] - 3s 19ms/step - loss: 1106.2572 - mse: 1106.2572 - mae: 28.2270 - val\_loss: 1083.7341 - val\_mse: 1083.7341 - val\_mae: 28.1167

Epoch 16/100

165/165 [==============================] - 3s 19ms/step - loss: 1061.6062 - mse: 1061.6062 - mae: 27.8384 - val\_loss: 1046.5331 - val\_mse: 1046.5331 - val\_mae: 27.8197

Epoch 17/100

165/165 [==============================] - 3s 18ms/step - loss: 1027.4271 - mse: 1027.4271 - mae: 27.5269 - val\_loss: 1018.7126 - val\_mse: 1018.7126 - val\_mae: 27.5911

Epoch 18/100

165/165 [==============================] - 3s 19ms/step - loss: 1001.6899 - mse: 1001.6899 - mae: 27.2848 - val\_loss: 998.4647 - val\_mse: 998.4647 - val\_mae: 27.4189

Epoch 19/100

165/165 [==============================] - 3s 19ms/step - loss: 982.8707 - mse: 982.8707 - mae: 27.1053 - val\_loss: 984.1743 - val\_mse: 984.1743 - val\_mae: 27.2919

Epoch 20/100

165/165 [==============================] - 3s 19ms/step - loss: 969.1002 - mse: 969.1002 - mae: 26.9586 - val\_loss: 974.4378 - val\_mse: 974.4378 - val\_mae: 27.2007

Epoch 21/100

165/165 [==============================] - 3s 18ms/step - loss: 960.2595 - mse: 960.2595 - mae: 26.8642 - val\_loss: 967.9368 - val\_mse: 967.9368 - val\_mae: 27.1347

Epoch 22/100

165/165 [==============================] - 3s 18ms/step - loss: 954.1915 - mse: 954.1915 - mae: 26.7938 - val\_loss: 963.8460 - val\_mse: 963.8460 - val\_mae: 27.0894

Epoch 23/100

165/165 [==============================] - 3s 19ms/step - loss: 950.2982 - mse: 950.2982 - mae: 26.7439 - val\_loss: 961.7518 - val\_mse: 961.7518 - val\_mae: 27.0636

Epoch 24/100

165/165 [==============================] - 3s 19ms/step - loss: 947.2006 - mse: 947.2006 - mae: 26.6963 - val\_loss: 951.1673 - val\_mse: 951.1673 - val\_mae: 26.9029

Epoch 25/100

165/165 [==============================] - 3s 19ms/step - loss: 647.1302 - mse: 647.1302 - mae: 20.1251 - val\_loss: 530.5076 - val\_mse: 530.5076 - val\_mae: 17.2909

Epoch 26/100

165/165 [==============================] - 3s 19ms/step - loss: 495.1290 - mse: 495.1290 - mae: 16.9827 - val\_loss: 450.6184 - val\_mse: 450.6184 - val\_mae: 16.0155

Epoch 27/100

165/165 [==============================] - 3s 19ms/step - loss: 427.4180 - mse: 427.4180 - mae: 15.8862 - val\_loss: 397.4871 - val\_mse: 397.4871 - val\_mae: 15.3098

Epoch 28/100

165/165 [==============================] - 3s 19ms/step - loss: 377.7130 - mse: 377.7130 - mae: 14.9671 - val\_loss: 407.1438 - val\_mse: 407.1438 - val\_mae: 15.6804

Epoch 29/100

165/165 [==============================] - 3s 19ms/step - loss: 359.7361 - mse: 359.7361 - mae: 14.8578 - val\_loss: 335.3203 - val\_mse: 335.3203 - val\_mae: 14.3390

Epoch 30/100

165/165 [==============================] - 3s 19ms/step - loss: 332.3407 - mse: 332.3407 - mae: 14.4233 - val\_loss: 327.0658 - val\_mse: 327.0658 - val\_mae: 14.4621

Epoch 31/100

165/165 [==============================] - 3s 20ms/step - loss: 310.5997 - mse: 310.5997 - mae: 14.0393 - val\_loss: 294.3292 - val\_mse: 294.3292 - val\_mae: 13.7054

Epoch 32/100

165/165 [==============================] - 3s 19ms/step - loss: 293.1909 - mse: 293.1909 - mae: 13.6600 - val\_loss: 276.4334 - val\_mse: 276.4334 - val\_mae: 13.2017

Epoch 33/100

165/165 [==============================] - 3s 18ms/step - loss: 274.8071 - mse: 274.8071 - mae: 13.2774 - val\_loss: 267.1411 - val\_mse: 267.1411 - val\_mae: 13.3439

Epoch 34/100

165/165 [==============================] - 3s 18ms/step - loss: 262.2027 - mse: 262.2027 - mae: 13.0240 - val\_loss: 254.0277 - val\_mse: 254.0277 - val\_mae: 12.6568

Epoch 35/100

165/165 [==============================] - 3s 19ms/step - loss: 252.7731 - mse: 252.7731 - mae: 12.7898 - val\_loss: 245.6543 - val\_mse: 245.6543 - val\_mae: 12.6133

Epoch 36/100

165/165 [==============================] - 3s 19ms/step - loss: 241.7845 - mse: 241.7845 - mae: 12.4830 - val\_loss: 239.0366 - val\_mse: 239.0366 - val\_mae: 12.5625

Epoch 37/100

165/165 [==============================] - 3s 18ms/step - loss: 235.3276 - mse: 235.3276 - mae: 12.3407 - val\_loss: 236.0786 - val\_mse: 236.0786 - val\_mae: 12.5598

Epoch 38/100

165/165 [==============================] - 3s 19ms/step - loss: 229.1271 - mse: 229.1271 - mae: 12.2147 - val\_loss: 223.4649 - val\_mse: 223.4649 - val\_mae: 12.1744

Epoch 39/100

165/165 [==============================] - 3s 18ms/step - loss: 224.4458 - mse: 224.4458 - mae: 12.0433 - val\_loss: 221.9362 - val\_mse: 221.9362 - val\_mae: 11.9741

Epoch 40/100

165/165 [==============================] - 3s 18ms/step - loss: 216.7512 - mse: 216.7512 - mae: 11.8573 - val\_loss: 210.9597 - val\_mse: 210.9597 - val\_mae: 11.6655

Epoch 41/100

165/165 [==============================] - 3s 18ms/step - loss: 213.2727 - mse: 213.2727 - mae: 11.7490 - val\_loss: 213.3862 - val\_mse: 213.3862 - val\_mae: 11.7841

Epoch 42/100

165/165 [==============================] - 3s 18ms/step - loss: 208.6476 - mse: 208.6476 - mae: 11.6264 - val\_loss: 200.5217 - val\_mse: 200.5217 - val\_mae: 11.2771

Epoch 43/100

165/165 [==============================] - 3s 19ms/step - loss: 202.1346 - mse: 202.1346 - mae: 11.3700 - val\_loss: 197.4378 - val\_mse: 197.4378 - val\_mae: 11.3610

Epoch 44/100

165/165 [==============================] - 3s 19ms/step - loss: 197.1998 - mse: 197.1998 - mae: 11.2260 - val\_loss: 198.9523 - val\_mse: 198.9523 - val\_mae: 11.3829

Epoch 45/100

165/165 [==============================] - 3s 19ms/step - loss: 198.1542 - mse: 198.1542 - mae: 11.2544 - val\_loss: 198.3424 - val\_mse: 198.3424 - val\_mae: 11.1991

Epoch 46/100

165/165 [==============================] - 3s 19ms/step - loss: 191.7385 - mse: 191.7385 - mae: 11.0382 - val\_loss: 218.9926 - val\_mse: 218.9926 - val\_mae: 11.8350

Epoch 47/100

165/165 [==============================] - 3s 18ms/step - loss: 189.9063 - mse: 189.9063 - mae: 10.9615 - val\_loss: 192.9079 - val\_mse: 192.9079 - val\_mae: 11.2958

Epoch 48/100

165/165 [==============================] - 3s 18ms/step - loss: 186.7097 - mse: 186.7097 - mae: 10.8329 - val\_loss: 194.3896 - val\_mse: 194.3896 - val\_mae: 10.8554

Epoch 49/100

165/165 [==============================] - 3s 19ms/step - loss: 185.5868 - mse: 185.5868 - mae: 10.7914 - val\_loss: 183.5870 - val\_mse: 183.5870 - val\_mae: 10.6207

Epoch 50/100

165/165 [==============================] - 3s 19ms/step - loss: 182.8562 - mse: 182.8562 - mae: 10.6641 - val\_loss: 183.0247 - val\_mse: 183.0247 - val\_mae: 10.8452

Epoch 51/100

165/165 [==============================] - 3s 18ms/step - loss: 179.2266 - mse: 179.2266 - mae: 10.5296 - val\_loss: 192.0119 - val\_mse: 192.0119 - val\_mae: 10.7049

Epoch 52/100

165/165 [==============================] - 3s 18ms/step - loss: 176.3316 - mse: 176.3316 - mae: 10.4239 - val\_loss: 176.8759 - val\_mse: 176.8759 - val\_mae: 10.4559

Epoch 53/100

165/165 [==============================] - 3s 18ms/step - loss: 175.9755 - mse: 175.9755 - mae: 10.4242 - val\_loss: 181.0077 - val\_mse: 181.0077 - val\_mae: 10.4846

Epoch 54/100

165/165 [==============================] - 3s 18ms/step - loss: 171.5127 - mse: 171.5127 - mae: 10.2680 - val\_loss: 169.4510 - val\_mse: 169.4510 - val\_mae: 10.0835

Epoch 55/100

165/165 [==============================] - 3s 19ms/step - loss: 171.5909 - mse: 171.5909 - mae: 10.2716 - val\_loss: 170.7785 - val\_mse: 170.7785 - val\_mae: 10.1971

Epoch 56/100

165/165 [==============================] - 3s 19ms/step - loss: 169.8955 - mse: 169.8955 - mae: 10.2006 - val\_loss: 168.5670 - val\_mse: 168.5670 - val\_mae: 10.1767

Epoch 57/100

165/165 [==============================] - 3s 19ms/step - loss: 163.9465 - mse: 163.9465 - mae: 10.0039 - val\_loss: 170.5368 - val\_mse: 170.5368 - val\_mae: 10.1062

Epoch 58/100

165/165 [==============================] - 3s 19ms/step - loss: 164.7478 - mse: 164.7478 - mae: 10.0298 - val\_loss: 190.7347 - val\_mse: 190.7347 - val\_mae: 10.4690

Epoch 59/100

165/165 [==============================] - 3s 19ms/step - loss: 161.6202 - mse: 161.6202 - mae: 9.9274 - val\_loss: 162.3436 - val\_mse: 162.3436 - val\_mae: 9.8670

Epoch 60/100

165/165 [==============================] - 3s 19ms/step - loss: 158.2898 - mse: 158.2898 - mae: 9.7875 - val\_loss: 163.6820 - val\_mse: 163.6820 - val\_mae: 9.8165

Epoch 61/100

165/165 [==============================] - 3s 19ms/step - loss: 156.9515 - mse: 156.9515 - mae: 9.7493 - val\_loss: 159.3942 - val\_mse: 159.3942 - val\_mae: 9.8324

Epoch 62/100

165/165 [==============================] - 3s 19ms/step - loss: 153.1277 - mse: 153.1277 - mae: 9.6068 - val\_loss: 155.7775 - val\_mse: 155.7775 - val\_mae: 9.6856

Epoch 63/100

165/165 [==============================] - 3s 18ms/step - loss: 153.0910 - mse: 153.0910 - mae: 9.6199 - val\_loss: 155.5297 - val\_mse: 155.5297 - val\_mae: 9.6091

Epoch 64/100

165/165 [==============================] - 3s 18ms/step - loss: 151.4668 - mse: 151.4668 - mae: 9.5388 - val\_loss: 151.4028 - val\_mse: 151.4028 - val\_mae: 9.3692

Epoch 65/100

165/165 [==============================] - 3s 19ms/step - loss: 148.9878 - mse: 148.9878 - mae: 9.4818 - val\_loss: 147.2333 - val\_mse: 147.2333 - val\_mae: 9.2990

Epoch 66/100

165/165 [==============================] - 3s 19ms/step - loss: 147.8607 - mse: 147.8607 - mae: 9.4456 - val\_loss: 149.4108 - val\_mse: 149.4108 - val\_mae: 9.5718

Epoch 67/100

165/165 [==============================] - 3s 19ms/step - loss: 144.8480 - mse: 144.8480 - mae: 9.3065 - val\_loss: 146.8482 - val\_mse: 146.8482 - val\_mae: 9.2929

Epoch 68/100

165/165 [==============================] - 3s 19ms/step - loss: 142.1185 - mse: 142.1185 - mae: 9.2256 - val\_loss: 142.8068 - val\_mse: 142.8068 - val\_mae: 9.1158

Epoch 69/100

165/165 [==============================] - 3s 19ms/step - loss: 141.4081 - mse: 141.4081 - mae: 9.1982 - val\_loss: 142.6034 - val\_mse: 142.6034 - val\_mae: 9.2366

Epoch 70/100

165/165 [==============================] - 3s 19ms/step - loss: 139.5010 - mse: 139.5010 - mae: 9.1578 - val\_loss: 145.4460 - val\_mse: 145.4460 - val\_mae: 9.2380

Epoch 71/100

165/165 [==============================] - 3s 19ms/step - loss: 137.5501 - mse: 137.5501 - mae: 9.0944 - val\_loss: 139.4375 - val\_mse: 139.4375 - val\_mae: 9.0354

Epoch 72/100

165/165 [==============================] - 3s 19ms/step - loss: 135.1744 - mse: 135.1744 - mae: 8.9916 - val\_loss: 155.8154 - val\_mse: 155.8154 - val\_mae: 9.6509

Epoch 73/100

165/165 [==============================] - 3s 19ms/step - loss: 133.6942 - mse: 133.6942 - mae: 8.9460 - val\_loss: 132.7726 - val\_mse: 132.7726 - val\_mae: 8.8412

Epoch 74/100

165/165 [==============================] - 3s 19ms/step - loss: 128.9201 - mse: 128.9201 - mae: 8.7551 - val\_loss: 131.8692 - val\_mse: 131.8692 - val\_mae: 8.7283

Epoch 75/100

165/165 [==============================] - 3s 19ms/step - loss: 128.0942 - mse: 128.0942 - mae: 8.7395 - val\_loss: 127.9106 - val\_mse: 127.9106 - val\_mae: 8.6029

Epoch 76/100

165/165 [==============================] - 3s 19ms/step - loss: 127.0356 - mse: 127.0356 - mae: 8.7058 - val\_loss: 126.4016 - val\_mse: 126.4016 - val\_mae: 8.5394

Epoch 77/100

165/165 [==============================] - 3s 19ms/step - loss: 123.3108 - mse: 123.3108 - mae: 8.5612 - val\_loss: 129.3851 - val\_mse: 129.3851 - val\_mae: 8.7106

Epoch 78/100

165/165 [==============================] - 3s 19ms/step - loss: 122.9873 - mse: 122.9873 - mae: 8.5724 - val\_loss: 128.1702 - val\_mse: 128.1702 - val\_mae: 8.6006

Epoch 79/100

165/165 [==============================] - 3s 19ms/step - loss: 119.7785 - mse: 119.7785 - mae: 8.4415 - val\_loss: 126.0660 - val\_mse: 126.0660 - val\_mae: 8.4371

Epoch 80/100

165/165 [==============================] - 3s 19ms/step - loss: 116.7004 - mse: 116.7004 - mae: 8.3198 - val\_loss: 127.4966 - val\_mse: 127.4966 - val\_mae: 8.7520

Epoch 81/100

165/165 [==============================] - 3s 18ms/step - loss: 117.9503 - mse: 117.9503 - mae: 8.3586 - val\_loss: 115.0780 - val\_mse: 115.0780 - val\_mae: 8.1262

Epoch 82/100

165/165 [==============================] - 3s 19ms/step - loss: 111.0216 - mse: 111.0216 - mae: 8.0994 - val\_loss: 114.0868 - val\_mse: 114.0868 - val\_mae: 8.0985

Epoch 83/100

165/165 [==============================] - 3s 18ms/step - loss: 107.9050 - mse: 107.9050 - mae: 7.9337 - val\_loss: 116.4240 - val\_mse: 116.4240 - val\_mae: 8.2181

Epoch 84/100

165/165 [==============================] - 3s 19ms/step - loss: 108.4354 - mse: 108.4354 - mae: 7.9870 - val\_loss: 106.9901 - val\_mse: 106.9901 - val\_mae: 7.7530

Epoch 85/100

165/165 [==============================] - 3s 19ms/step - loss: 106.6325 - mse: 106.6325 - mae: 7.9117 - val\_loss: 106.5703 - val\_mse: 106.5703 - val\_mae: 7.7413

Epoch 86/100

165/165 [==============================] - 3s 19ms/step - loss: 104.4708 - mse: 104.4708 - mae: 7.8093 - val\_loss: 106.0768 - val\_mse: 106.0768 - val\_mae: 7.7277

Epoch 87/100

165/165 [==============================] - 3s 19ms/step - loss: 102.5995 - mse: 102.5995 - mae: 7.7222 - val\_loss: 103.5388 - val\_mse: 103.5388 - val\_mae: 7.6146

Epoch 88/100

165/165 [==============================] - 3s 19ms/step - loss: 102.1885 - mse: 102.1885 - mae: 7.7104 - val\_loss: 105.9184 - val\_mse: 105.9184 - val\_mae: 7.7815

Epoch 89/100

165/165 [==============================] - 3s 19ms/step - loss: 99.5392 - mse: 99.5392 - mae: 7.6108 - val\_loss: 102.2083 - val\_mse: 102.2083 - val\_mae: 7.6401

Epoch 90/100

165/165 [==============================] - 3s 19ms/step - loss: 97.5469 - mse: 97.5469 - mae: 7.5131 - val\_loss: 101.6857 - val\_mse: 101.6857 - val\_mae: 7.6474

Epoch 91/100

165/165 [==============================] - 3s 19ms/step - loss: 97.7831 - mse: 97.7831 - mae: 7.5194 - val\_loss: 100.3572 - val\_mse: 100.3572 - val\_mae: 7.4837

Epoch 92/100

165/165 [==============================] - 3s 19ms/step - loss: 95.2894 - mse: 95.2894 - mae: 7.4223 - val\_loss: 107.9994 - val\_mse: 107.9994 - val\_mae: 7.7729

Epoch 93/100

165/165 [==============================] - 3s 19ms/step - loss: 94.5702 - mse: 94.5702 - mae: 7.3798 - val\_loss: 99.5274 - val\_mse: 99.5274 - val\_mae: 7.5578

Epoch 94/100

165/165 [==============================] - 3s 19ms/step - loss: 92.8300 - mse: 92.8300 - mae: 7.2926 - val\_loss: 95.5124 - val\_mse: 95.5124 - val\_mae: 7.2826

Epoch 95/100

165/165 [==============================] - 3s 20ms/step - loss: 93.3529 - mse: 93.3529 - mae: 7.3279 - val\_loss: 94.9492 - val\_mse: 94.9492 - val\_mae: 7.2803

Epoch 96/100

165/165 [==============================] - 3s 20ms/step - loss: 91.1121 - mse: 91.1121 - mae: 7.2206 - val\_loss: 94.2486 - val\_mse: 94.2486 - val\_mae: 7.2059

Epoch 97/100

165/165 [==============================] - 3s 19ms/step - loss: 91.2459 - mse: 91.2459 - mae: 7.2329 - val\_loss: 94.3171 - val\_mse: 94.3171 - val\_mae: 7.2780

Epoch 98/100

165/165 [==============================] - 3s 21ms/step - loss: 89.4596 - mse: 89.4596 - mae: 7.1332 - val\_loss: 93.1756 - val\_mse: 93.1756 - val\_mae: 7.1304

Epoch 99/100

165/165 [==============================] - 3s 19ms/step - loss: 89.6552 - mse: 89.6552 - mae: 7.1181 - val\_loss: 92.2818 - val\_mse: 92.2818 - val\_mae: 7.1947

Epoch 100/100

165/165 [==============================] - 3s 19ms/step - loss: 89.2030 - mse: 89.2030 - mae: 7.1346 - val\_loss: 97.1346 - val\_mse: 97.1346 - val\_mae: 7.4532

Training model: Deep LSTM

Epoch 1/100

165/165 [==============================] - 11s 35ms/step - loss: 4297.2793 - mse: 4297.2793 - mae: 57.9538 - val\_loss: 3919.9326 - val\_mse: 3919.9326 - val\_mae: 54.5288

Epoch 2/100

165/165 [==============================] - 5s 28ms/step - loss: 3729.4983 - mse: 3729.4983 - mae: 52.9682 - val\_loss: 3458.1858 - val\_mse: 3458.1858 - val\_mae: 50.2368

Epoch 3/100

165/165 [==============================] - 5s 28ms/step - loss: 3303.0625 - mse: 3303.0625 - mae: 48.8980 - val\_loss: 3070.0464 - val\_mse: 3070.0464 - val\_mae: 46.4234

Epoch 4/100

165/165 [==============================] - 5s 27ms/step - loss: 2938.2839 - mse: 2938.2839 - mae: 45.2761 - val\_loss: 2735.1099 - val\_mse: 2735.1099 - val\_mae: 42.9852

Epoch 5/100

165/165 [==============================] - 4s 27ms/step - loss: 2620.2566 - mse: 2620.2566 - mae: 42.0301 - val\_loss: 2443.2510 - val\_mse: 2443.2510 - val\_mae: 39.9256

Epoch 6/100

165/165 [==============================] - 4s 27ms/step - loss: 2342.9089 - mse: 2342.9089 - mae: 39.1527 - val\_loss: 2189.0327 - val\_mse: 2189.0327 - val\_mae: 37.3064

Epoch 7/100

165/165 [==============================] - 5s 27ms/step - loss: 2102.0129 - mse: 2102.0129 - mae: 36.7322 - val\_loss: 1968.9771 - val\_mse: 1968.9771 - val\_mae: 35.1604

Epoch 8/100

165/165 [==============================] - 4s 27ms/step - loss: 1893.9285 - mse: 1893.9285 - mae: 34.7480 - val\_loss: 1779.6835 - val\_mse: 1779.6835 - val\_mae: 33.4659

Epoch 9/100

165/165 [==============================] - 5s 28ms/step - loss: 1715.3871 - mse: 1715.3871 - mae: 33.2060 - val\_loss: 1618.4619 - val\_mse: 1618.4619 - val\_mae: 32.1857

Epoch 10/100

165/165 [==============================] - 5s 27ms/step - loss: 1563.2493 - mse: 1563.2493 - mae: 31.9577 - val\_loss: 1482.0825 - val\_mse: 1482.0825 - val\_mae: 31.1464

Epoch 11/100

165/165 [==============================] - 5s 27ms/step - loss: 1434.9103 - mse: 1434.9103 - mae: 30.9320 - val\_loss: 1368.2075 - val\_mse: 1368.2075 - val\_mae: 30.2800

Epoch 12/100

165/165 [==============================] - 5s 28ms/step - loss: 1327.8029 - mse: 1327.8029 - mae: 30.0607 - val\_loss: 1273.8676 - val\_mse: 1273.8676 - val\_mae: 29.5656

Epoch 13/100

165/165 [==============================] - 5s 28ms/step - loss: 1239.4194 - mse: 1239.4194 - mae: 29.3420 - val\_loss: 1196.6527 - val\_mse: 1196.6527 - val\_mae: 28.9803

Epoch 14/100

165/165 [==============================] - 5s 28ms/step - loss: 1167.4863 - mse: 1167.4863 - mae: 28.7434 - val\_loss: 1135.1340 - val\_mse: 1135.1340 - val\_mae: 28.5127

Epoch 15/100

165/165 [==============================] - 5s 28ms/step - loss: 1109.9191 - mse: 1109.9191 - mae: 28.2673 - val\_loss: 1086.5066 - val\_mse: 1086.5066 - val\_mae: 28.1421

Epoch 16/100

165/165 [==============================] - 5s 28ms/step - loss: 1064.7107 - mse: 1064.7107 - mae: 27.8703 - val\_loss: 1049.1327 - val\_mse: 1049.1327 - val\_mae: 27.8448

Epoch 17/100

165/165 [==============================] - 4s 27ms/step - loss: 1029.8141 - mse: 1029.8141 - mae: 27.5468 - val\_loss: 1020.5177 - val\_mse: 1020.5177 - val\_mae: 27.6090

Epoch 18/100

165/165 [==============================] - 4s 27ms/step - loss: 1003.4846 - mse: 1003.4846 - mae: 27.3011 - val\_loss: 999.8026 - val\_mse: 999.8026 - val\_mae: 27.4327

Epoch 19/100

165/165 [==============================] - 5s 28ms/step - loss: 984.2079 - mse: 984.2079 - mae: 27.1129 - val\_loss: 985.0059 - val\_mse: 985.0059 - val\_mae: 27.3020

Epoch 20/100

165/165 [==============================] - 5s 28ms/step - loss: 970.4674 - mse: 970.4674 - mae: 26.9731 - val\_loss: 974.9717 - val\_mse: 974.9717 - val\_mae: 27.2073

Epoch 21/100

165/165 [==============================] - 4s 27ms/step - loss: 960.9721 - mse: 960.9721 - mae: 26.8704 - val\_loss: 968.3683 - val\_mse: 968.3683 - val\_mae: 27.1403

Epoch 22/100

165/165 [==============================] - 5s 28ms/step - loss: 954.6541 - mse: 954.6541 - mae: 26.7983 - val\_loss: 964.2001 - val\_mse: 964.2001 - val\_mae: 27.0938

Epoch 23/100

165/165 [==============================] - 5s 28ms/step - loss: 950.6021 - mse: 950.6021 - mae: 26.7462 - val\_loss: 961.8664 - val\_mse: 961.8664 - val\_mae: 27.0652

Epoch 24/100

165/165 [==============================] - 5s 28ms/step - loss: 948.0035 - mse: 948.0035 - mae: 26.7088 - val\_loss: 960.5456 - val\_mse: 960.5456 - val\_mae: 27.0460

Epoch 25/100

165/165 [==============================] - 4s 27ms/step - loss: 946.4313 - mse: 946.4313 - mae: 26.6819 - val\_loss: 959.8636 - val\_mse: 959.8637 - val\_mae: 27.0327

Epoch 26/100

165/165 [==============================] - 5s 27ms/step - loss: 945.5821 - mse: 945.5821 - mae: 26.6656 - val\_loss: 959.6281 - val\_mse: 959.6281 - val\_mae: 27.0256

Epoch 27/100

165/165 [==============================] - 4s 27ms/step - loss: 945.1346 - mse: 945.1346 - mae: 26.6547 - val\_loss: 959.5718 - val\_mse: 959.5718 - val\_mae: 27.0203

Epoch 28/100

165/165 [==============================] - 5s 28ms/step - loss: 944.8560 - mse: 944.8560 - mae: 26.6468 - val\_loss: 959.6022 - val\_mse: 959.6022 - val\_mae: 27.0179

Epoch 29/100

165/165 [==============================] - 5s 28ms/step - loss: 944.7282 - mse: 944.7282 - mae: 26.6416 - val\_loss: 959.6772 - val\_mse: 959.6772 - val\_mae: 27.0161

Epoch 30/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6846 - mse: 944.6846 - mae: 26.6386 - val\_loss: 959.7709 - val\_mse: 959.7709 - val\_mae: 27.0148

Epoch 31/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6531 - mse: 944.6531 - mae: 26.6362 - val\_loss: 959.8273 - val\_mse: 959.8273 - val\_mae: 27.0144

Epoch 32/100

165/165 [==============================] - 5s 27ms/step - loss: 944.6612 - mse: 944.6612 - mae: 26.6356 - val\_loss: 959.9181 - val\_mse: 959.9181 - val\_mae: 27.0138

Epoch 33/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6826 - mse: 944.6826 - mae: 26.6343 - val\_loss: 959.9243 - val\_mse: 959.9243 - val\_mae: 27.0138

Epoch 34/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6583 - mse: 944.6583 - mae: 26.6324 - val\_loss: 959.8546 - val\_mse: 959.8546 - val\_mae: 27.0142

Epoch 35/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6710 - mse: 944.6710 - mae: 26.6352 - val\_loss: 959.8668 - val\_mse: 959.8668 - val\_mae: 27.0140

Epoch 36/100

165/165 [==============================] - 5s 28ms/step - loss: 944.6633 - mse: 944.6633 - mae: 26.6347 - val\_loss: 959.8734 - val\_mse: 959.8734 - val\_mae: 27.0139

Epoch 37/100

165/165 [==============================] - 5s 27ms/step - loss: 944.6855 - mse: 944.6855 - mae: 26.6329 - val\_loss: 959.8831 - val\_mse: 959.8831 - val\_mae: 27.0139

Epoch 38/100

165/165 [==============================] - 5s 28ms/step - loss: 944.6763 - mse: 944.6763 - mae: 26.6357 - val\_loss: 959.9311 - val\_mse: 959.9311 - val\_mae: 27.0137

Epoch 39/100

165/165 [==============================] - 5s 29ms/step - loss: 944.7051 - mse: 944.7051 - mae: 26.6338 - val\_loss: 959.9474 - val\_mse: 959.9474 - val\_mae: 27.0136

Epoch 40/100

165/165 [==============================] - 5s 28ms/step - loss: 944.6737 - mse: 944.6737 - mae: 26.6365 - val\_loss: 959.9150 - val\_mse: 959.9150 - val\_mae: 27.0139

Epoch 41/100

165/165 [==============================] - 5s 28ms/step - loss: 944.6679 - mse: 944.6679 - mae: 26.6320 - val\_loss: 959.9679 - val\_mse: 959.9679 - val\_mae: 27.0136

Epoch 42/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6500 - mse: 944.6500 - mae: 26.6327 - val\_loss: 959.9372 - val\_mse: 959.9372 - val\_mae: 27.0138

Epoch 43/100

165/165 [==============================] - 4s 27ms/step - loss: 944.7473 - mse: 944.7473 - mae: 26.6357 - val\_loss: 959.9945 - val\_mse: 959.9945 - val\_mae: 27.0135

Epoch 44/100

165/165 [==============================] - 5s 28ms/step - loss: 944.7061 - mse: 944.7061 - mae: 26.6365 - val\_loss: 959.9585 - val\_mse: 959.9585 - val\_mae: 27.0136

Epoch 45/100

165/165 [==============================] - 5s 28ms/step - loss: 944.6615 - mse: 944.6615 - mae: 26.6347 - val\_loss: 959.9803 - val\_mse: 959.9803 - val\_mae: 27.0135

Epoch 46/100

165/165 [==============================] - 5s 27ms/step - loss: 944.7421 - mse: 944.7421 - mae: 26.6377 - val\_loss: 959.9748 - val\_mse: 959.9748 - val\_mae: 27.0135

Epoch 47/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6846 - mse: 944.6846 - mae: 26.6302 - val\_loss: 960.0638 - val\_mse: 960.0638 - val\_mae: 27.0132

Epoch 48/100

165/165 [==============================] - 5s 28ms/step - loss: 944.7092 - mse: 944.7092 - mae: 26.6337 - val\_loss: 960.0355 - val\_mse: 960.0355 - val\_mae: 27.0133

Epoch 49/100

165/165 [==============================] - 5s 29ms/step - loss: 944.7035 - mse: 944.7035 - mae: 26.6315 - val\_loss: 959.8950 - val\_mse: 959.8950 - val\_mae: 27.0139

Epoch 50/100

165/165 [==============================] - 5s 28ms/step - loss: 944.8035 - mse: 944.8035 - mae: 26.6383 - val\_loss: 959.9446 - val\_mse: 959.9446 - val\_mae: 27.0136

Epoch 51/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6574 - mse: 944.6574 - mae: 26.6323 - val\_loss: 959.9753 - val\_mse: 959.9753 - val\_mae: 27.0136

Epoch 52/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6813 - mse: 944.6813 - mae: 26.6353 - val\_loss: 959.9119 - val\_mse: 959.9119 - val\_mae: 27.0139

Epoch 53/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6781 - mse: 944.6781 - mae: 26.6350 - val\_loss: 959.9559 - val\_mse: 959.9559 - val\_mae: 27.0136

Epoch 54/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6711 - mse: 944.6711 - mae: 26.6332 - val\_loss: 960.0355 - val\_mse: 960.0355 - val\_mae: 27.0133

Epoch 55/100

165/165 [==============================] - 5s 27ms/step - loss: 944.6893 - mse: 944.6893 - mae: 26.6320 - val\_loss: 959.9177 - val\_mse: 959.9177 - val\_mae: 27.0138

Epoch 56/100

165/165 [==============================] - 4s 27ms/step - loss: 944.7128 - mse: 944.7128 - mae: 26.6364 - val\_loss: 959.9530 - val\_mse: 959.9530 - val\_mae: 27.0136

Epoch 57/100

165/165 [==============================] - 4s 27ms/step - loss: 944.6707 - mse: 944.6707 - mae: 26.6304 - val\_loss: 959.9412 - val\_mse: 959.9412 - val\_mae: 27.0137

Epoch 58/100

165/165 [==============================] - 4s 27ms/step - loss: 944.7394 - mse: 944.7394 - mae: 26.6338 - val\_loss: 959.8348 - val\_mse: 959.8348 - val\_mae: 27.0143

Epoch 59/100

165/165 [==============================] - 5s 28ms/step - loss: 944.7286 - mse: 944.7286 - mae: 26.6369 - val\_loss: 959.8428 - val\_mse: 959.8428 - val\_mae: 27.0144

Epoch 60/100

165/165 [==============================] - 5s 28ms/step - loss: 944.7119 - mse: 944.7119 - mae: 26.6340 - val\_loss: 959.9698 - val\_mse: 959.9698 - val\_mae: 27.0135

Epoch 61/100

165/165 [==============================] - 5s 27ms/step - loss: 944.6792 - mse: 944.6792 - mae: 26.6345 - val\_loss: 959.9175 - val\_mse: 959.9175 - val\_mae: 27.0136

Epoch 62/100

165/165 [==============================] - 4s 27ms/step - loss: 713.4455 - mse: 713.4455 - mae: 21.7455 - val\_loss: 479.0652 - val\_mse: 479.0652 - val\_mae: 16.6727

Epoch 63/100

165/165 [==============================] - 4s 27ms/step - loss: 458.4650 - mse: 458.4650 - mae: 16.5987 - val\_loss: 408.3674 - val\_mse: 408.3674 - val\_mae: 16.0474

Epoch 64/100

165/165 [==============================] - 5s 28ms/step - loss: 379.0383 - mse: 379.0383 - mae: 15.2361 - val\_loss: 354.0553 - val\_mse: 354.0553 - val\_mae: 14.7263

Epoch 65/100

165/165 [==============================] - 5s 28ms/step - loss: 360.4119 - mse: 360.4119 - mae: 15.1006 - val\_loss: 362.9633 - val\_mse: 362.9633 - val\_mae: 15.7329

Epoch 66/100

165/165 [==============================] - 4s 27ms/step - loss: 351.6145 - mse: 351.6145 - mae: 14.9584 - val\_loss: 328.0601 - val\_mse: 328.0601 - val\_mae: 14.3382

Epoch 67/100

165/165 [==============================] - 4s 27ms/step - loss: 353.9336 - mse: 353.9336 - mae: 15.1260 - val\_loss: 365.8613 - val\_mse: 365.8613 - val\_mae: 15.1110

Epoch 68/100

165/165 [==============================] - 4s 27ms/step - loss: 340.7251 - mse: 340.7251 - mae: 14.6947 - val\_loss: 323.4003 - val\_mse: 323.4003 - val\_mae: 14.2423

Epoch 69/100

165/165 [==============================] - 4s 27ms/step - loss: 318.5840 - mse: 318.5840 - mae: 14.2281 - val\_loss: 312.0968 - val\_mse: 312.0968 - val\_mae: 14.0507

Epoch 70/100

165/165 [==============================] - 4s 27ms/step - loss: 324.4135 - mse: 324.4135 - mae: 14.3931 - val\_loss: 332.3388 - val\_mse: 332.3388 - val\_mae: 14.4269

Epoch 71/100

165/165 [==============================] - 4s 27ms/step - loss: 325.3420 - mse: 325.3420 - mae: 14.3995 - val\_loss: 301.4874 - val\_mse: 301.4874 - val\_mae: 13.8485

Epoch 72/100

165/165 [==============================] - 4s 27ms/step - loss: 312.8754 - mse: 312.8754 - mae: 14.1946 - val\_loss: 450.0186 - val\_mse: 450.0186 - val\_mae: 16.1012

Epoch 73/100

165/165 [==============================] - 4s 27ms/step - loss: 339.6196 - mse: 339.6196 - mae: 14.6409 - val\_loss: 321.0174 - val\_mse: 321.0174 - val\_mae: 14.2029

Epoch 74/100

165/165 [==============================] - 4s 27ms/step - loss: 313.3992 - mse: 313.3992 - mae: 14.2303 - val\_loss: 297.3174 - val\_mse: 297.3174 - val\_mae: 13.8904

Epoch 75/100

165/165 [==============================] - 4s 27ms/step - loss: 310.9429 - mse: 310.9429 - mae: 14.1579 - val\_loss: 317.5919 - val\_mse: 317.5919 - val\_mae: 14.1875

Epoch 76/100

165/165 [==============================] - 4s 27ms/step - loss: 313.8576 - mse: 313.8576 - mae: 14.2640 - val\_loss: 286.7960 - val\_mse: 286.7960 - val\_mae: 13.5642

Epoch 77/100

165/165 [==============================] - 4s 27ms/step - loss: 296.1422 - mse: 296.1422 - mae: 13.8067 - val\_loss: 280.4839 - val\_mse: 280.4839 - val\_mae: 13.4340

Epoch 78/100

165/165 [==============================] - 4s 27ms/step - loss: 290.7424 - mse: 290.7424 - mae: 13.6942 - val\_loss: 307.9185 - val\_mse: 307.9185 - val\_mae: 13.8510

Epoch 79/100

165/165 [==============================] - 4s 27ms/step - loss: 290.1127 - mse: 290.1127 - mae: 13.6669 - val\_loss: 276.3699 - val\_mse: 276.3699 - val\_mae: 13.3042

Epoch 80/100

165/165 [==============================] - 4s 27ms/step - loss: 284.1226 - mse: 284.1226 - mae: 13.5421 - val\_loss: 273.2514 - val\_mse: 273.2514 - val\_mae: 13.2325

Epoch 81/100

165/165 [==============================] - 4s 27ms/step - loss: 285.3120 - mse: 285.3120 - mae: 13.5742 - val\_loss: 278.0710 - val\_mse: 278.0710 - val\_mae: 13.3722

Epoch 82/100

165/165 [==============================] - 4s 27ms/step - loss: 286.4892 - mse: 286.4892 - mae: 13.5954 - val\_loss: 273.4708 - val\_mse: 273.4708 - val\_mae: 13.2758

Epoch 83/100

165/165 [==============================] - 4s 27ms/step - loss: 292.0761 - mse: 292.0761 - mae: 13.7198 - val\_loss: 272.1685 - val\_mse: 272.1685 - val\_mae: 13.2292

Epoch 84/100

165/165 [==============================] - 4s 27ms/step - loss: 283.7343 - mse: 283.7343 - mae: 13.5334 - val\_loss: 267.9128 - val\_mse: 267.9128 - val\_mae: 13.1286

Epoch 85/100

165/165 [==============================] - 4s 27ms/step - loss: 280.6372 - mse: 280.6372 - mae: 13.4478 - val\_loss: 266.5828 - val\_mse: 266.5828 - val\_mae: 13.1092

Epoch 86/100

165/165 [==============================] - 4s 27ms/step - loss: 280.5767 - mse: 280.5767 - mae: 13.4922 - val\_loss: 274.3486 - val\_mse: 274.3486 - val\_mae: 13.2818

Epoch 87/100

165/165 [==============================] - 4s 27ms/step - loss: 300.2098 - mse: 300.2098 - mae: 13.9197 - val\_loss: 270.7232 - val\_mse: 270.7232 - val\_mae: 13.1882

Epoch 88/100

165/165 [==============================] - 4s 27ms/step - loss: 278.5341 - mse: 278.5341 - mae: 13.4072 - val\_loss: 261.1626 - val\_mse: 261.1626 - val\_mae: 12.9535

Epoch 89/100

165/165 [==============================] - 4s 27ms/step - loss: 271.5244 - mse: 271.5244 - mae: 13.2482 - val\_loss: 256.1812 - val\_mse: 256.1812 - val\_mae: 12.9434

Epoch 90/100

165/165 [==============================] - 4s 27ms/step - loss: 264.6122 - mse: 264.6122 - mae: 13.0599 - val\_loss: 253.3260 - val\_mse: 253.3260 - val\_mae: 12.6785

Epoch 91/100

165/165 [==============================] - 4s 27ms/step - loss: 258.8827 - mse: 258.8827 - mae: 12.9033 - val\_loss: 243.4168 - val\_mse: 243.4168 - val\_mae: 12.5077

Epoch 92/100

165/165 [==============================] - 4s 27ms/step - loss: 254.0016 - mse: 254.0016 - mae: 12.7940 - val\_loss: 242.2428 - val\_mse: 242.2428 - val\_mae: 12.3405

Epoch 93/100

165/165 [==============================] - 4s 27ms/step - loss: 281.8903 - mse: 281.8903 - mae: 13.3989 - val\_loss: 261.4370 - val\_mse: 261.4370 - val\_mae: 13.0064

Epoch 94/100

165/165 [==============================] - 5s 30ms/step - loss: 260.2440 - mse: 260.2440 - mae: 12.9408 - val\_loss: 243.3636 - val\_mse: 243.3636 - val\_mae: 12.3246

Epoch 95/100

165/165 [==============================] - 5s 29ms/step - loss: 246.9937 - mse: 246.9937 - mae: 12.5858 - val\_loss: 233.6409 - val\_mse: 233.6409 - val\_mae: 12.1178

Epoch 96/100

165/165 [==============================] - 5s 28ms/step - loss: 239.7223 - mse: 239.7223 - mae: 12.3760 - val\_loss: 236.9090 - val\_mse: 236.9090 - val\_mae: 12.0838

Epoch 97/100

165/165 [==============================] - 4s 27ms/step - loss: 233.7245 - mse: 233.7245 - mae: 12.2315 - val\_loss: 223.8519 - val\_mse: 223.8519 - val\_mae: 11.8367

Epoch 98/100

165/165 [==============================] - 5s 28ms/step - loss: 228.8349 - mse: 228.8349 - mae: 12.0326 - val\_loss: 220.9459 - val\_mse: 220.9459 - val\_mae: 11.8888

Epoch 99/100

165/165 [==============================] - 4s 27ms/step - loss: 218.9764 - mse: 218.9764 - mae: 11.7288 - val\_loss: 214.2508 - val\_mse: 214.2508 - val\_mae: 11.7066

Epoch 100/100

165/165 [==============================] - 5s 28ms/step - loss: 211.6678 - mse: 211.6678 - mae: 11.5621 - val\_loss: 203.5975 - val\_mse: 203.5975 - val\_mae: 11.2899

Training model: Bidirectional LSTM

Epoch 1/100

165/165 [==============================] - 6s 15ms/step - loss: 4540.9507 - mse: 4540.9507 - mae: 60.0236 - val\_loss: 4379.6045 - val\_mse: 4379.6045 - val\_mae: 58.5439

Epoch 2/100

165/165 [==============================] - 2s 11ms/step - loss: 4332.0757 - mse: 4332.0757 - mae: 58.2737 - val\_loss: 4177.9722 - val\_mse: 4177.9722 - val\_mae: 56.8179

Epoch 3/100

165/165 [==============================] - 2s 10ms/step - loss: 4135.4468 - mse: 4135.4468 - mae: 56.5862 - val\_loss: 3989.0789 - val\_mse: 3989.0789 - val\_mae: 55.1562

Epoch 4/100

165/165 [==============================] - 2s 10ms/step - loss: 3948.9221 - mse: 3948.9221 - mae: 54.9416 - val\_loss: 3808.5796 - val\_mse: 3808.5796 - val\_mae: 53.5260

Epoch 5/100

165/165 [==============================] - 2s 10ms/step - loss: 3770.6069 - mse: 3770.6069 - mae: 53.3375 - val\_loss: 3636.4739 - val\_mse: 3636.4739 - val\_mae: 51.9301

Epoch 6/100

165/165 [==============================] - 2s 10ms/step - loss: 3600.0247 - mse: 3600.0247 - mae: 51.7575 - val\_loss: 3471.5386 - val\_mse: 3471.5386 - val\_mae: 50.3663

Epoch 7/100

165/165 [==============================] - 2s 10ms/step - loss: 3436.9565 - mse: 3436.9565 - mae: 50.2094 - val\_loss: 3313.8376 - val\_mse: 3313.8376 - val\_mae: 48.8408

Epoch 8/100

165/165 [==============================] - 2s 10ms/step - loss: 3280.9722 - mse: 3280.9722 - mae: 48.7089 - val\_loss: 3163.7588 - val\_mse: 3163.7588 - val\_mae: 47.3588

Epoch 9/100

165/165 [==============================] - 2s 10ms/step - loss: 3131.9189 - mse: 3131.9189 - mae: 47.2340 - val\_loss: 3019.2734 - val\_mse: 3019.2734 - val\_mae: 45.9027

Epoch 10/100

165/165 [==============================] - 2s 10ms/step - loss: 2989.4709 - mse: 2989.4709 - mae: 45.7997 - val\_loss: 2881.8740 - val\_mse: 2881.8740 - val\_mae: 44.4939

Epoch 11/100

165/165 [==============================] - 2s 10ms/step - loss: 2853.2910 - mse: 2853.2910 - mae: 44.4140 - val\_loss: 2751.0903 - val\_mse: 2751.0903 - val\_mae: 43.1354

Epoch 12/100

165/165 [==============================] - 2s 10ms/step - loss: 2723.3079 - mse: 2723.3079 - mae: 43.0638 - val\_loss: 2625.5647 - val\_mse: 2625.5647 - val\_mae: 41.8098

Epoch 13/100

165/165 [==============================] - 2s 10ms/step - loss: 2599.1802 - mse: 2599.1802 - mae: 41.7731 - val\_loss: 2506.4817 - val\_mse: 2506.4817 - val\_mae: 40.5560

Epoch 14/100

165/165 [==============================] - 2s 10ms/step - loss: 2480.8594 - mse: 2480.8594 - mae: 40.5363 - val\_loss: 2392.4368 - val\_mse: 2392.4368 - val\_mae: 39.3493

Epoch 15/100

165/165 [==============================] - 2s 10ms/step - loss: 2367.9875 - mse: 2367.9875 - mae: 39.3574 - val\_loss: 2284.0571 - val\_mse: 2284.0571 - val\_mae: 38.2068

Epoch 16/100

165/165 [==============================] - 2s 11ms/step - loss: 2260.3909 - mse: 2260.3909 - mae: 38.2341 - val\_loss: 2180.7251 - val\_mse: 2180.7251 - val\_mae: 37.1326

Epoch 17/100

165/165 [==============================] - 2s 10ms/step - loss: 2157.8928 - mse: 2157.8928 - mae: 37.1816 - val\_loss: 2082.3052 - val\_mse: 2082.3052 - val\_mae: 36.1257

Epoch 18/100

165/165 [==============================] - 2s 10ms/step - loss: 2060.2844 - mse: 2060.2844 - mae: 36.1972 - val\_loss: 1988.8303 - val\_mse: 1988.8303 - val\_mae: 35.1834

Epoch 19/100

165/165 [==============================] - 2s 11ms/step - loss: 1950.0171 - mse: 1950.0171 - mae: 35.0960 - val\_loss: 1879.2623 - val\_mse: 1879.2623 - val\_mae: 34.1141

Epoch 20/100

165/165 [==============================] - 2s 10ms/step - loss: 1857.7351 - mse: 1857.7351 - mae: 34.1900 - val\_loss: 1793.9320 - val\_mse: 1793.9320 - val\_mae: 33.2914

Epoch 21/100

165/165 [==============================] - 2s 10ms/step - loss: 1773.3840 - mse: 1773.3840 - mae: 33.3805 - val\_loss: 1713.4644 - val\_mse: 1713.4644 - val\_mae: 32.5554

Epoch 22/100

165/165 [==============================] - 2s 10ms/step - loss: 1693.4238 - mse: 1693.4238 - mae: 32.6336 - val\_loss: 1637.1577 - val\_mse: 1637.1577 - val\_mae: 31.8457

Epoch 23/100

165/165 [==============================] - 2s 10ms/step - loss: 1617.9578 - mse: 1617.9578 - mae: 31.9575 - val\_loss: 1564.8892 - val\_mse: 1564.8892 - val\_mae: 31.2121

Epoch 24/100

165/165 [==============================] - 2s 10ms/step - loss: 1546.1289 - mse: 1546.1289 - mae: 31.2839 - val\_loss: 1496.6526 - val\_mse: 1496.6526 - val\_mae: 30.6411

Epoch 25/100

165/165 [==============================] - 2s 10ms/step - loss: 1478.3136 - mse: 1478.3136 - mae: 30.6815 - val\_loss: 1431.9153 - val\_mse: 1431.9153 - val\_mae: 30.0402

Epoch 26/100

165/165 [==============================] - 2s 10ms/step - loss: 1414.2620 - mse: 1414.2620 - mae: 30.0921 - val\_loss: 1371.8116 - val\_mse: 1371.8116 - val\_mae: 29.5598

Epoch 27/100

165/165 [==============================] - 2s 10ms/step - loss: 1354.3643 - mse: 1354.3643 - mae: 29.5599 - val\_loss: 1315.3251 - val\_mse: 1315.3251 - val\_mae: 29.1137

Epoch 28/100

165/165 [==============================] - 2s 10ms/step - loss: 1297.7306 - mse: 1297.7306 - mae: 29.0325 - val\_loss: 1260.8616 - val\_mse: 1260.8616 - val\_mae: 28.5665

Epoch 29/100

165/165 [==============================] - 2s 11ms/step - loss: 1244.2976 - mse: 1244.2976 - mae: 28.5196 - val\_loss: 1210.6554 - val\_mse: 1210.6554 - val\_mae: 28.0989

Epoch 30/100

165/165 [==============================] - 2s 10ms/step - loss: 1194.7482 - mse: 1194.7482 - mae: 28.0613 - val\_loss: 1163.8336 - val\_mse: 1163.8336 - val\_mae: 27.6851

Epoch 31/100

165/165 [==============================] - 2s 10ms/step - loss: 1148.6362 - mse: 1148.6362 - mae: 27.6248 - val\_loss: 1120.8021 - val\_mse: 1120.8021 - val\_mae: 27.3161

Epoch 32/100

165/165 [==============================] - 2s 10ms/step - loss: 1105.8796 - mse: 1105.8796 - mae: 27.2186 - val\_loss: 1080.8007 - val\_mse: 1080.8007 - val\_mae: 26.9509

Epoch 33/100

165/165 [==============================] - 2s 10ms/step - loss: 1066.0665 - mse: 1066.0665 - mae: 26.8276 - val\_loss: 1044.1591 - val\_mse: 1044.1591 - val\_mae: 26.6412

Epoch 34/100

165/165 [==============================] - 2s 10ms/step - loss: 1029.9081 - mse: 1029.9081 - mae: 26.4812 - val\_loss: 1010.6539 - val\_mse: 1010.6539 - val\_mae: 26.3071

Epoch 35/100

165/165 [==============================] - 2s 10ms/step - loss: 996.3821 - mse: 996.3821 - mae: 26.1494 - val\_loss: 979.2581 - val\_mse: 979.2581 - val\_mae: 26.0173

Epoch 36/100

165/165 [==============================] - 2s 10ms/step - loss: 965.8931 - mse: 965.8931 - mae: 25.8424 - val\_loss: 950.8160 - val\_mse: 950.8160 - val\_mae: 25.7546

Epoch 37/100

165/165 [==============================] - 2s 10ms/step - loss: 937.9797 - mse: 937.9797 - mae: 25.5525 - val\_loss: 926.0924 - val\_mse: 926.0924 - val\_mae: 25.5364

Epoch 38/100

165/165 [==============================] - 2s 10ms/step - loss: 912.7105 - mse: 912.7105 - mae: 25.2927 - val\_loss: 903.3389 - val\_mse: 903.3389 - val\_mae: 25.3182

Epoch 39/100

165/165 [==============================] - 2s 10ms/step - loss: 890.3206 - mse: 890.3206 - mae: 25.0631 - val\_loss: 881.9471 - val\_mse: 881.9471 - val\_mae: 25.0671

Epoch 40/100

165/165 [==============================] - 2s 10ms/step - loss: 869.6440 - mse: 869.6440 - mae: 24.8379 - val\_loss: 863.6404 - val\_mse: 863.6404 - val\_mae: 24.8936

Epoch 41/100

165/165 [==============================] - 2s 11ms/step - loss: 851.5387 - mse: 851.5387 - mae: 24.6467 - val\_loss: 847.0746 - val\_mse: 847.0746 - val\_mae: 24.7238

Epoch 42/100

165/165 [==============================] - 2s 10ms/step - loss: 835.1036 - mse: 835.1036 - mae: 24.4587 - val\_loss: 832.5876 - val\_mse: 832.5876 - val\_mae: 24.5669

Epoch 43/100

165/165 [==============================] - 2s 10ms/step - loss: 820.6192 - mse: 820.6192 - mae: 24.2986 - val\_loss: 820.3928 - val\_mse: 820.3928 - val\_mae: 24.4541

Epoch 44/100

165/165 [==============================] - 2s 10ms/step - loss: 808.1940 - mse: 808.1940 - mae: 24.1613 - val\_loss: 809.1435 - val\_mse: 809.1435 - val\_mae: 24.3346

Epoch 45/100

165/165 [==============================] - 2s 10ms/step - loss: 796.7873 - mse: 796.7873 - mae: 24.0301 - val\_loss: 798.2173 - val\_mse: 798.2173 - val\_mae: 24.1868

Epoch 46/100

165/165 [==============================] - 2s 10ms/step - loss: 786.6202 - mse: 786.6202 - mae: 23.8971 - val\_loss: 790.5660 - val\_mse: 790.5660 - val\_mae: 24.1136

Epoch 47/100

165/165 [==============================] - 2s 10ms/step - loss: 778.4481 - mse: 778.4481 - mae: 23.8067 - val\_loss: 781.6191 - val\_mse: 781.6191 - val\_mae: 23.9911

Epoch 48/100

165/165 [==============================] - 2s 10ms/step - loss: 770.1566 - mse: 770.1566 - mae: 23.7008 - val\_loss: 774.3552 - val\_mse: 774.3552 - val\_mae: 23.8919

Epoch 49/100

165/165 [==============================] - 2s 10ms/step - loss: 763.0970 - mse: 763.0970 - mae: 23.6022 - val\_loss: 767.6270 - val\_mse: 767.6270 - val\_mae: 23.7999

Epoch 50/100

165/165 [==============================] - 2s 10ms/step - loss: 757.0154 - mse: 757.0154 - mae: 23.5248 - val\_loss: 762.1463 - val\_mse: 762.1463 - val\_mae: 23.7343

Epoch 51/100

165/165 [==============================] - 2s 10ms/step - loss: 751.9548 - mse: 751.9548 - mae: 23.4642 - val\_loss: 756.8657 - val\_mse: 756.8657 - val\_mae: 23.6588

Epoch 52/100

165/165 [==============================] - 2s 10ms/step - loss: 746.1116 - mse: 746.1116 - mae: 23.3733 - val\_loss: 752.8315 - val\_mse: 752.8315 - val\_mae: 23.6099

Epoch 53/100

165/165 [==============================] - 2s 10ms/step - loss: 741.6082 - mse: 741.6082 - mae: 23.3177 - val\_loss: 749.1660 - val\_mse: 749.1660 - val\_mae: 23.5700

Epoch 54/100

165/165 [==============================] - 2s 11ms/step - loss: 737.0536 - mse: 737.0536 - mae: 23.2449 - val\_loss: 744.0717 - val\_mse: 744.0717 - val\_mae: 23.4787

Epoch 55/100

165/165 [==============================] - 2s 10ms/step - loss: 732.4293 - mse: 732.4293 - mae: 23.1738 - val\_loss: 739.1194 - val\_mse: 739.1194 - val\_mae: 23.3917

Epoch 56/100

165/165 [==============================] - 2s 10ms/step - loss: 728.5278 - mse: 728.5278 - mae: 23.1168 - val\_loss: 735.0417 - val\_mse: 735.0417 - val\_mae: 23.3398

Epoch 57/100

165/165 [==============================] - 2s 10ms/step - loss: 724.4675 - mse: 724.4675 - mae: 23.0471 - val\_loss: 731.0936 - val\_mse: 731.0936 - val\_mae: 23.2675

Epoch 58/100

165/165 [==============================] - 2s 10ms/step - loss: 720.0988 - mse: 720.0988 - mae: 22.9750 - val\_loss: 727.3318 - val\_mse: 727.3318 - val\_mae: 23.2087

Epoch 59/100

165/165 [==============================] - 2s 10ms/step - loss: 716.4271 - mse: 716.4271 - mae: 22.9165 - val\_loss: 723.4153 - val\_mse: 723.4153 - val\_mae: 23.1397

Epoch 60/100

165/165 [==============================] - 2s 10ms/step - loss: 712.2060 - mse: 712.2060 - mae: 22.8381 - val\_loss: 720.1960 - val\_mse: 720.1960 - val\_mae: 23.0976

Epoch 61/100

165/165 [==============================] - 2s 10ms/step - loss: 708.2499 - mse: 708.2499 - mae: 22.7666 - val\_loss: 715.0872 - val\_mse: 715.0872 - val\_mae: 22.9977

Epoch 62/100

165/165 [==============================] - 2s 10ms/step - loss: 704.4925 - mse: 704.4925 - mae: 22.6998 - val\_loss: 711.2106 - val\_mse: 711.2106 - val\_mae: 22.9330

Epoch 63/100

165/165 [==============================] - 2s 10ms/step - loss: 700.3821 - mse: 700.3821 - mae: 22.6315 - val\_loss: 708.1323 - val\_mse: 708.1323 - val\_mae: 22.8881

Epoch 64/100

165/165 [==============================] - 2s 10ms/step - loss: 693.7850 - mse: 693.7850 - mae: 22.5158 - val\_loss: 699.7753 - val\_mse: 699.7753 - val\_mae: 22.7372

Epoch 65/100

165/165 [==============================] - 2s 10ms/step - loss: 686.6900 - mse: 686.6900 - mae: 22.4051 - val\_loss: 690.7587 - val\_mse: 690.7587 - val\_mae: 22.5645

Epoch 66/100

165/165 [==============================] - 2s 10ms/step - loss: 678.4719 - mse: 678.4719 - mae: 22.2416 - val\_loss: 684.1685 - val\_mse: 684.1685 - val\_mae: 22.4561

Epoch 67/100

165/165 [==============================] - 2s 10ms/step - loss: 672.5840 - mse: 672.5840 - mae: 22.1395 - val\_loss: 678.5161 - val\_mse: 678.5161 - val\_mae: 22.3665

Epoch 68/100

165/165 [==============================] - 2s 11ms/step - loss: 666.3354 - mse: 666.3354 - mae: 22.0242 - val\_loss: 673.0596 - val\_mse: 673.0596 - val\_mae: 22.2542

Epoch 69/100

165/165 [==============================] - 2s 10ms/step - loss: 660.9462 - mse: 660.9462 - mae: 21.9316 - val\_loss: 666.2161 - val\_mse: 666.2161 - val\_mae: 22.1367

Epoch 70/100

165/165 [==============================] - 2s 11ms/step - loss: 654.8364 - mse: 654.8364 - mae: 21.8198 - val\_loss: 660.6868 - val\_mse: 660.6868 - val\_mae: 22.0327

Epoch 71/100

165/165 [==============================] - 2s 11ms/step - loss: 649.6249 - mse: 649.6249 - mae: 21.7189 - val\_loss: 656.8408 - val\_mse: 656.8408 - val\_mae: 21.9810

Epoch 72/100

165/165 [==============================] - 2s 11ms/step - loss: 644.4035 - mse: 644.4035 - mae: 21.6322 - val\_loss: 649.9382 - val\_mse: 649.9382 - val\_mae: 21.8438

Epoch 73/100

165/165 [==============================] - 2s 11ms/step - loss: 640.5283 - mse: 640.5283 - mae: 21.5720 - val\_loss: 644.7380 - val\_mse: 644.7380 - val\_mae: 21.7563

Epoch 74/100

165/165 [==============================] - 2s 10ms/step - loss: 633.9243 - mse: 633.9243 - mae: 21.4337 - val\_loss: 639.9561 - val\_mse: 639.9561 - val\_mae: 21.6755

Epoch 75/100

165/165 [==============================] - 2s 10ms/step - loss: 628.5452 - mse: 628.5452 - mae: 21.3334 - val\_loss: 633.9174 - val\_mse: 633.9174 - val\_mae: 21.5403

Epoch 76/100

165/165 [==============================] - 2s 10ms/step - loss: 623.7613 - mse: 623.7613 - mae: 21.2494 - val\_loss: 629.3235 - val\_mse: 629.3235 - val\_mae: 21.4565

Epoch 77/100

165/165 [==============================] - 2s 10ms/step - loss: 619.7062 - mse: 619.7062 - mae: 21.1772 - val\_loss: 624.9504 - val\_mse: 624.9504 - val\_mae: 21.3643

Epoch 78/100

165/165 [==============================] - 2s 10ms/step - loss: 613.8279 - mse: 613.8279 - mae: 21.0518 - val\_loss: 619.7684 - val\_mse: 619.7684 - val\_mae: 21.2782

Epoch 79/100

165/165 [==============================] - 2s 10ms/step - loss: 609.4966 - mse: 609.4966 - mae: 20.9951 - val\_loss: 613.6857 - val\_mse: 613.6857 - val\_mae: 21.1614

Epoch 80/100

165/165 [==============================] - 2s 10ms/step - loss: 603.6912 - mse: 603.6912 - mae: 20.8592 - val\_loss: 608.7848 - val\_mse: 608.7848 - val\_mae: 21.0647

Epoch 81/100

165/165 [==============================] - 2s 10ms/step - loss: 599.1263 - mse: 599.1263 - mae: 20.7743 - val\_loss: 604.0515 - val\_mse: 604.0515 - val\_mae: 20.9867

Epoch 82/100

165/165 [==============================] - 2s 10ms/step - loss: 594.1555 - mse: 594.1555 - mae: 20.6851 - val\_loss: 600.0792 - val\_mse: 600.0792 - val\_mae: 20.9201

Epoch 83/100

165/165 [==============================] - 2s 10ms/step - loss: 589.5503 - mse: 589.5503 - mae: 20.5944 - val\_loss: 595.1631 - val\_mse: 595.1631 - val\_mae: 20.8213

Epoch 84/100

165/165 [==============================] - 2s 10ms/step - loss: 585.3284 - mse: 585.3284 - mae: 20.5192 - val\_loss: 590.7567 - val\_mse: 590.7567 - val\_mae: 20.7429

Epoch 85/100

165/165 [==============================] - 2s 10ms/step - loss: 580.3939 - mse: 580.3939 - mae: 20.4332 - val\_loss: 585.2858 - val\_mse: 585.2858 - val\_mae: 20.6304

Epoch 86/100

165/165 [==============================] - 2s 10ms/step - loss: 575.7928 - mse: 575.7928 - mae: 20.3278 - val\_loss: 580.4400 - val\_mse: 580.4400 - val\_mae: 20.5221

Epoch 87/100

165/165 [==============================] - 2s 10ms/step - loss: 571.2623 - mse: 571.2623 - mae: 20.2397 - val\_loss: 575.3818 - val\_mse: 575.3818 - val\_mae: 20.4351

Epoch 88/100

165/165 [==============================] - 2s 10ms/step - loss: 566.0556 - mse: 566.0556 - mae: 20.1401 - val\_loss: 570.5151 - val\_mse: 570.5151 - val\_mae: 20.3380

Epoch 89/100

165/165 [==============================] - 2s 10ms/step - loss: 561.2126 - mse: 561.2126 - mae: 20.0416 - val\_loss: 568.1187 - val\_mse: 568.1187 - val\_mae: 20.3142

Epoch 90/100

165/165 [==============================] - 2s 10ms/step - loss: 557.6685 - mse: 557.6685 - mae: 19.9910 - val\_loss: 562.5992 - val\_mse: 562.5992 - val\_mae: 20.1774

Epoch 91/100

165/165 [==============================] - 2s 10ms/step - loss: 552.9945 - mse: 552.9945 - mae: 19.8851 - val\_loss: 557.0380 - val\_mse: 557.0380 - val\_mae: 20.0776

Epoch 92/100

165/165 [==============================] - 2s 10ms/step - loss: 547.7901 - mse: 547.7901 - mae: 19.7807 - val\_loss: 554.0519 - val\_mse: 554.0519 - val\_mae: 19.9877

Epoch 93/100

165/165 [==============================] - 2s 10ms/step - loss: 543.6736 - mse: 543.6736 - mae: 19.7050 - val\_loss: 547.6732 - val\_mse: 547.6732 - val\_mae: 19.8868

Epoch 94/100

165/165 [==============================] - 2s 10ms/step - loss: 539.4487 - mse: 539.4487 - mae: 19.6200 - val\_loss: 544.5627 - val\_mse: 544.5627 - val\_mae: 19.8604

Epoch 95/100

165/165 [==============================] - 2s 11ms/step - loss: 536.1992 - mse: 536.1992 - mae: 19.5790 - val\_loss: 539.1602 - val\_mse: 539.1602 - val\_mae: 19.7288

Epoch 96/100

165/165 [==============================] - 2s 11ms/step - loss: 530.8542 - mse: 530.8542 - mae: 19.4596 - val\_loss: 536.6196 - val\_mse: 536.6196 - val\_mae: 19.7047

Epoch 97/100

165/165 [==============================] - 2s 11ms/step - loss: 526.8784 - mse: 526.8784 - mae: 19.3760 - val\_loss: 530.5383 - val\_mse: 530.5383 - val\_mae: 19.5621

Epoch 98/100

165/165 [==============================] - 2s 10ms/step - loss: 522.2693 - mse: 522.2693 - mae: 19.2833 - val\_loss: 526.4805 - val\_mse: 526.4805 - val\_mae: 19.4853

Epoch 99/100

165/165 [==============================] - 2s 10ms/step - loss: 518.4691 - mse: 518.4691 - mae: 19.2170 - val\_loss: 521.8819 - val\_mse: 521.8819 - val\_mae: 19.3797

Epoch 100/100

165/165 [==============================] - 2s 10ms/step - loss: 514.3496 - mse: 514.3496 - mae: 19.1374 - val\_loss: 517.4903 - val\_mse: 517.4903 - val\_mae: 19.2971

Training model: LSTM with Dropout

Epoch 1/100

165/165 [==============================] - 4s 13ms/step - loss: 4543.6118 - mse: 4543.6118 - mae: 60.0399 - val\_loss: 4410.2202 - val\_mse: 4410.2202 - val\_mae: 58.8027

Epoch 2/100

165/165 [==============================] - 2s 10ms/step - loss: 4387.3701 - mse: 4387.3701 - mae: 58.7336 - val\_loss: 4250.2124 - val\_mse: 4250.2124 - val\_mae: 57.4421

Epoch 3/100

165/165 [==============================] - 2s 10ms/step - loss: 4223.0024 - mse: 4223.0024 - mae: 57.3414 - val\_loss: 4090.4526 - val\_mse: 4090.4526 - val\_mae: 56.0538

Epoch 4/100

165/165 [==============================] - 2s 10ms/step - loss: 4066.8721 - mse: 4066.8721 - mae: 55.9901 - val\_loss: 3941.7502 - val\_mse: 3941.7502 - val\_mae: 54.7332

Epoch 5/100

165/165 [==============================] - 2s 10ms/step - loss: 3920.7090 - mse: 3920.7090 - mae: 54.6938 - val\_loss: 3799.6770 - val\_mse: 3799.6770 - val\_mae: 53.4457

Epoch 6/100

165/165 [==============================] - 2s 10ms/step - loss: 3780.8640 - mse: 3780.8640 - mae: 53.4176 - val\_loss: 3662.6816 - val\_mse: 3662.6816 - val\_mae: 52.1783

Epoch 7/100

165/165 [==============================] - 2s 10ms/step - loss: 3644.2390 - mse: 3644.2390 - mae: 52.1583 - val\_loss: 3531.0166 - val\_mse: 3531.0166 - val\_mae: 50.9376

Epoch 8/100

165/165 [==============================] - 2s 10ms/step - loss: 3514.2124 - mse: 3514.2124 - mae: 50.9302 - val\_loss: 3403.6831 - val\_mse: 3403.6831 - val\_mae: 49.7192

Epoch 9/100

165/165 [==============================] - 2s 10ms/step - loss: 3386.6011 - mse: 3386.6011 - mae: 49.7374 - val\_loss: 3281.2908 - val\_mse: 3281.2908 - val\_mae: 48.5290

Epoch 10/100

165/165 [==============================] - 2s 10ms/step - loss: 3269.9138 - mse: 3269.9138 - mae: 48.5756 - val\_loss: 3163.1035 - val\_mse: 3163.1035 - val\_mae: 47.3608

Epoch 11/100

165/165 [==============================] - 2s 10ms/step - loss: 3151.2666 - mse: 3151.2666 - mae: 47.4271 - val\_loss: 3049.0427 - val\_mse: 3049.0427 - val\_mae: 46.2162

Epoch 12/100

165/165 [==============================] - 2s 10ms/step - loss: 3038.1296 - mse: 3038.1296 - mae: 46.2961 - val\_loss: 2939.0063 - val\_mse: 2939.0063 - val\_mae: 45.0970

Epoch 13/100

165/165 [==============================] - 2s 10ms/step - loss: 2924.9846 - mse: 2924.9846 - mae: 45.1373 - val\_loss: 2832.5591 - val\_mse: 2832.5591 - val\_mae: 44.0005

Epoch 14/100

165/165 [==============================] - 2s 10ms/step - loss: 2820.4644 - mse: 2820.4644 - mae: 44.0913 - val\_loss: 2730.1936 - val\_mse: 2730.1936 - val\_mae: 42.9348

Epoch 15/100

165/165 [==============================] - 2s 10ms/step - loss: 2717.4524 - mse: 2717.4524 - mae: 43.0315 - val\_loss: 2631.3311 - val\_mse: 2631.3311 - val\_mae: 41.8994

Epoch 16/100

165/165 [==============================] - 2s 10ms/step - loss: 2618.2234 - mse: 2618.2234 - mae: 42.0084 - val\_loss: 2536.0642 - val\_mse: 2536.0642 - val\_mae: 40.8997

Epoch 17/100

165/165 [==============================] - 2s 10ms/step - loss: 2527.5920 - mse: 2527.5920 - mae: 41.0551 - val\_loss: 2444.1860 - val\_mse: 2444.1860 - val\_mae: 39.9349

Epoch 18/100

165/165 [==============================] - 2s 10ms/step - loss: 2436.9570 - mse: 2436.9570 - mae: 40.1364 - val\_loss: 2356.0237 - val\_mse: 2356.0237 - val\_mae: 39.0117

Epoch 19/100

165/165 [==============================] - 2s 10ms/step - loss: 2351.6248 - mse: 2351.6248 - mae: 39.2585 - val\_loss: 2271.1895 - val\_mse: 2271.1895 - val\_mae: 38.1345

Epoch 20/100

165/165 [==============================] - 2s 10ms/step - loss: 2269.5427 - mse: 2269.5427 - mae: 38.4487 - val\_loss: 2189.8240 - val\_mse: 2189.8240 - val\_mae: 37.3090

Epoch 21/100

165/165 [==============================] - 2s 10ms/step - loss: 2189.8345 - mse: 2189.8345 - mae: 37.6090 - val\_loss: 2111.2812 - val\_mse: 2111.2812 - val\_mae: 36.5290

Epoch 22/100

165/165 [==============================] - 2s 10ms/step - loss: 2106.3386 - mse: 2106.3386 - mae: 36.8299 - val\_loss: 2036.1804 - val\_mse: 2036.1804 - val\_mae: 35.7963

Epoch 23/100

165/165 [==============================] - 2s 10ms/step - loss: 2024.4564 - mse: 2024.4564 - mae: 36.0255 - val\_loss: 1964.2736 - val\_mse: 1964.2736 - val\_mae: 35.1092

Epoch 24/100

165/165 [==============================] - 2s 11ms/step - loss: 1964.5100 - mse: 1964.5100 - mae: 35.5045 - val\_loss: 1895.3076 - val\_mse: 1895.3076 - val\_mae: 34.4687

Epoch 25/100

165/165 [==============================] - 2s 11ms/step - loss: 1886.0266 - mse: 1886.0266 - mae: 34.7553 - val\_loss: 1829.3813 - val\_mse: 1829.3813 - val\_mae: 33.8821

Epoch 26/100

165/165 [==============================] - 2s 10ms/step - loss: 1834.2346 - mse: 1834.2346 - mae: 34.3065 - val\_loss: 1766.4788 - val\_mse: 1766.4788 - val\_mae: 33.3499

Epoch 27/100

165/165 [==============================] - 2s 10ms/step - loss: 1768.1299 - mse: 1768.1299 - mae: 33.7119 - val\_loss: 1706.5404 - val\_mse: 1706.5404 - val\_mae: 32.8686

Epoch 28/100

165/165 [==============================] - 2s 10ms/step - loss: 1713.0953 - mse: 1713.0953 - mae: 33.1896 - val\_loss: 1649.1649 - val\_mse: 1649.1649 - val\_mae: 32.4232

Epoch 29/100

165/165 [==============================] - 2s 10ms/step - loss: 1653.7708 - mse: 1653.7708 - mae: 32.7193 - val\_loss: 1594.6217 - val\_mse: 1594.6217 - val\_mae: 32.0038

Epoch 30/100

165/165 [==============================] - 2s 10ms/step - loss: 1597.5873 - mse: 1597.5873 - mae: 32.2678 - val\_loss: 1543.0066 - val\_mse: 1543.0066 - val\_mae: 31.6089

Epoch 31/100

165/165 [==============================] - 2s 10ms/step - loss: 1544.1173 - mse: 1544.1173 - mae: 31.8371 - val\_loss: 1494.3507 - val\_mse: 1494.3507 - val\_mae: 31.2392

Epoch 32/100

165/165 [==============================] - 2s 10ms/step - loss: 1501.2146 - mse: 1501.2146 - mae: 31.4698 - val\_loss: 1448.1627 - val\_mse: 1448.1627 - val\_mae: 30.8880

Epoch 33/100

165/165 [==============================] - 2s 10ms/step - loss: 1458.7804 - mse: 1458.7804 - mae: 31.1635 - val\_loss: 1404.5879 - val\_mse: 1404.5879 - val\_mae: 30.5553

Epoch 34/100

165/165 [==============================] - 2s 10ms/step - loss: 1410.9535 - mse: 1410.9535 - mae: 30.7328 - val\_loss: 1363.3761 - val\_mse: 1363.3761 - val\_mae: 30.2419

Epoch 35/100

165/165 [==============================] - 2s 10ms/step - loss: 1375.4855 - mse: 1375.4855 - mae: 30.4077 - val\_loss: 1324.7664 - val\_mse: 1324.7664 - val\_mae: 29.9499

Epoch 36/100

165/165 [==============================] - 2s 10ms/step - loss: 1336.3513 - mse: 1336.3513 - mae: 30.1259 - val\_loss: 1288.8221 - val\_mse: 1288.8221 - val\_mae: 29.6784

Epoch 37/100

165/165 [==============================] - 2s 10ms/step - loss: 1300.6096 - mse: 1300.6096 - mae: 29.8114 - val\_loss: 1255.0231 - val\_mse: 1255.0231 - val\_mae: 29.4228

Epoch 38/100

165/165 [==============================] - 2s 10ms/step - loss: 1256.3370 - mse: 1256.3370 - mae: 29.2623 - val\_loss: 1196.5190 - val\_mse: 1196.5190 - val\_mae: 28.4513

Epoch 39/100

165/165 [==============================] - 2s 10ms/step - loss: 1204.4355 - mse: 1204.4355 - mae: 28.5244 - val\_loss: 1161.3037 - val\_mse: 1161.3037 - val\_mae: 28.1202

Epoch 40/100

165/165 [==============================] - 2s 10ms/step - loss: 1172.0045 - mse: 1172.0045 - mae: 28.2357 - val\_loss: 1129.6379 - val\_mse: 1129.6379 - val\_mae: 27.8824

Epoch 41/100

165/165 [==============================] - 2s 10ms/step - loss: 1145.4001 - mse: 1145.4001 - mae: 28.0263 - val\_loss: 1100.1541 - val\_mse: 1100.1541 - val\_mae: 27.6109

Epoch 42/100

165/165 [==============================] - 2s 10ms/step - loss: 1097.1696 - mse: 1097.1696 - mae: 27.3784 - val\_loss: 1049.4495 - val\_mse: 1049.4495 - val\_mae: 26.7551

Epoch 43/100

165/165 [==============================] - 2s 10ms/step - loss: 1063.3623 - mse: 1063.3623 - mae: 26.8071 - val\_loss: 1018.6694 - val\_mse: 1018.6694 - val\_mae: 26.4101

Epoch 44/100

165/165 [==============================] - 2s 10ms/step - loss: 1032.6880 - mse: 1032.6880 - mae: 26.4879 - val\_loss: 988.8702 - val\_mse: 988.8702 - val\_mae: 26.1240

Epoch 45/100

165/165 [==============================] - 2s 10ms/step - loss: 1018.3691 - mse: 1018.3691 - mae: 26.3202 - val\_loss: 961.6207 - val\_mse: 961.6207 - val\_mae: 25.8283

Epoch 46/100

165/165 [==============================] - 2s 10ms/step - loss: 990.2192 - mse: 990.2192 - mae: 26.0643 - val\_loss: 937.9080 - val\_mse: 937.9080 - val\_mae: 25.6034

Epoch 47/100

165/165 [==============================] - 2s 10ms/step - loss: 957.2263 - mse: 957.2263 - mae: 25.7452 - val\_loss: 916.9026 - val\_mse: 916.9026 - val\_mae: 25.4048

Epoch 48/100

165/165 [==============================] - 2s 10ms/step - loss: 936.2579 - mse: 936.2579 - mae: 25.5256 - val\_loss: 898.1303 - val\_mse: 898.1303 - val\_mae: 25.1918

Epoch 49/100

165/165 [==============================] - 2s 10ms/step - loss: 925.9473 - mse: 925.9473 - mae: 25.4132 - val\_loss: 879.7332 - val\_mse: 879.7332 - val\_mae: 25.0095

Epoch 50/100

165/165 [==============================] - 2s 10ms/step - loss: 908.9779 - mse: 908.9779 - mae: 25.2430 - val\_loss: 863.9192 - val\_mse: 863.9192 - val\_mae: 24.8675

Epoch 51/100

165/165 [==============================] - 2s 11ms/step - loss: 886.3690 - mse: 886.3690 - mae: 24.9120 - val\_loss: 849.7627 - val\_mse: 849.7627 - val\_mae: 24.7221

Epoch 52/100

165/165 [==============================] - 2s 10ms/step - loss: 877.8506 - mse: 877.8506 - mae: 24.8300 - val\_loss: 838.3241 - val\_mse: 838.3241 - val\_mae: 24.6475

Epoch 53/100

165/165 [==============================] - 2s 10ms/step - loss: 865.0949 - mse: 865.0949 - mae: 24.6940 - val\_loss: 825.8578 - val\_mse: 825.8578 - val\_mae: 24.4895

Epoch 54/100

165/165 [==============================] - 2s 10ms/step - loss: 855.4355 - mse: 855.4355 - mae: 24.6406 - val\_loss: 816.7734 - val\_mse: 816.7734 - val\_mae: 24.4059

Epoch 55/100

165/165 [==============================] - 2s 10ms/step - loss: 850.7367 - mse: 850.7367 - mae: 24.5799 - val\_loss: 807.2100 - val\_mse: 807.2100 - val\_mae: 24.2926

Epoch 56/100

165/165 [==============================] - 2s 10ms/step - loss: 838.1007 - mse: 838.1007 - mae: 24.4701 - val\_loss: 798.8774 - val\_mse: 798.8774 - val\_mae: 24.1998

Epoch 57/100

165/165 [==============================] - 2s 11ms/step - loss: 824.8990 - mse: 824.8990 - mae: 24.2868 - val\_loss: 790.5863 - val\_mse: 790.5863 - val\_mae: 24.0838

Epoch 58/100

165/165 [==============================] - 2s 10ms/step - loss: 820.3102 - mse: 820.3102 - mae: 24.2193 - val\_loss: 784.6044 - val\_mse: 784.6044 - val\_mae: 24.0222

Epoch 59/100

165/165 [==============================] - 2s 10ms/step - loss: 814.8192 - mse: 814.8192 - mae: 24.2106 - val\_loss: 779.7234 - val\_mse: 779.7234 - val\_mae: 23.9923

Epoch 60/100

165/165 [==============================] - 2s 10ms/step - loss: 818.8726 - mse: 818.8726 - mae: 24.2462 - val\_loss: 773.5010 - val\_mse: 773.5010 - val\_mae: 23.8858

Epoch 61/100

165/165 [==============================] - 2s 10ms/step - loss: 808.0789 - mse: 808.0789 - mae: 24.0946 - val\_loss: 769.4821 - val\_mse: 769.4821 - val\_mae: 23.8431

Epoch 62/100

165/165 [==============================] - 2s 10ms/step - loss: 802.4228 - mse: 802.4228 - mae: 24.0324 - val\_loss: 764.7676 - val\_mse: 764.7676 - val\_mae: 23.7811

Epoch 63/100

165/165 [==============================] - 2s 10ms/step - loss: 797.0252 - mse: 797.0252 - mae: 23.9810 - val\_loss: 762.2797 - val\_mse: 762.2797 - val\_mae: 23.7400

Epoch 64/100

165/165 [==============================] - 2s 10ms/step - loss: 792.8458 - mse: 792.8458 - mae: 23.9308 - val\_loss: 756.8141 - val\_mse: 756.8141 - val\_mae: 23.6632

Epoch 65/100

165/165 [==============================] - 2s 10ms/step - loss: 789.8752 - mse: 789.8752 - mae: 23.8585 - val\_loss: 756.9325 - val\_mse: 756.9325 - val\_mae: 23.6621

Epoch 66/100

165/165 [==============================] - 2s 10ms/step - loss: 788.4691 - mse: 788.4691 - mae: 23.8210 - val\_loss: 752.9092 - val\_mse: 752.9092 - val\_mae: 23.6008

Epoch 67/100

165/165 [==============================] - 2s 10ms/step - loss: 783.1949 - mse: 783.1949 - mae: 23.7698 - val\_loss: 746.8730 - val\_mse: 746.8730 - val\_mae: 23.5118

Epoch 68/100

165/165 [==============================] - 2s 10ms/step - loss: 785.3914 - mse: 785.3914 - mae: 23.8203 - val\_loss: 746.5393 - val\_mse: 746.5393 - val\_mae: 23.5377

Epoch 69/100

165/165 [==============================] - 2s 10ms/step - loss: 775.9736 - mse: 775.9736 - mae: 23.6449 - val\_loss: 741.2537 - val\_mse: 741.2537 - val\_mae: 23.4299

Epoch 70/100

165/165 [==============================] - 2s 10ms/step - loss: 775.4542 - mse: 775.4542 - mae: 23.5905 - val\_loss: 737.6411 - val\_mse: 737.6411 - val\_mae: 23.3637

Epoch 71/100

165/165 [==============================] - 2s 10ms/step - loss: 775.5756 - mse: 775.5756 - mae: 23.5910 - val\_loss: 736.0314 - val\_mse: 736.0314 - val\_mae: 23.3568

Epoch 72/100

165/165 [==============================] - 2s 10ms/step - loss: 771.0790 - mse: 771.0790 - mae: 23.5459 - val\_loss: 733.4063 - val\_mse: 733.4063 - val\_mae: 23.3131

Epoch 73/100

165/165 [==============================] - 2s 10ms/step - loss: 777.4197 - mse: 777.4197 - mae: 23.6575 - val\_loss: 728.9109 - val\_mse: 728.9109 - val\_mae: 23.2215

Epoch 74/100

165/165 [==============================] - 2s 10ms/step - loss: 762.4813 - mse: 762.4813 - mae: 23.4639 - val\_loss: 725.3742 - val\_mse: 725.3742 - val\_mae: 23.1603

Epoch 75/100

165/165 [==============================] - 2s 10ms/step - loss: 759.7395 - mse: 759.7395 - mae: 23.3386 - val\_loss: 722.3513 - val\_mse: 722.3513 - val\_mae: 23.1123

Epoch 76/100

165/165 [==============================] - 2s 10ms/step - loss: 760.0972 - mse: 760.0972 - mae: 23.3995 - val\_loss: 720.9118 - val\_mse: 720.9118 - val\_mae: 23.0986

Epoch 77/100

165/165 [==============================] - 2s 10ms/step - loss: 755.1764 - mse: 755.1764 - mae: 23.3528 - val\_loss: 716.5524 - val\_mse: 716.5524 - val\_mae: 22.9966

Epoch 78/100

165/165 [==============================] - 2s 10ms/step - loss: 751.0002 - mse: 751.0002 - mae: 23.2193 - val\_loss: 713.1840 - val\_mse: 713.1840 - val\_mae: 22.9441

Epoch 79/100

165/165 [==============================] - 2s 10ms/step - loss: 747.1484 - mse: 747.1484 - mae: 23.1574 - val\_loss: 710.7809 - val\_mse: 710.7809 - val\_mae: 22.9043

Epoch 80/100

165/165 [==============================] - 2s 10ms/step - loss: 753.8382 - mse: 753.8382 - mae: 23.2475 - val\_loss: 708.0266 - val\_mse: 708.0266 - val\_mae: 22.8524

Epoch 81/100

165/165 [==============================] - 2s 10ms/step - loss: 737.2314 - mse: 737.2314 - mae: 23.0244 - val\_loss: 706.9805 - val\_mse: 706.9805 - val\_mae: 22.8221

Epoch 82/100

165/165 [==============================] - 2s 10ms/step - loss: 744.6909 - mse: 744.6909 - mae: 23.1239 - val\_loss: 702.5026 - val\_mse: 702.5026 - val\_mae: 22.7400

Epoch 83/100

165/165 [==============================] - 2s 9ms/step - loss: 739.1938 - mse: 739.1938 - mae: 23.0346 - val\_loss: 698.3088 - val\_mse: 698.3088 - val\_mae: 22.6854

Epoch 84/100

165/165 [==============================] - 2s 10ms/step - loss: 744.0524 - mse: 744.0524 - mae: 23.1043 - val\_loss: 695.0410 - val\_mse: 695.0410 - val\_mae: 22.6210

Epoch 85/100

165/165 [==============================] - 2s 10ms/step - loss: 729.0845 - mse: 729.0845 - mae: 22.8781 - val\_loss: 693.6877 - val\_mse: 693.6877 - val\_mae: 22.5804

Epoch 86/100

165/165 [==============================] - 2s 10ms/step - loss: 731.9893 - mse: 731.9893 - mae: 22.9007 - val\_loss: 689.8846 - val\_mse: 689.8846 - val\_mae: 22.5252

Epoch 87/100

165/165 [==============================] - 2s 11ms/step - loss: 728.7517 - mse: 728.7517 - mae: 22.8663 - val\_loss: 688.6376 - val\_mse: 688.6376 - val\_mae: 22.4955

Epoch 88/100

165/165 [==============================] - 2s 9ms/step - loss: 727.0865 - mse: 727.0865 - mae: 22.8123 - val\_loss: 683.7156 - val\_mse: 683.7156 - val\_mae: 22.4179

Epoch 89/100

165/165 [==============================] - 2s 10ms/step - loss: 724.0989 - mse: 724.0989 - mae: 22.7745 - val\_loss: 683.2270 - val\_mse: 683.2270 - val\_mae: 22.3867

Epoch 90/100

165/165 [==============================] - 2s 10ms/step - loss: 728.4139 - mse: 728.4139 - mae: 22.8611 - val\_loss: 679.7103 - val\_mse: 679.7103 - val\_mae: 22.3256

Epoch 91/100

165/165 [==============================] - 2s 10ms/step - loss: 725.3383 - mse: 725.3383 - mae: 22.7837 - val\_loss: 675.3658 - val\_mse: 675.3658 - val\_mae: 22.2799

Epoch 92/100

165/165 [==============================] - 2s 10ms/step - loss: 714.3411 - mse: 714.3411 - mae: 22.6044 - val\_loss: 672.1938 - val\_mse: 672.1938 - val\_mae: 22.1968

Epoch 93/100

165/165 [==============================] - 2s 10ms/step - loss: 722.4432 - mse: 722.4432 - mae: 22.6929 - val\_loss: 670.9153 - val\_mse: 670.9153 - val\_mae: 22.2268

Epoch 94/100

165/165 [==============================] - 2s 10ms/step - loss: 712.9536 - mse: 712.9536 - mae: 22.5752 - val\_loss: 666.0635 - val\_mse: 666.0635 - val\_mae: 22.0945

Epoch 95/100

165/165 [==============================] - 2s 10ms/step - loss: 703.8055 - mse: 703.8055 - mae: 22.4376 - val\_loss: 666.4126 - val\_mse: 666.4126 - val\_mae: 22.0827

Epoch 96/100

165/165 [==============================] - 2s 10ms/step - loss: 709.3210 - mse: 709.3210 - mae: 22.4834 - val\_loss: 660.6622 - val\_mse: 660.6622 - val\_mae: 21.9888

Epoch 97/100

165/165 [==============================] - 2s 10ms/step - loss: 702.7197 - mse: 702.7197 - mae: 22.3762 - val\_loss: 657.3954 - val\_mse: 657.3954 - val\_mae: 21.9110

Epoch 98/100

165/165 [==============================] - 2s 10ms/step - loss: 701.1790 - mse: 701.1790 - mae: 22.3769 - val\_loss: 649.9249 - val\_mse: 649.9249 - val\_mae: 21.8209

Epoch 99/100

165/165 [==============================] - 2s 10ms/step - loss: 693.6824 - mse: 693.6824 - mae: 22.2038 - val\_loss: 642.6173 - val\_mse: 642.6173 - val\_mae: 21.6365

Epoch 100/100

165/165 [==============================] - 2s 10ms/step - loss: 681.6420 - mse: 681.6420 - mae: 22.0292 - val\_loss: 637.8149 - val\_mse: 637.8149 - val\_mae: 21.5629

Training model: Wide LSTM

Epoch 1/100

165/165 [==============================] - 4s 16ms/step - loss: 4503.4043 - mse: 4503.4043 - mae: 59.7011 - val\_loss: 4295.3477 - val\_mse: 4295.3477 - val\_mae: 57.8268

Epoch 2/100

165/165 [==============================] - 2s 13ms/step - loss: 4207.0059 - mse: 4207.0059 - mae: 57.2025 - val\_loss: 4013.0796 - val\_mse: 4013.0796 - val\_mae: 55.3684

Epoch 3/100

165/165 [==============================] - 2s 13ms/step - loss: 3930.2021 - mse: 3930.2021 - mae: 54.7752 - val\_loss: 3749.1379 - val\_mse: 3749.1379 - val\_mae: 52.9796

Epoch 4/100

165/165 [==============================] - 2s 13ms/step - loss: 3672.3623 - mse: 3672.3623 - mae: 52.4291 - val\_loss: 3501.4031 - val\_mse: 3501.4031 - val\_mae: 50.6540

Epoch 5/100

165/165 [==============================] - 2s 13ms/step - loss: 3420.7502 - mse: 3420.7502 - mae: 50.0542 - val\_loss: 3255.9038 - val\_mse: 3255.9038 - val\_mae: 48.2751

Epoch 6/100

165/165 [==============================] - 2s 13ms/step - loss: 3185.1338 - mse: 3185.1338 - mae: 47.7610 - val\_loss: 3033.7581 - val\_mse: 3033.7581 - val\_mae: 46.0551

Epoch 7/100

165/165 [==============================] - 2s 13ms/step - loss: 2968.9888 - mse: 2968.9888 - mae: 45.5946 - val\_loss: 2828.4258 - val\_mse: 2828.4258 - val\_mae: 43.9406

Epoch 8/100

165/165 [==============================] - 2s 13ms/step - loss: 2768.3438 - mse: 2768.3438 - mae: 43.5351 - val\_loss: 2633.8030 - val\_mse: 2633.8030 - val\_mae: 41.8933

Epoch 9/100

165/165 [==============================] - 2s 12ms/step - loss: 2569.8816 - mse: 2569.8816 - mae: 41.4630 - val\_loss: 2444.2219 - val\_mse: 2444.2219 - val\_mae: 39.8825

Epoch 10/100

165/165 [==============================] - 2s 14ms/step - loss: 2388.5051 - mse: 2388.5051 - mae: 39.5485 - val\_loss: 2274.4294 - val\_mse: 2274.4294 - val\_mae: 38.0908

Epoch 11/100

165/165 [==============================] - 2s 13ms/step - loss: 2224.1475 - mse: 2224.1475 - mae: 37.8451 - val\_loss: 2119.7166 - val\_mse: 2119.7166 - val\_mae: 36.4926

Epoch 12/100

165/165 [==============================] - 2s 13ms/step - loss: 2073.3018 - mse: 2073.3018 - mae: 36.3015 - val\_loss: 1978.1556 - val\_mse: 1978.1556 - val\_mae: 35.0714

Epoch 13/100

165/165 [==============================] - 2s 14ms/step - loss: 1933.1047 - mse: 1933.1047 - mae: 34.8578 - val\_loss: 1845.1588 - val\_mse: 1845.1588 - val\_mae: 33.6914

Epoch 14/100

165/165 [==============================] - 2s 13ms/step - loss: 1804.2761 - mse: 1804.2761 - mae: 33.5720 - val\_loss: 1723.2184 - val\_mse: 1723.2184 - val\_mae: 32.4979

Epoch 15/100

165/165 [==============================] - 2s 13ms/step - loss: 1685.4286 - mse: 1685.4286 - mae: 32.4233 - val\_loss: 1611.7278 - val\_mse: 1611.7278 - val\_mae: 31.4636

Epoch 16/100

165/165 [==============================] - 2s 13ms/step - loss: 1575.9208 - mse: 1575.9208 - mae: 31.3766 - val\_loss: 1508.1882 - val\_mse: 1508.1882 - val\_mae: 30.5258

Epoch 17/100

165/165 [==============================] - 2s 13ms/step - loss: 1474.5162 - mse: 1474.5162 - mae: 30.3988 - val\_loss: 1412.2919 - val\_mse: 1412.2919 - val\_mae: 29.5700

Epoch 18/100

165/165 [==============================] - 2s 13ms/step - loss: 1381.2815 - mse: 1381.2815 - mae: 29.5016 - val\_loss: 1326.5186 - val\_mse: 1326.5186 - val\_mae: 28.8570

Epoch 19/100

165/165 [==============================] - 2s 13ms/step - loss: 1295.4301 - mse: 1295.4301 - mae: 28.6728 - val\_loss: 1244.7244 - val\_mse: 1244.7244 - val\_mae: 27.9940

Epoch 20/100

165/165 [==============================] - 2s 12ms/step - loss: 1216.8459 - mse: 1216.8459 - mae: 27.8973 - val\_loss: 1171.2852 - val\_mse: 1171.2852 - val\_mae: 27.3068

Epoch 21/100

165/165 [==============================] - 2s 13ms/step - loss: 1144.6779 - mse: 1144.6779 - mae: 27.1646 - val\_loss: 1103.9791 - val\_mse: 1103.9791 - val\_mae: 26.7056

Epoch 22/100

165/165 [==============================] - 2s 13ms/step - loss: 1079.9294 - mse: 1079.9294 - mae: 26.5186 - val\_loss: 1043.6875 - val\_mse: 1043.6875 - val\_mae: 26.1057

Epoch 23/100

165/165 [==============================] - 2s 13ms/step - loss: 1021.5107 - mse: 1021.5107 - mae: 25.9229 - val\_loss: 990.1154 - val\_mse: 990.1154 - val\_mae: 25.6020

Epoch 24/100

165/165 [==============================] - 2s 13ms/step - loss: 968.7600 - mse: 968.7600 - mae: 25.3721 - val\_loss: 942.1025 - val\_mse: 942.1025 - val\_mae: 25.1243

Epoch 25/100

165/165 [==============================] - 2s 13ms/step - loss: 922.2435 - mse: 922.2435 - mae: 24.8746 - val\_loss: 898.7477 - val\_mse: 898.7477 - val\_mae: 24.6770

Epoch 26/100

165/165 [==============================] - 2s 13ms/step - loss: 880.8410 - mse: 880.8410 - mae: 24.4222 - val\_loss: 861.4772 - val\_mse: 861.4772 - val\_mae: 24.2848

Epoch 27/100

165/165 [==============================] - 2s 13ms/step - loss: 844.5380 - mse: 844.5380 - mae: 24.0324 - val\_loss: 829.5096 - val\_mse: 829.5096 - val\_mae: 23.9834

Epoch 28/100

165/165 [==============================] - 2s 12ms/step - loss: 812.7280 - mse: 812.7280 - mae: 23.6826 - val\_loss: 800.0396 - val\_mse: 800.0396 - val\_mae: 23.6362

Epoch 29/100

165/165 [==============================] - 2s 13ms/step - loss: 784.8603 - mse: 784.8603 - mae: 23.3608 - val\_loss: 775.4191 - val\_mse: 775.4191 - val\_mae: 23.3620

Epoch 30/100

165/165 [==============================] - 2s 13ms/step - loss: 760.8608 - mse: 760.8608 - mae: 23.0891 - val\_loss: 753.3149 - val\_mse: 753.3149 - val\_mae: 23.1149

Epoch 31/100

165/165 [==============================] - 2s 13ms/step - loss: 738.4419 - mse: 738.4419 - mae: 22.8053 - val\_loss: 731.6622 - val\_mse: 731.6622 - val\_mae: 22.8521

Epoch 32/100

165/165 [==============================] - 2s 13ms/step - loss: 713.1569 - mse: 713.1569 - mae: 22.4374 - val\_loss: 706.0251 - val\_mse: 706.0251 - val\_mae: 22.4347

Epoch 33/100

165/165 [==============================] - 2s 13ms/step - loss: 691.9940 - mse: 691.9940 - mae: 22.1251 - val\_loss: 686.6454 - val\_mse: 686.6454 - val\_mae: 22.1561

Epoch 34/100

165/165 [==============================] - 2s 13ms/step - loss: 674.2316 - mse: 674.2316 - mae: 21.8864 - val\_loss: 671.9446 - val\_mse: 671.9446 - val\_mae: 21.9602

Epoch 35/100

165/165 [==============================] - 2s 13ms/step - loss: 657.5273 - mse: 657.5273 - mae: 21.6328 - val\_loss: 655.0220 - val\_mse: 655.0220 - val\_mae: 21.6975

Epoch 36/100

165/165 [==============================] - 2s 13ms/step - loss: 642.7572 - mse: 642.7572 - mae: 21.4154 - val\_loss: 644.4236 - val\_mse: 644.4236 - val\_mae: 21.5775

Epoch 37/100

165/165 [==============================] - 2s 13ms/step - loss: 629.9688 - mse: 629.9688 - mae: 21.2212 - val\_loss: 629.3808 - val\_mse: 629.3808 - val\_mae: 21.3222

Epoch 38/100

165/165 [==============================] - 2s 13ms/step - loss: 617.4848 - mse: 617.4848 - mae: 21.0210 - val\_loss: 617.7514 - val\_mse: 617.7514 - val\_mae: 21.1448

Epoch 39/100

165/165 [==============================] - 2s 13ms/step - loss: 607.0394 - mse: 607.0394 - mae: 20.8619 - val\_loss: 607.9265 - val\_mse: 607.9265 - val\_mae: 20.9593

Epoch 40/100

165/165 [==============================] - 2s 12ms/step - loss: 596.3817 - mse: 596.3817 - mae: 20.6849 - val\_loss: 605.4645 - val\_mse: 605.4645 - val\_mae: 20.9254

Epoch 41/100

165/165 [==============================] - 2s 13ms/step - loss: 587.3539 - mse: 587.3539 - mae: 20.5492 - val\_loss: 589.1937 - val\_mse: 589.1937 - val\_mae: 20.7158

Epoch 42/100

165/165 [==============================] - 2s 13ms/step - loss: 576.5407 - mse: 576.5407 - mae: 20.3478 - val\_loss: 578.7472 - val\_mse: 578.7472 - val\_mae: 20.5006

Epoch 43/100

165/165 [==============================] - 2s 13ms/step - loss: 566.8953 - mse: 566.8953 - mae: 20.1741 - val\_loss: 568.8188 - val\_mse: 568.8188 - val\_mae: 20.3278

Epoch 44/100

165/165 [==============================] - 2s 13ms/step - loss: 558.0154 - mse: 558.0154 - mae: 20.0092 - val\_loss: 560.3812 - val\_mse: 560.3812 - val\_mae: 20.1388

Epoch 45/100

165/165 [==============================] - 2s 13ms/step - loss: 548.7054 - mse: 548.7054 - mae: 19.8286 - val\_loss: 552.7861 - val\_mse: 552.7861 - val\_mae: 20.0247

Epoch 46/100

165/165 [==============================] - 2s 13ms/step - loss: 541.4211 - mse: 541.4211 - mae: 19.7183 - val\_loss: 542.8510 - val\_mse: 542.8510 - val\_mae: 19.8239

Epoch 47/100

165/165 [==============================] - 2s 13ms/step - loss: 532.7759 - mse: 532.7759 - mae: 19.5411 - val\_loss: 535.3459 - val\_mse: 535.3459 - val\_mae: 19.7133

Epoch 48/100

165/165 [==============================] - 2s 13ms/step - loss: 524.4939 - mse: 524.4939 - mae: 19.3857 - val\_loss: 526.0976 - val\_mse: 526.0976 - val\_mae: 19.5415

Epoch 49/100

165/165 [==============================] - 2s 13ms/step - loss: 516.1343 - mse: 516.1343 - mae: 19.2145 - val\_loss: 517.2916 - val\_mse: 517.2916 - val\_mae: 19.3555

Epoch 50/100

165/165 [==============================] - 2s 12ms/step - loss: 507.7881 - mse: 507.7881 - mae: 19.0492 - val\_loss: 510.0670 - val\_mse: 510.0670 - val\_mae: 19.2249

Epoch 51/100

165/165 [==============================] - 2s 13ms/step - loss: 500.5268 - mse: 500.5268 - mae: 18.9096 - val\_loss: 502.4132 - val\_mse: 502.4132 - val\_mae: 19.0554

Epoch 52/100

165/165 [==============================] - 2s 13ms/step - loss: 492.9219 - mse: 492.9219 - mae: 18.7495 - val\_loss: 495.3542 - val\_mse: 495.3542 - val\_mae: 18.9249

Epoch 53/100

165/165 [==============================] - 2s 13ms/step - loss: 485.1848 - mse: 485.1848 - mae: 18.5979 - val\_loss: 486.3823 - val\_mse: 486.3823 - val\_mae: 18.7520

Epoch 54/100

165/165 [==============================] - 2s 13ms/step - loss: 467.8716 - mse: 467.8716 - mae: 18.2444 - val\_loss: 463.1138 - val\_mse: 463.1138 - val\_mae: 18.2144

Epoch 55/100

165/165 [==============================] - 2s 13ms/step - loss: 455.4854 - mse: 455.4854 - mae: 17.9638 - val\_loss: 456.5425 - val\_mse: 456.5425 - val\_mae: 18.1285

Epoch 56/100

165/165 [==============================] - 2s 13ms/step - loss: 447.7413 - mse: 447.7413 - mae: 17.8085 - val\_loss: 447.6055 - val\_mse: 447.6055 - val\_mae: 17.9379

Epoch 57/100

165/165 [==============================] - 2s 13ms/step - loss: 440.1961 - mse: 440.1961 - mae: 17.6635 - val\_loss: 439.6967 - val\_mse: 439.6967 - val\_mae: 17.7322

Epoch 58/100

165/165 [==============================] - 2s 13ms/step - loss: 431.9833 - mse: 431.9833 - mae: 17.4671 - val\_loss: 434.2129 - val\_mse: 434.2129 - val\_mae: 17.6902

Epoch 59/100

165/165 [==============================] - 2s 14ms/step - loss: 427.2079 - mse: 427.2079 - mae: 17.4070 - val\_loss: 429.9064 - val\_mse: 429.9064 - val\_mae: 17.5616

Epoch 60/100

165/165 [==============================] - 2s 13ms/step - loss: 418.7600 - mse: 418.7600 - mae: 17.2147 - val\_loss: 418.5610 - val\_mse: 418.5610 - val\_mae: 17.3395

Epoch 61/100

165/165 [==============================] - 2s 13ms/step - loss: 412.0828 - mse: 412.0828 - mae: 17.0557 - val\_loss: 412.0489 - val\_mse: 412.0489 - val\_mae: 17.2030

Epoch 62/100

165/165 [==============================] - 2s 13ms/step - loss: 404.7471 - mse: 404.7471 - mae: 16.8973 - val\_loss: 406.3445 - val\_mse: 406.3445 - val\_mae: 17.0417

Epoch 63/100

165/165 [==============================] - 2s 13ms/step - loss: 400.5651 - mse: 400.5651 - mae: 16.8434 - val\_loss: 400.2578 - val\_mse: 400.2578 - val\_mae: 16.8934

Epoch 64/100

165/165 [==============================] - 2s 13ms/step - loss: 393.5259 - mse: 393.5259 - mae: 16.6736 - val\_loss: 393.5549 - val\_mse: 393.5549 - val\_mae: 16.7946

Epoch 65/100

165/165 [==============================] - 2s 12ms/step - loss: 386.7139 - mse: 386.7139 - mae: 16.5218 - val\_loss: 386.5023 - val\_mse: 386.5023 - val\_mae: 16.6355

Epoch 66/100

165/165 [==============================] - 2s 13ms/step - loss: 380.3662 - mse: 380.3662 - mae: 16.3598 - val\_loss: 383.1955 - val\_mse: 383.1955 - val\_mae: 16.5978

Epoch 67/100

165/165 [==============================] - 2s 13ms/step - loss: 375.5292 - mse: 375.5292 - mae: 16.2605 - val\_loss: 373.6648 - val\_mse: 373.6648 - val\_mae: 16.3412

Epoch 68/100

165/165 [==============================] - 2s 13ms/step - loss: 369.1534 - mse: 369.1534 - mae: 16.1172 - val\_loss: 369.7888 - val\_mse: 369.7888 - val\_mae: 16.2480

Epoch 69/100

165/165 [==============================] - 2s 13ms/step - loss: 362.6643 - mse: 362.6643 - mae: 15.9566 - val\_loss: 363.9361 - val\_mse: 363.9361 - val\_mae: 16.1490

Epoch 70/100

165/165 [==============================] - 2s 13ms/step - loss: 356.9462 - mse: 356.9462 - mae: 15.8143 - val\_loss: 356.7067 - val\_mse: 356.7067 - val\_mae: 15.9224

Epoch 71/100

165/165 [==============================] - 2s 13ms/step - loss: 351.3356 - mse: 351.3356 - mae: 15.6980 - val\_loss: 349.6732 - val\_mse: 349.6732 - val\_mae: 15.7506

Epoch 72/100

165/165 [==============================] - 2s 13ms/step - loss: 345.4667 - mse: 345.4667 - mae: 15.5432 - val\_loss: 345.8145 - val\_mse: 345.8145 - val\_mae: 15.6947

Epoch 73/100

165/165 [==============================] - 2s 13ms/step - loss: 340.1211 - mse: 340.1211 - mae: 15.4145 - val\_loss: 343.3291 - val\_mse: 343.3291 - val\_mae: 15.6303

Epoch 74/100

165/165 [==============================] - 2s 14ms/step - loss: 336.0743 - mse: 336.0743 - mae: 15.3367 - val\_loss: 335.8198 - val\_mse: 335.8198 - val\_mae: 15.4721

Epoch 75/100

165/165 [==============================] - 2s 12ms/step - loss: 331.4594 - mse: 331.4594 - mae: 15.2133 - val\_loss: 333.5553 - val\_mse: 333.5553 - val\_mae: 15.3765

Epoch 76/100

165/165 [==============================] - 2s 13ms/step - loss: 325.8851 - mse: 325.8851 - mae: 15.0842 - val\_loss: 328.1091 - val\_mse: 328.1091 - val\_mae: 15.1569

Epoch 77/100

165/165 [==============================] - 2s 13ms/step - loss: 320.2520 - mse: 320.2520 - mae: 14.9179 - val\_loss: 320.7129 - val\_mse: 320.7129 - val\_mae: 15.0693

Epoch 78/100

165/165 [==============================] - 2s 13ms/step - loss: 315.5166 - mse: 315.5166 - mae: 14.8099 - val\_loss: 314.2886 - val\_mse: 314.2886 - val\_mae: 14.9195

Epoch 79/100

165/165 [==============================] - 2s 13ms/step - loss: 311.1371 - mse: 311.1371 - mae: 14.7323 - val\_loss: 310.2320 - val\_mse: 310.2320 - val\_mae: 14.8212

Epoch 80/100

165/165 [==============================] - 2s 13ms/step - loss: 306.5780 - mse: 306.5780 - mae: 14.5884 - val\_loss: 304.6787 - val\_mse: 304.6787 - val\_mae: 14.6741

Epoch 81/100

165/165 [==============================] - 2s 14ms/step - loss: 302.3873 - mse: 302.3873 - mae: 14.4755 - val\_loss: 303.4611 - val\_mse: 303.4611 - val\_mae: 14.5840

Epoch 82/100

165/165 [==============================] - 2s 13ms/step - loss: 297.1668 - mse: 297.1668 - mae: 14.3338 - val\_loss: 296.5069 - val\_mse: 296.5069 - val\_mae: 14.4719

Epoch 83/100

165/165 [==============================] - 2s 12ms/step - loss: 292.6347 - mse: 292.6347 - mae: 14.2268 - val\_loss: 291.5790 - val\_mse: 291.5790 - val\_mae: 14.3341

Epoch 84/100

165/165 [==============================] - 2s 13ms/step - loss: 288.2537 - mse: 288.2537 - mae: 14.0900 - val\_loss: 289.3088 - val\_mse: 289.3088 - val\_mae: 14.2498

Epoch 85/100

165/165 [==============================] - 2s 13ms/step - loss: 285.1930 - mse: 285.1930 - mae: 14.0132 - val\_loss: 283.3367 - val\_mse: 283.3367 - val\_mae: 14.0423

Epoch 86/100

165/165 [==============================] - 2s 13ms/step - loss: 280.5796 - mse: 280.5796 - mae: 13.8991 - val\_loss: 281.1512 - val\_mse: 281.1512 - val\_mae: 14.0495

Epoch 87/100

165/165 [==============================] - 2s 13ms/step - loss: 277.7687 - mse: 277.7687 - mae: 13.8242 - val\_loss: 279.8510 - val\_mse: 279.8510 - val\_mae: 14.0592

Epoch 88/100

165/165 [==============================] - 2s 12ms/step - loss: 273.5268 - mse: 273.5268 - mae: 13.7052 - val\_loss: 274.1127 - val\_mse: 274.1127 - val\_mae: 13.8163

Epoch 89/100

165/165 [==============================] - 2s 13ms/step - loss: 269.2779 - mse: 269.2779 - mae: 13.5629 - val\_loss: 273.5064 - val\_mse: 273.5064 - val\_mae: 13.8774

Epoch 90/100

165/165 [==============================] - 2s 13ms/step - loss: 267.3358 - mse: 267.3358 - mae: 13.5296 - val\_loss: 264.3733 - val\_mse: 264.3733 - val\_mae: 13.5564

Epoch 91/100

165/165 [==============================] - 2s 12ms/step - loss: 263.3574 - mse: 263.3574 - mae: 13.4067 - val\_loss: 260.7638 - val\_mse: 260.7638 - val\_mae: 13.4384

Epoch 92/100

165/165 [==============================] - 2s 13ms/step - loss: 259.6739 - mse: 259.6739 - mae: 13.3025 - val\_loss: 260.7747 - val\_mse: 260.7747 - val\_mae: 13.3411

Epoch 93/100

165/165 [==============================] - 2s 13ms/step - loss: 256.0952 - mse: 256.0952 - mae: 13.1885 - val\_loss: 257.5915 - val\_mse: 257.5915 - val\_mae: 13.2822

Epoch 94/100

165/165 [==============================] - 2s 13ms/step - loss: 253.4727 - mse: 253.4727 - mae: 13.1302 - val\_loss: 251.9199 - val\_mse: 251.9199 - val\_mae: 13.1364

Epoch 95/100

165/165 [==============================] - 2s 13ms/step - loss: 249.7226 - mse: 249.7226 - mae: 13.0083 - val\_loss: 248.1460 - val\_mse: 248.1460 - val\_mae: 13.0599

Epoch 96/100

165/165 [==============================] - 2s 12ms/step - loss: 246.8745 - mse: 246.8745 - mae: 12.9140 - val\_loss: 253.0231 - val\_mse: 253.0231 - val\_mae: 13.2450

Epoch 97/100

165/165 [==============================] - 2s 13ms/step - loss: 249.0605 - mse: 249.0605 - mae: 12.9968 - val\_loss: 249.0811 - val\_mse: 249.0811 - val\_mae: 13.0688

Epoch 98/100

165/165 [==============================] - 2s 13ms/step - loss: 242.0062 - mse: 242.0062 - mae: 12.7725 - val\_loss: 238.9072 - val\_mse: 238.9072 - val\_mae: 12.7776

Epoch 99/100

165/165 [==============================] - 2s 13ms/step - loss: 239.2275 - mse: 239.2275 - mae: 12.7025 - val\_loss: 237.0966 - val\_mse: 237.0966 - val\_mae: 12.7067

Epoch 100/100

165/165 [==============================] - 2s 13ms/step - loss: 235.4160 - mse: 235.4160 - mae: 12.5545 - val\_loss: 237.6582 - val\_mse: 237.6582 - val\_mae: 12.7904

Training model: Deep and Wide LSTM

Epoch 1/100

165/165 [==============================] - 8s 29ms/step - loss: 4010.8105 - mse: 4010.8105 - mae: 55.4205 - val\_loss: 3412.8176 - val\_mse: 3412.8176 - val\_mae: 49.8042

Epoch 2/100

165/165 [==============================] - 4s 23ms/step - loss: 3068.8323 - mse: 3068.8323 - mae: 46.5849 - val\_loss: 2680.3384 - val\_mse: 2680.3384 - val\_mae: 42.4126

Epoch 3/100

165/165 [==============================] - 4s 24ms/step - loss: 2430.5701 - mse: 2430.5701 - mae: 40.0661 - val\_loss: 2141.9199 - val\_mse: 2141.9199 - val\_mae: 36.8319

Epoch 4/100

165/165 [==============================] - 4s 24ms/step - loss: 1958.9242 - mse: 1958.9242 - mae: 35.3764 - val\_loss: 1747.3528 - val\_mse: 1747.3528 - val\_mae: 33.1950

Epoch 5/100

165/165 [==============================] - 4s 24ms/step - loss: 1615.6136 - mse: 1615.6136 - mae: 32.3727 - val\_loss: 1466.1486 - val\_mse: 1466.1486 - val\_mae: 31.0256

Epoch 6/100

165/165 [==============================] - 4s 23ms/step - loss: 1372.0977 - mse: 1372.0977 - mae: 30.4188 - val\_loss: 1271.1003 - val\_mse: 1271.1003 - val\_mae: 29.5439

Epoch 7/100

165/165 [==============================] - 4s 24ms/step - loss: 1205.6394 - mse: 1205.6394 - mae: 29.0663 - val\_loss: 1141.2465 - val\_mse: 1141.2465 - val\_mae: 28.5570

Epoch 8/100

165/165 [==============================] - 4s 25ms/step - loss: 1096.7148 - mse: 1096.7148 - mae: 28.1516 - val\_loss: 1059.8409 - val\_mse: 1059.8409 - val\_mae: 27.9301

Epoch 9/100

165/165 [==============================] - 4s 25ms/step - loss: 974.0118 - mse: 974.0118 - mae: 26.1581 - val\_loss: 1002.0211 - val\_mse: 1002.0211 - val\_mae: 27.4521

Epoch 10/100

165/165 [==============================] - 4s 25ms/step - loss: 928.8107 - mse: 928.8107 - mae: 26.0530 - val\_loss: 823.0259 - val\_mse: 823.0259 - val\_mae: 23.9502

Epoch 11/100

165/165 [==============================] - 4s 24ms/step - loss: 674.6324 - mse: 674.6324 - mae: 20.2288 - val\_loss: 576.4359 - val\_mse: 576.4359 - val\_mae: 18.0998

Epoch 12/100

165/165 [==============================] - 4s 25ms/step - loss: 728.3001 - mse: 728.3001 - mae: 22.6274 - val\_loss: 658.4236 - val\_mse: 658.4236 - val\_mae: 21.6645

Epoch 13/100

165/165 [==============================] - 4s 23ms/step - loss: 535.8373 - mse: 535.8373 - mae: 18.4754 - val\_loss: 448.5401 - val\_mse: 448.5401 - val\_mae: 16.2932

Epoch 14/100

165/165 [==============================] - 4s 24ms/step - loss: 422.9946 - mse: 422.9946 - mae: 15.8330 - val\_loss: 407.8735 - val\_mse: 407.8735 - val\_mae: 15.5820

Epoch 15/100

165/165 [==============================] - 4s 24ms/step - loss: 387.7293 - mse: 387.7293 - mae: 15.4897 - val\_loss: 349.7392 - val\_mse: 349.7392 - val\_mae: 14.6573

Epoch 16/100

165/165 [==============================] - 4s 24ms/step - loss: 855.3552 - mse: 855.3552 - mae: 24.2468 - val\_loss: 996.5804 - val\_mse: 996.5804 - val\_mae: 27.3163

Epoch 17/100

165/165 [==============================] - 4s 25ms/step - loss: 956.7246 - mse: 956.7246 - mae: 26.6733 - val\_loss: 966.0032 - val\_mse: 966.0032 - val\_mae: 27.0271

Epoch 18/100

165/165 [==============================] - 4s 24ms/step - loss: 938.6686 - mse: 938.6686 - mae: 26.5119 - val\_loss: 947.3789 - val\_mse: 947.3789 - val\_mae: 26.8172

Epoch 19/100

165/165 [==============================] - 4s 26ms/step - loss: 912.7866 - mse: 912.7866 - mae: 26.1631 - val\_loss: 896.8207 - val\_mse: 896.8207 - val\_mae: 26.0686

Epoch 20/100

165/165 [==============================] - 4s 26ms/step - loss: 760.6274 - mse: 760.6274 - mae: 23.6434 - val\_loss: 620.9413 - val\_mse: 620.9413 - val\_mae: 21.2852

Epoch 21/100

165/165 [==============================] - 4s 24ms/step - loss: 447.2962 - mse: 447.2962 - mae: 16.9000 - val\_loss: 365.9728 - val\_mse: 365.9728 - val\_mae: 14.7773

Epoch 22/100

165/165 [==============================] - 4s 23ms/step - loss: 334.3651 - mse: 334.3651 - mae: 14.2868 - val\_loss: 307.5202 - val\_mse: 307.5202 - val\_mae: 13.7975

Epoch 23/100

165/165 [==============================] - 4s 24ms/step - loss: 294.4164 - mse: 294.4164 - mae: 13.6354 - val\_loss: 271.9355 - val\_mse: 271.9355 - val\_mae: 13.1935

Epoch 24/100

165/165 [==============================] - 4s 27ms/step - loss: 267.8074 - mse: 267.8074 - mae: 13.1311 - val\_loss: 254.8938 - val\_mse: 254.8938 - val\_mae: 13.0126

Epoch 25/100

165/165 [==============================] - 4s 26ms/step - loss: 246.6623 - mse: 246.6623 - mae: 12.6981 - val\_loss: 241.1639 - val\_mse: 241.1639 - val\_mae: 12.6776

Epoch 26/100

165/165 [==============================] - 4s 24ms/step - loss: 238.1209 - mse: 238.1209 - mae: 12.4653 - val\_loss: 238.7920 - val\_mse: 238.7920 - val\_mae: 12.3427

Epoch 27/100

165/165 [==============================] - 4s 23ms/step - loss: 228.8730 - mse: 228.8730 - mae: 12.2065 - val\_loss: 220.2283 - val\_mse: 220.2283 - val\_mae: 11.8207

Epoch 28/100

165/165 [==============================] - 4s 24ms/step - loss: 223.3312 - mse: 223.3312 - mae: 12.0156 - val\_loss: 214.9648 - val\_mse: 214.9648 - val\_mae: 11.7596

Epoch 29/100

165/165 [==============================] - 4s 23ms/step - loss: 213.5187 - mse: 213.5187 - mae: 11.7327 - val\_loss: 211.3990 - val\_mse: 211.3990 - val\_mae: 11.6382

Epoch 30/100

165/165 [==============================] - 4s 24ms/step - loss: 206.9601 - mse: 206.9601 - mae: 11.5352 - val\_loss: 202.0360 - val\_mse: 202.0360 - val\_mae: 11.2357

Epoch 31/100

165/165 [==============================] - 4s 23ms/step - loss: 201.2735 - mse: 201.2735 - mae: 11.3513 - val\_loss: 194.9703 - val\_mse: 194.9703 - val\_mae: 11.2924

Epoch 32/100

165/165 [==============================] - 4s 23ms/step - loss: 200.4054 - mse: 200.4054 - mae: 11.2930 - val\_loss: 197.8013 - val\_mse: 197.8013 - val\_mae: 11.1103

Epoch 33/100

165/165 [==============================] - 4s 23ms/step - loss: 199.7245 - mse: 199.7245 - mae: 11.2457 - val\_loss: 193.7892 - val\_mse: 193.7892 - val\_mae: 10.9511

Epoch 34/100

165/165 [==============================] - 4s 24ms/step - loss: 195.1653 - mse: 195.1653 - mae: 11.0630 - val\_loss: 199.7964 - val\_mse: 199.7964 - val\_mae: 10.9765

Epoch 35/100

165/165 [==============================] - 4s 24ms/step - loss: 191.2177 - mse: 191.2177 - mae: 10.9113 - val\_loss: 194.1882 - val\_mse: 194.1882 - val\_mae: 11.2186

Epoch 36/100

165/165 [==============================] - 4s 24ms/step - loss: 189.7814 - mse: 189.7814 - mae: 10.8377 - val\_loss: 195.6463 - val\_mse: 195.6463 - val\_mae: 11.0779

Epoch 37/100

165/165 [==============================] - 4s 23ms/step - loss: 187.3571 - mse: 187.3571 - mae: 10.7604 - val\_loss: 183.8856 - val\_mse: 183.8856 - val\_mae: 10.6395

Epoch 38/100

165/165 [==============================] - 4s 24ms/step - loss: 187.3441 - mse: 187.3441 - mae: 10.7481 - val\_loss: 183.7157 - val\_mse: 183.7157 - val\_mae: 10.6489

Epoch 39/100

165/165 [==============================] - 4s 23ms/step - loss: 187.4347 - mse: 187.4347 - mae: 10.7299 - val\_loss: 196.1992 - val\_mse: 196.1992 - val\_mae: 11.0619

Epoch 40/100

165/165 [==============================] - 4s 24ms/step - loss: 186.6675 - mse: 186.6675 - mae: 10.7236 - val\_loss: 185.9937 - val\_mse: 185.9937 - val\_mae: 10.7513

Epoch 41/100

165/165 [==============================] - 4s 23ms/step - loss: 184.0327 - mse: 184.0327 - mae: 10.6353 - val\_loss: 181.8584 - val\_mse: 181.8584 - val\_mae: 10.4639

Epoch 42/100

165/165 [==============================] - 4s 24ms/step - loss: 186.6242 - mse: 186.6242 - mae: 10.7525 - val\_loss: 183.3223 - val\_mse: 183.3223 - val\_mae: 10.6918

Epoch 43/100

165/165 [==============================] - 4s 24ms/step - loss: 188.9083 - mse: 188.9083 - mae: 10.7715 - val\_loss: 184.2536 - val\_mse: 184.2536 - val\_mae: 10.5651

Epoch 44/100

165/165 [==============================] - 4s 24ms/step - loss: 180.1477 - mse: 180.1477 - mae: 10.5108 - val\_loss: 179.5520 - val\_mse: 179.5520 - val\_mae: 10.4381

Epoch 45/100

165/165 [==============================] - 4s 24ms/step - loss: 184.6163 - mse: 184.6163 - mae: 10.6217 - val\_loss: 184.5992 - val\_mse: 184.5992 - val\_mae: 10.5155

Epoch 46/100

165/165 [==============================] - 4s 23ms/step - loss: 180.6706 - mse: 180.6706 - mae: 10.5245 - val\_loss: 188.9354 - val\_mse: 188.9354 - val\_mae: 10.7004

Epoch 47/100

165/165 [==============================] - 4s 24ms/step - loss: 180.0268 - mse: 180.0268 - mae: 10.4577 - val\_loss: 185.0992 - val\_mse: 185.0992 - val\_mae: 10.4964

Epoch 48/100

165/165 [==============================] - 4s 24ms/step - loss: 178.3075 - mse: 178.3075 - mae: 10.4094 - val\_loss: 183.5663 - val\_mse: 183.5663 - val\_mae: 10.4986

Epoch 49/100

165/165 [==============================] - 4s 24ms/step - loss: 179.9290 - mse: 179.9290 - mae: 10.4684 - val\_loss: 178.1934 - val\_mse: 178.1934 - val\_mae: 10.2453

Epoch 50/100

165/165 [==============================] - 4s 24ms/step - loss: 174.2010 - mse: 174.2010 - mae: 10.2582 - val\_loss: 176.1786 - val\_mse: 176.1786 - val\_mae: 10.2009

Epoch 51/100

165/165 [==============================] - 4s 23ms/step - loss: 176.9272 - mse: 176.9272 - mae: 10.3146 - val\_loss: 176.0248 - val\_mse: 176.0248 - val\_mae: 10.1795

Epoch 52/100

165/165 [==============================] - 4s 24ms/step - loss: 175.1418 - mse: 175.1418 - mae: 10.2881 - val\_loss: 172.5149 - val\_mse: 172.5149 - val\_mae: 10.1920

Epoch 53/100

165/165 [==============================] - 4s 24ms/step - loss: 177.4773 - mse: 177.4773 - mae: 10.3592 - val\_loss: 173.5098 - val\_mse: 173.5098 - val\_mae: 10.2545

Epoch 54/100

165/165 [==============================] - 4s 24ms/step - loss: 173.2349 - mse: 173.2349 - mae: 10.2495 - val\_loss: 174.2782 - val\_mse: 174.2782 - val\_mae: 10.0543

Epoch 55/100

165/165 [==============================] - 4s 24ms/step - loss: 173.5471 - mse: 173.5471 - mae: 10.2260 - val\_loss: 178.9237 - val\_mse: 178.9237 - val\_mae: 10.3627

Epoch 56/100

165/165 [==============================] - 4s 23ms/step - loss: 170.7746 - mse: 170.7746 - mae: 10.1439 - val\_loss: 171.6406 - val\_mse: 171.6406 - val\_mae: 10.1726

Epoch 57/100

165/165 [==============================] - 4s 25ms/step - loss: 171.2544 - mse: 171.2544 - mae: 10.1425 - val\_loss: 179.3635 - val\_mse: 179.3635 - val\_mae: 10.3365

Epoch 58/100

165/165 [==============================] - 4s 24ms/step - loss: 169.8100 - mse: 169.8100 - mae: 10.0880 - val\_loss: 169.9036 - val\_mse: 169.9036 - val\_mae: 9.9804

Epoch 59/100

165/165 [==============================] - 4s 24ms/step - loss: 170.0367 - mse: 170.0367 - mae: 10.0877 - val\_loss: 174.7874 - val\_mse: 174.7874 - val\_mae: 10.2217

Epoch 60/100

165/165 [==============================] - 4s 24ms/step - loss: 170.7046 - mse: 170.7046 - mae: 10.1317 - val\_loss: 170.3588 - val\_mse: 170.3588 - val\_mae: 10.1642

Epoch 61/100

165/165 [==============================] - 4s 24ms/step - loss: 167.8347 - mse: 167.8347 - mae: 10.0140 - val\_loss: 175.9599 - val\_mse: 175.9599 - val\_mae: 10.3277

Epoch 62/100

165/165 [==============================] - 4s 25ms/step - loss: 169.3723 - mse: 169.3723 - mae: 10.0570 - val\_loss: 171.4713 - val\_mse: 171.4713 - val\_mae: 10.0338

Epoch 63/100

165/165 [==============================] - 4s 24ms/step - loss: 167.9080 - mse: 167.9080 - mae: 10.0015 - val\_loss: 167.3812 - val\_mse: 167.3812 - val\_mae: 9.9021

Epoch 64/100

165/165 [==============================] - 4s 25ms/step - loss: 164.6184 - mse: 164.6184 - mae: 9.8900 - val\_loss: 171.0672 - val\_mse: 171.0672 - val\_mae: 9.9823

Epoch 65/100

165/165 [==============================] - 4s 27ms/step - loss: 166.7663 - mse: 166.7663 - mae: 9.9774 - val\_loss: 164.9551 - val\_mse: 164.9551 - val\_mae: 9.8438

Epoch 66/100

165/165 [==============================] - 4s 23ms/step - loss: 164.5099 - mse: 164.5099 - mae: 9.8755 - val\_loss: 167.0476 - val\_mse: 167.0476 - val\_mae: 9.9933

Epoch 67/100

165/165 [==============================] - 4s 25ms/step - loss: 163.3095 - mse: 163.3095 - mae: 9.8379 - val\_loss: 169.7425 - val\_mse: 169.7425 - val\_mae: 10.0213

Epoch 68/100

165/165 [==============================] - 4s 25ms/step - loss: 162.5022 - mse: 162.5022 - mae: 9.8258 - val\_loss: 179.3401 - val\_mse: 179.3401 - val\_mae: 10.4098

Epoch 69/100

165/165 [==============================] - 4s 25ms/step - loss: 162.4997 - mse: 162.4997 - mae: 9.7908 - val\_loss: 174.5013 - val\_mse: 174.5013 - val\_mae: 10.2607

Epoch 70/100

165/165 [==============================] - 4s 25ms/step - loss: 162.1042 - mse: 162.1042 - mae: 9.8095 - val\_loss: 163.3192 - val\_mse: 163.3192 - val\_mae: 9.7587

Epoch 71/100

165/165 [==============================] - 4s 24ms/step - loss: 160.6059 - mse: 160.6059 - mae: 9.7553 - val\_loss: 168.4690 - val\_mse: 168.4690 - val\_mae: 9.9477

Epoch 72/100

165/165 [==============================] - 4s 25ms/step - loss: 164.5508 - mse: 164.5508 - mae: 9.8741 - val\_loss: 179.9210 - val\_mse: 179.9210 - val\_mae: 10.2384

Epoch 73/100

165/165 [==============================] - 4s 25ms/step - loss: 165.4198 - mse: 165.4198 - mae: 9.9103 - val\_loss: 163.6349 - val\_mse: 163.6349 - val\_mae: 9.8106

Epoch 74/100

165/165 [==============================] - 4s 25ms/step - loss: 162.1949 - mse: 162.1949 - mae: 9.7932 - val\_loss: 174.0079 - val\_mse: 174.0079 - val\_mae: 10.3847

Epoch 75/100

165/165 [==============================] - 4s 25ms/step - loss: 161.9131 - mse: 161.9131 - mae: 9.8064 - val\_loss: 168.3453 - val\_mse: 168.3453 - val\_mae: 9.7343

Epoch 76/100

165/165 [==============================] - 4s 24ms/step - loss: 158.2619 - mse: 158.2619 - mae: 9.6801 - val\_loss: 161.1494 - val\_mse: 161.1494 - val\_mae: 9.8159

Epoch 77/100

165/165 [==============================] - 4s 24ms/step - loss: 160.8709 - mse: 160.8709 - mae: 9.7494 - val\_loss: 166.0900 - val\_mse: 166.0900 - val\_mae: 9.7837

Epoch 78/100

165/165 [==============================] - 4s 26ms/step - loss: 160.8219 - mse: 160.8219 - mae: 9.7551 - val\_loss: 168.1289 - val\_mse: 168.1289 - val\_mae: 9.9854

Epoch 79/100

165/165 [==============================] - 4s 26ms/step - loss: 159.1535 - mse: 159.1535 - mae: 9.6889 - val\_loss: 163.8425 - val\_mse: 163.8425 - val\_mae: 9.8115

Epoch 80/100

165/165 [==============================] - 4s 26ms/step - loss: 159.9130 - mse: 159.9130 - mae: 9.7300 - val\_loss: 166.1023 - val\_mse: 166.1023 - val\_mae: 9.9699

Epoch 81/100

165/165 [==============================] - 4s 25ms/step - loss: 158.6558 - mse: 158.6558 - mae: 9.6677 - val\_loss: 160.7207 - val\_mse: 160.7207 - val\_mae: 9.9286

Epoch 82/100

165/165 [==============================] - 4s 25ms/step - loss: 156.4756 - mse: 156.4756 - mae: 9.6342 - val\_loss: 166.9325 - val\_mse: 166.9325 - val\_mae: 9.7860

Epoch 83/100

165/165 [==============================] - 4s 25ms/step - loss: 159.0043 - mse: 159.0043 - mae: 9.6943 - val\_loss: 163.2834 - val\_mse: 163.2834 - val\_mae: 9.6923

Epoch 84/100

165/165 [==============================] - 4s 25ms/step - loss: 155.6073 - mse: 155.6073 - mae: 9.5835 - val\_loss: 157.6593 - val\_mse: 157.6593 - val\_mae: 9.5505

Epoch 85/100

165/165 [==============================] - 4s 26ms/step - loss: 159.4359 - mse: 159.4359 - mae: 9.7350 - val\_loss: 159.5650 - val\_mse: 159.5650 - val\_mae: 9.6203

Epoch 86/100

165/165 [==============================] - 4s 24ms/step - loss: 155.0909 - mse: 155.0909 - mae: 9.5395 - val\_loss: 155.7562 - val\_mse: 155.7562 - val\_mae: 9.6761

Epoch 87/100

165/165 [==============================] - 4s 24ms/step - loss: 154.9317 - mse: 154.9317 - mae: 9.5446 - val\_loss: 155.4677 - val\_mse: 155.4677 - val\_mae: 9.5444

Epoch 88/100

165/165 [==============================] - 4s 24ms/step - loss: 156.8844 - mse: 156.8844 - mae: 9.6097 - val\_loss: 153.7519 - val\_mse: 153.7519 - val\_mae: 9.6135

Epoch 89/100

165/165 [==============================] - 4s 24ms/step - loss: 151.1650 - mse: 151.1650 - mae: 9.4186 - val\_loss: 154.6156 - val\_mse: 154.6156 - val\_mae: 9.3932

Epoch 90/100

165/165 [==============================] - 4s 24ms/step - loss: 151.4348 - mse: 151.4348 - mae: 9.4260 - val\_loss: 157.6999 - val\_mse: 157.6999 - val\_mae: 9.4575

Epoch 91/100

165/165 [==============================] - 4s 24ms/step - loss: 150.2394 - mse: 150.2394 - mae: 9.3674 - val\_loss: 153.4601 - val\_mse: 153.4601 - val\_mae: 9.4372

Epoch 92/100

165/165 [==============================] - 4s 24ms/step - loss: 146.7192 - mse: 146.7192 - mae: 9.2632 - val\_loss: 145.9148 - val\_mse: 145.9148 - val\_mae: 9.1043

Epoch 93/100

165/165 [==============================] - 4s 24ms/step - loss: 146.7632 - mse: 146.7632 - mae: 9.2761 - val\_loss: 149.5230 - val\_mse: 149.5230 - val\_mae: 9.1870

Epoch 94/100

165/165 [==============================] - 4s 24ms/step - loss: 143.3627 - mse: 143.3627 - mae: 9.1347 - val\_loss: 148.8996 - val\_mse: 148.8996 - val\_mae: 9.2490

Epoch 95/100

165/165 [==============================] - 4s 25ms/step - loss: 144.3125 - mse: 144.3125 - mae: 9.1870 - val\_loss: 145.9629 - val\_mse: 145.9629 - val\_mae: 9.4394

Epoch 96/100

165/165 [==============================] - 4s 24ms/step - loss: 142.9546 - mse: 142.9546 - mae: 9.1476 - val\_loss: 142.7168 - val\_mse: 142.7168 - val\_mae: 9.1477

Epoch 97/100

165/165 [==============================] - 4s 25ms/step - loss: 138.9719 - mse: 138.9719 - mae: 9.0244 - val\_loss: 138.5388 - val\_mse: 138.5388 - val\_mae: 8.9453

Epoch 98/100

165/165 [==============================] - 4s 24ms/step - loss: 136.9971 - mse: 136.9971 - mae: 8.9160 - val\_loss: 137.2258 - val\_mse: 137.2258 - val\_mae: 8.9248

Epoch 99/100

165/165 [==============================] - 4s 24ms/step - loss: 136.4087 - mse: 136.4087 - mae: 8.9227 - val\_loss: 140.1177 - val\_mse: 140.1177 - val\_mae: 8.9462

Epoch 100/100

165/165 [==============================] - 4s 23ms/step - loss: 136.1894 - mse: 136.1894 - mae: 8.9001 - val\_loss: 142.1114 - val\_mse: 142.1114 - val\_mae: 9.3391

Training model: Bidirectional Deep LSTM

Epoch 1/100

165/165 [==============================] - 10s 28ms/step - loss: 4026.5237 - mse: 4026.5237 - mae: 55.5854 - val\_loss: 3399.3394 - val\_mse: 3399.3394 - val\_mae: 49.6709

Epoch 2/100

165/165 [==============================] - 3s 20ms/step - loss: 3044.4900 - mse: 3044.4900 - mae: 46.3376 - val\_loss: 2649.3774 - val\_mse: 2649.3774 - val\_mae: 42.0863

Epoch 3/100

165/165 [==============================] - 3s 20ms/step - loss: 2400.2893 - mse: 2400.2893 - mae: 39.7376 - val\_loss: 2114.6980 - val\_mse: 2114.6980 - val\_mae: 36.5697

Epoch 4/100

165/165 [==============================] - 3s 20ms/step - loss: 1930.8298 - mse: 1930.8298 - mae: 35.1280 - val\_loss: 1722.4812 - val\_mse: 1722.4812 - val\_mae: 32.9989

Epoch 5/100

165/165 [==============================] - 3s 20ms/step - loss: 1591.4348 - mse: 1591.4348 - mae: 32.1781 - val\_loss: 1444.8080 - val\_mse: 1444.8080 - val\_mae: 30.8625

Epoch 6/100

165/165 [==============================] - 3s 20ms/step - loss: 1353.3102 - mse: 1353.3102 - mae: 30.2612 - val\_loss: 1255.3044 - val\_mse: 1255.3044 - val\_mae: 29.4241

Epoch 7/100

165/165 [==============================] - 3s 19ms/step - loss: 1192.3835 - mse: 1192.3835 - mae: 28.9775 - val\_loss: 1129.8016 - val\_mse: 1129.8016 - val\_mae: 28.4718

Epoch 8/100

165/165 [==============================] - 3s 19ms/step - loss: 1087.9524 - mse: 1087.9524 - mae: 28.0777 - val\_loss: 1053.0831 - val\_mse: 1053.0831 - val\_mae: 27.8756

Epoch 9/100

165/165 [==============================] - 3s 19ms/step - loss: 1023.3088 - mse: 1023.3088 - mae: 27.4847 - val\_loss: 1006.4844 - val\_mse: 1006.4844 - val\_mae: 27.4901

Epoch 10/100

165/165 [==============================] - 3s 20ms/step - loss: 985.1315 - mse: 985.1315 - mae: 27.1218 - val\_loss: 981.3912 - val\_mse: 981.3912 - val\_mae: 27.2683

Epoch 11/100

165/165 [==============================] - 3s 20ms/step - loss: 964.1788 - mse: 964.1788 - mae: 26.9099 - val\_loss: 968.3715 - val\_mse: 968.3715 - val\_mae: 27.1397

Epoch 12/100

165/165 [==============================] - 3s 19ms/step - loss: 953.4297 - mse: 953.4297 - mae: 26.7814 - val\_loss: 962.7524 - val\_mse: 962.7524 - val\_mae: 27.0762

Epoch 13/100

165/165 [==============================] - 3s 19ms/step - loss: 937.6843 - mse: 937.6843 - mae: 26.5413 - val\_loss: 849.8474 - val\_mse: 849.8474 - val\_mae: 25.2840

Epoch 14/100

165/165 [==============================] - 3s 20ms/step - loss: 760.7181 - mse: 760.7181 - mae: 22.8101 - val\_loss: 529.3574 - val\_mse: 529.3574 - val\_mae: 17.6446

Epoch 15/100

165/165 [==============================] - 3s 21ms/step - loss: 485.5204 - mse: 485.5204 - mae: 16.9442 - val\_loss: 416.7769 - val\_mse: 416.7769 - val\_mae: 15.5503

Epoch 16/100

165/165 [==============================] - 3s 20ms/step - loss: 414.2823 - mse: 414.2823 - mae: 15.8730 - val\_loss: 367.2219 - val\_mse: 367.2219 - val\_mae: 14.8806

Epoch 17/100

165/165 [==============================] - 3s 20ms/step - loss: 355.0626 - mse: 355.0626 - mae: 14.7205 - val\_loss: 313.4497 - val\_mse: 313.4497 - val\_mae: 13.9037

Epoch 18/100

165/165 [==============================] - 3s 20ms/step - loss: 312.4711 - mse: 312.4711 - mae: 14.1309 - val\_loss: 288.4199 - val\_mse: 288.4199 - val\_mae: 13.6799

Epoch 19/100

165/165 [==============================] - 3s 20ms/step - loss: 329.3640 - mse: 329.3640 - mae: 14.3336 - val\_loss: 316.6539 - val\_mse: 316.6539 - val\_mae: 13.9428

Epoch 20/100

165/165 [==============================] - 3s 20ms/step - loss: 303.1257 - mse: 303.1257 - mae: 13.8167 - val\_loss: 279.6161 - val\_mse: 279.6161 - val\_mae: 13.3274

Epoch 21/100

165/165 [==============================] - 3s 20ms/step - loss: 273.0171 - mse: 273.0171 - mae: 13.3171 - val\_loss: 256.1297 - val\_mse: 256.1297 - val\_mae: 12.9580

Epoch 22/100

165/165 [==============================] - 3s 20ms/step - loss: 253.9927 - mse: 253.9927 - mae: 12.9730 - val\_loss: 234.3843 - val\_mse: 234.3843 - val\_mae: 12.5071

Epoch 23/100

165/165 [==============================] - 3s 19ms/step - loss: 235.9944 - mse: 235.9944 - mae: 12.4872 - val\_loss: 233.3782 - val\_mse: 233.3782 - val\_mae: 12.4895

Epoch 24/100

165/165 [==============================] - 3s 19ms/step - loss: 226.3371 - mse: 226.3371 - mae: 12.2411 - val\_loss: 216.6595 - val\_mse: 216.6595 - val\_mae: 11.9545

Epoch 25/100

165/165 [==============================] - 3s 19ms/step - loss: 218.4128 - mse: 218.4128 - mae: 11.9756 - val\_loss: 210.3755 - val\_mse: 210.3755 - val\_mae: 11.5846

Epoch 26/100

165/165 [==============================] - 3s 21ms/step - loss: 206.8589 - mse: 206.8589 - mae: 11.6387 - val\_loss: 213.0687 - val\_mse: 213.0687 - val\_mae: 11.6542

Epoch 27/100

165/165 [==============================] - 3s 20ms/step - loss: 197.4899 - mse: 197.4899 - mae: 11.2654 - val\_loss: 186.6686 - val\_mse: 186.6686 - val\_mae: 10.9362

Epoch 28/100

165/165 [==============================] - 3s 20ms/step - loss: 190.5435 - mse: 190.5435 - mae: 11.0504 - val\_loss: 197.4055 - val\_mse: 197.4055 - val\_mae: 11.0897

Epoch 29/100

165/165 [==============================] - 3s 20ms/step - loss: 184.8470 - mse: 184.8470 - mae: 10.8187 - val\_loss: 214.5717 - val\_mse: 214.5717 - val\_mae: 11.5634

Epoch 30/100

165/165 [==============================] - 3s 20ms/step - loss: 184.5783 - mse: 184.5783 - mae: 10.7918 - val\_loss: 177.8107 - val\_mse: 177.8107 - val\_mae: 10.5137

Epoch 31/100

165/165 [==============================] - 3s 20ms/step - loss: 181.5110 - mse: 181.5110 - mae: 10.6744 - val\_loss: 181.3230 - val\_mse: 181.3230 - val\_mae: 10.6823

Epoch 32/100

165/165 [==============================] - 3s 19ms/step - loss: 180.2874 - mse: 180.2874 - mae: 10.6554 - val\_loss: 177.8786 - val\_mse: 177.8786 - val\_mae: 10.5940

Epoch 33/100

165/165 [==============================] - 3s 19ms/step - loss: 178.9281 - mse: 178.9281 - mae: 10.5917 - val\_loss: 176.6461 - val\_mse: 176.6461 - val\_mae: 10.5127

Epoch 34/100

165/165 [==============================] - 3s 20ms/step - loss: 174.3193 - mse: 174.3193 - mae: 10.3980 - val\_loss: 170.9857 - val\_mse: 170.9857 - val\_mae: 10.2401

Epoch 35/100

165/165 [==============================] - 3s 19ms/step - loss: 169.9646 - mse: 169.9646 - mae: 10.2657 - val\_loss: 177.2363 - val\_mse: 177.2363 - val\_mae: 10.6274

Epoch 36/100

165/165 [==============================] - 3s 19ms/step - loss: 167.6237 - mse: 167.6237 - mae: 10.1627 - val\_loss: 166.4776 - val\_mse: 166.4776 - val\_mae: 10.1287

Epoch 37/100

165/165 [==============================] - 3s 20ms/step - loss: 170.5929 - mse: 170.5929 - mae: 10.2501 - val\_loss: 172.8201 - val\_mse: 172.8201 - val\_mae: 10.3031

Epoch 38/100

165/165 [==============================] - 3s 20ms/step - loss: 166.0933 - mse: 166.0933 - mae: 10.1320 - val\_loss: 165.6030 - val\_mse: 165.6030 - val\_mae: 10.0475

Epoch 39/100

165/165 [==============================] - 3s 20ms/step - loss: 163.6311 - mse: 163.6311 - mae: 10.0534 - val\_loss: 162.7611 - val\_mse: 162.7611 - val\_mae: 9.9729

Epoch 40/100

165/165 [==============================] - 3s 19ms/step - loss: 162.4148 - mse: 162.4148 - mae: 10.0074 - val\_loss: 173.1563 - val\_mse: 173.1563 - val\_mae: 10.1804

Epoch 41/100

165/165 [==============================] - 3s 20ms/step - loss: 162.4692 - mse: 162.4692 - mae: 10.0063 - val\_loss: 174.5971 - val\_mse: 174.5971 - val\_mae: 10.0949

Epoch 42/100

165/165 [==============================] - 3s 20ms/step - loss: 159.5655 - mse: 159.5655 - mae: 9.9149 - val\_loss: 163.7826 - val\_mse: 163.7826 - val\_mae: 10.0764

Epoch 43/100

165/165 [==============================] - 3s 19ms/step - loss: 160.9393 - mse: 160.9393 - mae: 9.9573 - val\_loss: 158.4090 - val\_mse: 158.4090 - val\_mae: 9.7342

Epoch 44/100

165/165 [==============================] - 3s 20ms/step - loss: 170.8109 - mse: 170.8109 - mae: 10.2943 - val\_loss: 172.3217 - val\_mse: 172.3217 - val\_mae: 10.4809

Epoch 45/100

165/165 [==============================] - 3s 20ms/step - loss: 166.5634 - mse: 166.5634 - mae: 10.2116 - val\_loss: 173.8319 - val\_mse: 173.8319 - val\_mae: 10.2810

Epoch 46/100

165/165 [==============================] - 3s 19ms/step - loss: 162.0544 - mse: 162.0544 - mae: 10.0439 - val\_loss: 159.8372 - val\_mse: 159.8372 - val\_mae: 9.9633

Epoch 47/100

165/165 [==============================] - 3s 20ms/step - loss: 164.0649 - mse: 164.0649 - mae: 10.0935 - val\_loss: 165.3924 - val\_mse: 165.3924 - val\_mae: 10.2020

Epoch 48/100

165/165 [==============================] - 3s 19ms/step - loss: 161.8164 - mse: 161.8164 - mae: 10.0200 - val\_loss: 161.6769 - val\_mse: 161.6769 - val\_mae: 10.0262

Epoch 49/100

165/165 [==============================] - 3s 20ms/step - loss: 155.0108 - mse: 155.0108 - mae: 9.7967 - val\_loss: 163.2346 - val\_mse: 163.2346 - val\_mae: 10.2146

Epoch 50/100

165/165 [==============================] - 3s 20ms/step - loss: 152.6654 - mse: 152.6654 - mae: 9.7332 - val\_loss: 157.7740 - val\_mse: 157.7740 - val\_mae: 9.8334

Epoch 51/100

165/165 [==============================] - 3s 20ms/step - loss: 152.8051 - mse: 152.8051 - mae: 9.7095 - val\_loss: 155.4669 - val\_mse: 155.4669 - val\_mae: 9.9335

Epoch 52/100

165/165 [==============================] - 3s 20ms/step - loss: 146.8921 - mse: 146.8921 - mae: 9.4838 - val\_loss: 143.6419 - val\_mse: 143.6419 - val\_mae: 9.3392

Epoch 53/100

165/165 [==============================] - 3s 20ms/step - loss: 140.7241 - mse: 140.7241 - mae: 9.2824 - val\_loss: 139.6537 - val\_mse: 139.6537 - val\_mae: 9.1609

Epoch 54/100

165/165 [==============================] - 3s 20ms/step - loss: 135.8040 - mse: 135.8040 - mae: 9.1020 - val\_loss: 136.1744 - val\_mse: 136.1744 - val\_mae: 9.1151

Epoch 55/100

165/165 [==============================] - 3s 19ms/step - loss: 130.9424 - mse: 130.9424 - mae: 8.9288 - val\_loss: 132.1963 - val\_mse: 132.1963 - val\_mae: 8.9086

Epoch 56/100

165/165 [==============================] - 3s 20ms/step - loss: 132.5973 - mse: 132.5973 - mae: 8.9754 - val\_loss: 144.4173 - val\_mse: 144.4173 - val\_mae: 9.3623

Epoch 57/100

165/165 [==============================] - 3s 19ms/step - loss: 130.0650 - mse: 130.0650 - mae: 8.8902 - val\_loss: 131.6564 - val\_mse: 131.6564 - val\_mae: 8.8627

Epoch 58/100

165/165 [==============================] - 3s 19ms/step - loss: 126.6578 - mse: 126.6578 - mae: 8.7320 - val\_loss: 128.7279 - val\_mse: 128.7279 - val\_mae: 8.8210

Epoch 59/100

165/165 [==============================] - 3s 20ms/step - loss: 133.4418 - mse: 133.4418 - mae: 9.0339 - val\_loss: 131.0211 - val\_mse: 131.0211 - val\_mae: 8.8971

Epoch 60/100

165/165 [==============================] - 3s 20ms/step - loss: 121.3801 - mse: 121.3801 - mae: 8.5546 - val\_loss: 123.3530 - val\_mse: 123.3530 - val\_mae: 8.5449

Epoch 61/100

165/165 [==============================] - 3s 19ms/step - loss: 120.8761 - mse: 120.8761 - mae: 8.5274 - val\_loss: 131.6622 - val\_mse: 131.6622 - val\_mae: 8.9599

Epoch 62/100

165/165 [==============================] - 3s 20ms/step - loss: 120.9605 - mse: 120.9605 - mae: 8.5286 - val\_loss: 129.1630 - val\_mse: 129.1630 - val\_mae: 8.9109

Epoch 63/100

165/165 [==============================] - 3s 20ms/step - loss: 118.4906 - mse: 118.4906 - mae: 8.4444 - val\_loss: 119.0382 - val\_mse: 119.0382 - val\_mae: 8.4013

Epoch 64/100

165/165 [==============================] - 3s 20ms/step - loss: 114.3704 - mse: 114.3704 - mae: 8.2721 - val\_loss: 143.1182 - val\_mse: 143.1182 - val\_mae: 9.5500

Epoch 65/100

165/165 [==============================] - 4s 22ms/step - loss: 113.7139 - mse: 113.7139 - mae: 8.2436 - val\_loss: 113.1558 - val\_mse: 113.1558 - val\_mae: 8.0763

Epoch 66/100

165/165 [==============================] - 4s 22ms/step - loss: 113.0630 - mse: 113.0630 - mae: 8.2235 - val\_loss: 118.7528 - val\_mse: 118.7528 - val\_mae: 8.4774

Epoch 67/100

165/165 [==============================] - 3s 21ms/step - loss: 112.3638 - mse: 112.3638 - mae: 8.1785 - val\_loss: 140.9245 - val\_mse: 140.9245 - val\_mae: 9.2266

Epoch 68/100

165/165 [==============================] - 3s 20ms/step - loss: 109.1783 - mse: 109.1783 - mae: 8.0260 - val\_loss: 116.0907 - val\_mse: 116.0907 - val\_mae: 8.2188

Epoch 69/100

165/165 [==============================] - 3s 20ms/step - loss: 108.7428 - mse: 108.7428 - mae: 7.9913 - val\_loss: 114.6270 - val\_mse: 114.6270 - val\_mae: 8.1468

Epoch 70/100

165/165 [==============================] - 3s 20ms/step - loss: 109.9969 - mse: 109.9969 - mae: 8.0678 - val\_loss: 107.2403 - val\_mse: 107.2403 - val\_mae: 7.8663

Epoch 71/100

165/165 [==============================] - 3s 20ms/step - loss: 105.6716 - mse: 105.6716 - mae: 7.8806 - val\_loss: 112.9465 - val\_mse: 112.9465 - val\_mae: 7.9285

Epoch 72/100

165/165 [==============================] - 3s 20ms/step - loss: 106.9502 - mse: 106.9502 - mae: 7.9377 - val\_loss: 109.0429 - val\_mse: 109.0429 - val\_mae: 7.8265

Epoch 73/100

165/165 [==============================] - 3s 19ms/step - loss: 105.5814 - mse: 105.5814 - mae: 7.8857 - val\_loss: 106.6461 - val\_mse: 106.6461 - val\_mae: 7.7930

Epoch 74/100

165/165 [==============================] - 3s 20ms/step - loss: 105.4959 - mse: 105.4959 - mae: 7.8697 - val\_loss: 105.3866 - val\_mse: 105.3866 - val\_mae: 7.7681

Epoch 75/100

165/165 [==============================] - 3s 20ms/step - loss: 101.5225 - mse: 101.5225 - mae: 7.7133 - val\_loss: 109.7783 - val\_mse: 109.7783 - val\_mae: 7.8560

Epoch 76/100

165/165 [==============================] - 3s 20ms/step - loss: 106.5470 - mse: 106.5470 - mae: 7.8927 - val\_loss: 112.0814 - val\_mse: 112.0814 - val\_mae: 7.9295

Epoch 77/100

165/165 [==============================] - 3s 20ms/step - loss: 99.7745 - mse: 99.7745 - mae: 7.6035 - val\_loss: 107.1291 - val\_mse: 107.1291 - val\_mae: 7.8136

Epoch 78/100

165/165 [==============================] - 3s 19ms/step - loss: 98.9745 - mse: 98.9745 - mae: 7.5619 - val\_loss: 108.0702 - val\_mse: 108.0702 - val\_mae: 7.8818

Epoch 79/100

165/165 [==============================] - 3s 19ms/step - loss: 102.5558 - mse: 102.5558 - mae: 7.7113 - val\_loss: 117.1763 - val\_mse: 117.1763 - val\_mae: 8.0509

Epoch 80/100

165/165 [==============================] - 3s 20ms/step - loss: 102.6651 - mse: 102.6651 - mae: 7.7074 - val\_loss: 101.2874 - val\_mse: 101.2874 - val\_mae: 7.5497

Epoch 81/100

165/165 [==============================] - 3s 21ms/step - loss: 102.2232 - mse: 102.2232 - mae: 7.6692 - val\_loss: 99.6423 - val\_mse: 99.6423 - val\_mae: 7.4279

Epoch 82/100

165/165 [==============================] - 3s 19ms/step - loss: 95.4959 - mse: 95.4959 - mae: 7.3958 - val\_loss: 100.6332 - val\_mse: 100.6332 - val\_mae: 7.4833

Epoch 83/100

165/165 [==============================] - 3s 19ms/step - loss: 97.6631 - mse: 97.6631 - mae: 7.5064 - val\_loss: 98.0391 - val\_mse: 98.0391 - val\_mae: 7.3962

Epoch 84/100

165/165 [==============================] - 3s 20ms/step - loss: 95.0765 - mse: 95.0765 - mae: 7.3767 - val\_loss: 97.8003 - val\_mse: 97.8003 - val\_mae: 7.3136

Epoch 85/100

165/165 [==============================] - 3s 20ms/step - loss: 97.4622 - mse: 97.4622 - mae: 7.4830 - val\_loss: 104.1485 - val\_mse: 104.1485 - val\_mae: 7.8902

Epoch 86/100

165/165 [==============================] - 3s 19ms/step - loss: 97.6936 - mse: 97.6936 - mae: 7.4816 - val\_loss: 98.7689 - val\_mse: 98.7689 - val\_mae: 7.4611

Epoch 87/100

165/165 [==============================] - 3s 19ms/step - loss: 94.3985 - mse: 94.3985 - mae: 7.3336 - val\_loss: 105.9192 - val\_mse: 105.9192 - val\_mae: 7.7425

Epoch 88/100

165/165 [==============================] - 3s 19ms/step - loss: 98.9757 - mse: 98.9757 - mae: 7.5381 - val\_loss: 96.0274 - val\_mse: 96.0274 - val\_mae: 7.2706

Epoch 89/100

165/165 [==============================] - 3s 20ms/step - loss: 93.0601 - mse: 93.0601 - mae: 7.2921 - val\_loss: 104.1713 - val\_mse: 104.1713 - val\_mae: 7.5715

Epoch 90/100

165/165 [==============================] - 3s 19ms/step - loss: 93.1028 - mse: 93.1028 - mae: 7.2772 - val\_loss: 95.7827 - val\_mse: 95.7827 - val\_mae: 7.2449

Epoch 91/100

165/165 [==============================] - 3s 19ms/step - loss: 94.4518 - mse: 94.4518 - mae: 7.3432 - val\_loss: 110.4197 - val\_mse: 110.4197 - val\_mae: 7.7276

Epoch 92/100

165/165 [==============================] - 3s 20ms/step - loss: 98.5853 - mse: 98.5853 - mae: 7.5105 - val\_loss: 106.1922 - val\_mse: 106.1922 - val\_mae: 7.9155

Epoch 93/100

165/165 [==============================] - 3s 19ms/step - loss: 101.1032 - mse: 101.1032 - mae: 7.6407 - val\_loss: 109.7724 - val\_mse: 109.7724 - val\_mae: 7.9965

Epoch 94/100

165/165 [==============================] - 3s 19ms/step - loss: 93.4951 - mse: 93.4951 - mae: 7.2967 - val\_loss: 104.9261 - val\_mse: 104.9261 - val\_mae: 7.9101

Epoch 95/100

165/165 [==============================] - 3s 19ms/step - loss: 91.5911 - mse: 91.5911 - mae: 7.2037 - val\_loss: 100.2735 - val\_mse: 100.2735 - val\_mae: 7.5673

Epoch 96/100

165/165 [==============================] - 3s 20ms/step - loss: 91.2330 - mse: 91.2330 - mae: 7.1985 - val\_loss: 92.6403 - val\_mse: 92.6403 - val\_mae: 7.1576

Epoch 97/100

165/165 [==============================] - 3s 20ms/step - loss: 92.0856 - mse: 92.0856 - mae: 7.2161 - val\_loss: 94.6167 - val\_mse: 94.6167 - val\_mae: 7.2524

Epoch 98/100

165/165 [==============================] - 3s 20ms/step - loss: 90.8644 - mse: 90.8644 - mae: 7.1654 - val\_loss: 94.7120 - val\_mse: 94.7120 - val\_mae: 7.2289

Epoch 99/100

165/165 [==============================] - 3s 20ms/step - loss: 101.6751 - mse: 101.6751 - mae: 7.6151 - val\_loss: 97.8199 - val\_mse: 97.8199 - val\_mae: 7.3584

Epoch 100/100

165/165 [==============================] - 3s 21ms/step - loss: 91.0188 - mse: 91.0188 - mae: 7.1829 - val\_loss: 98.3779 - val\_mse: 98.3779 - val\_mae: 7.6177

Training model: LSTM with Batch Normalization

Epoch 1/100

165/165 [==============================] - 4s 14ms/step - loss: 4614.6055 - mse: 4614.6055 - mae: 60.7475 - val\_loss: 4462.5015 - val\_mse: 4462.5015 - val\_mae: 59.4400

Epoch 2/100

165/165 [==============================] - 2s 10ms/step - loss: 4386.2173 - mse: 4386.2173 - mae: 59.0920 - val\_loss: 4149.4136 - val\_mse: 4149.4136 - val\_mae: 57.0957

Epoch 3/100

165/165 [==============================] - 2s 10ms/step - loss: 3965.5654 - mse: 3965.5654 - mae: 55.7761 - val\_loss: 3640.0596 - val\_mse: 3640.0596 - val\_mae: 52.9050

Epoch 4/100

165/165 [==============================] - 2s 10ms/step - loss: 3410.2417 - mse: 3410.2417 - mae: 51.0302 - val\_loss: 3076.8728 - val\_mse: 3076.8728 - val\_mae: 47.8583

Epoch 5/100

165/165 [==============================] - 2s 10ms/step - loss: 2795.8853 - mse: 2795.8853 - mae: 45.2310 - val\_loss: 2465.0547 - val\_mse: 2465.0547 - val\_mae: 41.8164

Epoch 6/100

165/165 [==============================] - 2s 11ms/step - loss: 2193.5640 - mse: 2193.5640 - mae: 38.9560 - val\_loss: 1906.2891 - val\_mse: 1906.2891 - val\_mae: 35.6804

Epoch 7/100

165/165 [==============================] - 2s 10ms/step - loss: 1657.3435 - mse: 1657.3435 - mae: 32.7559 - val\_loss: 1370.8364 - val\_mse: 1370.8364 - val\_mae: 28.9102

Epoch 8/100

165/165 [==============================] - 2s 10ms/step - loss: 1228.9122 - mse: 1228.9122 - mae: 27.4611 - val\_loss: 1086.3693 - val\_mse: 1086.3693 - val\_mae: 25.8626

Epoch 9/100

165/165 [==============================] - 2s 10ms/step - loss: 916.9982 - mse: 916.9982 - mae: 23.6581 - val\_loss: 765.5389 - val\_mse: 765.5389 - val\_mae: 21.5461

Epoch 10/100

165/165 [==============================] - 2s 10ms/step - loss: 706.6394 - mse: 706.6394 - mae: 21.0099 - val\_loss: 605.2554 - val\_mse: 605.2554 - val\_mae: 19.7023

Epoch 11/100

165/165 [==============================] - 2s 10ms/step - loss: 576.8508 - mse: 576.8508 - mae: 19.3511 - val\_loss: 517.6863 - val\_mse: 517.6863 - val\_mae: 18.5910

Epoch 12/100

165/165 [==============================] - 2s 10ms/step - loss: 498.2233 - mse: 498.2233 - mae: 18.3367 - val\_loss: 461.0796 - val\_mse: 461.0796 - val\_mae: 17.7714

Epoch 13/100

165/165 [==============================] - 2s 10ms/step - loss: 450.2080 - mse: 450.2080 - mae: 17.6799 - val\_loss: 411.6809 - val\_mse: 411.6809 - val\_mae: 17.0815

Epoch 14/100

165/165 [==============================] - 2s 10ms/step - loss: 412.8379 - mse: 412.8379 - mae: 17.0322 - val\_loss: 380.9641 - val\_mse: 380.9641 - val\_mae: 16.6021

Epoch 15/100

165/165 [==============================] - 2s 10ms/step - loss: 385.7062 - mse: 385.7062 - mae: 16.5160 - val\_loss: 374.4138 - val\_mse: 374.4138 - val\_mae: 16.2020

Epoch 16/100

165/165 [==============================] - 2s 10ms/step - loss: 353.0160 - mse: 353.0160 - mae: 15.8173 - val\_loss: 324.6577 - val\_mse: 324.6577 - val\_mae: 15.4408

Epoch 17/100

165/165 [==============================] - 2s 11ms/step - loss: 333.7494 - mse: 333.7494 - mae: 15.3234 - val\_loss: 303.9464 - val\_mse: 303.9464 - val\_mae: 14.7723

Epoch 18/100

165/165 [==============================] - 2s 11ms/step - loss: 309.8127 - mse: 309.8127 - mae: 14.6871 - val\_loss: 278.5723 - val\_mse: 278.5723 - val\_mae: 13.9684

Epoch 19/100

165/165 [==============================] - 2s 11ms/step - loss: 291.2194 - mse: 291.2194 - mae: 14.1986 - val\_loss: 259.7391 - val\_mse: 259.7391 - val\_mae: 13.5753

Epoch 20/100

165/165 [==============================] - 2s 10ms/step - loss: 275.7948 - mse: 275.7948 - mae: 13.7646 - val\_loss: 245.4681 - val\_mse: 245.4681 - val\_mae: 13.0882

Epoch 21/100

165/165 [==============================] - 2s 10ms/step - loss: 260.9475 - mse: 260.9475 - mae: 13.3468 - val\_loss: 238.8397 - val\_mse: 238.8397 - val\_mae: 12.8545

Epoch 22/100

165/165 [==============================] - 2s 10ms/step - loss: 246.1478 - mse: 246.1478 - mae: 12.8496 - val\_loss: 216.9504 - val\_mse: 216.9504 - val\_mae: 12.1720

Epoch 23/100

165/165 [==============================] - 2s 10ms/step - loss: 238.1423 - mse: 238.1423 - mae: 12.6403 - val\_loss: 214.2987 - val\_mse: 214.2987 - val\_mae: 12.0696

Epoch 24/100

165/165 [==============================] - 2s 10ms/step - loss: 231.8532 - mse: 231.8532 - mae: 12.3852 - val\_loss: 216.7942 - val\_mse: 216.7942 - val\_mae: 11.9229

Epoch 25/100

165/165 [==============================] - 2s 10ms/step - loss: 221.6381 - mse: 221.6381 - mae: 12.0738 - val\_loss: 196.4115 - val\_mse: 196.4115 - val\_mae: 11.3861

Epoch 26/100

165/165 [==============================] - 2s 10ms/step - loss: 218.1561 - mse: 218.1561 - mae: 11.8772 - val\_loss: 197.6016 - val\_mse: 197.6016 - val\_mae: 11.0532

Epoch 27/100

165/165 [==============================] - 2s 10ms/step - loss: 214.9639 - mse: 214.9639 - mae: 11.8292 - val\_loss: 196.7246 - val\_mse: 196.7246 - val\_mae: 11.2100

Epoch 28/100

165/165 [==============================] - 2s 11ms/step - loss: 211.8433 - mse: 211.8433 - mae: 11.7356 - val\_loss: 186.4539 - val\_mse: 186.4539 - val\_mae: 11.0700

Epoch 29/100

165/165 [==============================] - 2s 10ms/step - loss: 214.0405 - mse: 214.0405 - mae: 11.6624 - val\_loss: 186.1780 - val\_mse: 186.1780 - val\_mae: 10.6026

Epoch 30/100

165/165 [==============================] - 2s 10ms/step - loss: 209.9310 - mse: 209.9310 - mae: 11.5632 - val\_loss: 179.2314 - val\_mse: 179.2314 - val\_mae: 10.5541

Epoch 31/100

165/165 [==============================] - 2s 10ms/step - loss: 202.7234 - mse: 202.7234 - mae: 11.3141 - val\_loss: 179.5493 - val\_mse: 179.5493 - val\_mae: 10.7091

Epoch 32/100

165/165 [==============================] - 2s 10ms/step - loss: 194.3386 - mse: 194.3386 - mae: 11.0839 - val\_loss: 191.4947 - val\_mse: 191.4947 - val\_mae: 10.7502

Epoch 33/100

165/165 [==============================] - 2s 10ms/step - loss: 201.0705 - mse: 201.0705 - mae: 11.3156 - val\_loss: 174.9706 - val\_mse: 174.9706 - val\_mae: 10.4271

Epoch 34/100

165/165 [==============================] - 2s 10ms/step - loss: 198.9495 - mse: 198.9495 - mae: 11.2008 - val\_loss: 175.8598 - val\_mse: 175.8598 - val\_mae: 10.2533

Epoch 35/100

165/165 [==============================] - 2s 10ms/step - loss: 197.2848 - mse: 197.2848 - mae: 11.1478 - val\_loss: 184.7268 - val\_mse: 184.7268 - val\_mae: 11.0488

Epoch 36/100

165/165 [==============================] - 2s 10ms/step - loss: 201.0688 - mse: 201.0688 - mae: 11.2955 - val\_loss: 223.7709 - val\_mse: 223.7709 - val\_mae: 12.3542

Epoch 37/100

165/165 [==============================] - 2s 10ms/step - loss: 201.1127 - mse: 201.1127 - mae: 11.3191 - val\_loss: 184.1973 - val\_mse: 184.1973 - val\_mae: 11.0494

Epoch 38/100

165/165 [==============================] - 2s 11ms/step - loss: 195.6082 - mse: 195.6082 - mae: 11.1268 - val\_loss: 200.4119 - val\_mse: 200.4119 - val\_mae: 11.3099

Epoch 39/100

165/165 [==============================] - 2s 10ms/step - loss: 191.7780 - mse: 191.7780 - mae: 10.9635 - val\_loss: 176.1429 - val\_mse: 176.1429 - val\_mae: 10.6495

Epoch 40/100

165/165 [==============================] - 2s 10ms/step - loss: 197.2260 - mse: 197.2260 - mae: 11.0977 - val\_loss: 213.9789 - val\_mse: 213.9789 - val\_mae: 11.6662

Epoch 41/100

165/165 [==============================] - 2s 11ms/step - loss: 191.2878 - mse: 191.2878 - mae: 10.9158 - val\_loss: 168.7117 - val\_mse: 168.7117 - val\_mae: 10.0397

Epoch 42/100

165/165 [==============================] - 2s 11ms/step - loss: 197.7798 - mse: 197.7798 - mae: 11.1139 - val\_loss: 176.4766 - val\_mse: 176.4766 - val\_mae: 10.5835

Epoch 43/100

165/165 [==============================] - 2s 10ms/step - loss: 192.3292 - mse: 192.3292 - mae: 10.9309 - val\_loss: 172.2680 - val\_mse: 172.2680 - val\_mae: 10.2473

Epoch 44/100

165/165 [==============================] - 2s 11ms/step - loss: 194.4759 - mse: 194.4759 - mae: 11.0462 - val\_loss: 169.3359 - val\_mse: 169.3359 - val\_mae: 10.1098

Epoch 45/100

165/165 [==============================] - 2s 10ms/step - loss: 193.8319 - mse: 193.8319 - mae: 10.9553 - val\_loss: 185.7107 - val\_mse: 185.7107 - val\_mae: 10.4025

Epoch 46/100

165/165 [==============================] - 2s 10ms/step - loss: 194.0693 - mse: 194.0693 - mae: 10.9774 - val\_loss: 165.5356 - val\_mse: 165.5356 - val\_mae: 9.9434

Epoch 47/100

165/165 [==============================] - 2s 10ms/step - loss: 187.5687 - mse: 187.5687 - mae: 10.7797 - val\_loss: 180.1656 - val\_mse: 180.1656 - val\_mae: 10.6481

Epoch 48/100

165/165 [==============================] - 2s 10ms/step - loss: 184.4401 - mse: 184.4401 - mae: 10.5969 - val\_loss: 175.1602 - val\_mse: 175.1602 - val\_mae: 10.2172

Epoch 49/100

165/165 [==============================] - 2s 11ms/step - loss: 187.4915 - mse: 187.4915 - mae: 10.7443 - val\_loss: 164.8828 - val\_mse: 164.8828 - val\_mae: 9.8658

Epoch 50/100

165/165 [==============================] - 2s 10ms/step - loss: 188.9146 - mse: 188.9146 - mae: 10.8431 - val\_loss: 176.7164 - val\_mse: 176.7164 - val\_mae: 10.3282

Epoch 51/100

165/165 [==============================] - 2s 10ms/step - loss: 189.0060 - mse: 189.0060 - mae: 10.7520 - val\_loss: 168.3379 - val\_mse: 168.3379 - val\_mae: 9.9207

Epoch 52/100

165/165 [==============================] - 2s 10ms/step - loss: 185.6776 - mse: 185.6776 - mae: 10.6698 - val\_loss: 165.1609 - val\_mse: 165.1609 - val\_mae: 9.7336

Epoch 53/100

165/165 [==============================] - 2s 10ms/step - loss: 187.0805 - mse: 187.0805 - mae: 10.7343 - val\_loss: 191.5125 - val\_mse: 191.5125 - val\_mae: 10.9259

Epoch 54/100

165/165 [==============================] - 2s 10ms/step - loss: 190.2125 - mse: 190.2125 - mae: 10.8121 - val\_loss: 168.2040 - val\_mse: 168.2040 - val\_mae: 9.9306

Epoch 55/100

165/165 [==============================] - 2s 10ms/step - loss: 188.4364 - mse: 188.4364 - mae: 10.7925 - val\_loss: 166.1368 - val\_mse: 166.1368 - val\_mae: 9.8410

Epoch 56/100

165/165 [==============================] - 2s 10ms/step - loss: 190.1333 - mse: 190.1333 - mae: 10.8538 - val\_loss: 173.5143 - val\_mse: 173.5143 - val\_mae: 10.2591

Epoch 57/100

165/165 [==============================] - 2s 10ms/step - loss: 190.2710 - mse: 190.2710 - mae: 10.8440 - val\_loss: 163.9713 - val\_mse: 163.9713 - val\_mae: 9.8402

Epoch 58/100

165/165 [==============================] - 2s 10ms/step - loss: 196.3440 - mse: 196.3440 - mae: 11.0470 - val\_loss: 176.6109 - val\_mse: 176.6109 - val\_mae: 10.0849

Epoch 59/100

165/165 [==============================] - 2s 10ms/step - loss: 190.4092 - mse: 190.4092 - mae: 10.8344 - val\_loss: 169.4629 - val\_mse: 169.4629 - val\_mae: 10.1127

Epoch 60/100

165/165 [==============================] - 2s 10ms/step - loss: 185.3806 - mse: 185.3806 - mae: 10.6409 - val\_loss: 180.7515 - val\_mse: 180.7515 - val\_mae: 10.6740

Epoch 61/100

165/165 [==============================] - 2s 10ms/step - loss: 185.4484 - mse: 185.4484 - mae: 10.6709 - val\_loss: 164.0581 - val\_mse: 164.0581 - val\_mae: 9.9807

Epoch 62/100

165/165 [==============================] - 2s 10ms/step - loss: 182.3859 - mse: 182.3859 - mae: 10.5634 - val\_loss: 174.3650 - val\_mse: 174.3650 - val\_mae: 10.0891

Epoch 63/100

165/165 [==============================] - 2s 10ms/step - loss: 186.1463 - mse: 186.1463 - mae: 10.7059 - val\_loss: 162.6855 - val\_mse: 162.6855 - val\_mae: 9.7171

Epoch 64/100

165/165 [==============================] - 2s 10ms/step - loss: 186.5217 - mse: 186.5217 - mae: 10.7184 - val\_loss: 164.2956 - val\_mse: 164.2956 - val\_mae: 9.6773

Epoch 65/100

165/165 [==============================] - 2s 10ms/step - loss: 192.2627 - mse: 192.2627 - mae: 10.9468 - val\_loss: 163.7311 - val\_mse: 163.7311 - val\_mae: 9.8596

Epoch 66/100

165/165 [==============================] - 2s 10ms/step - loss: 184.2991 - mse: 184.2991 - mae: 10.6556 - val\_loss: 165.9874 - val\_mse: 165.9874 - val\_mae: 10.0608

Epoch 67/100

165/165 [==============================] - 2s 11ms/step - loss: 185.6500 - mse: 185.6500 - mae: 10.7028 - val\_loss: 159.0668 - val\_mse: 159.0668 - val\_mae: 9.5787

Epoch 68/100

165/165 [==============================] - 2s 10ms/step - loss: 183.0647 - mse: 183.0647 - mae: 10.5877 - val\_loss: 171.2911 - val\_mse: 171.2911 - val\_mae: 9.8741

Epoch 69/100

165/165 [==============================] - 2s 11ms/step - loss: 186.0230 - mse: 186.0230 - mae: 10.7023 - val\_loss: 160.3983 - val\_mse: 160.3983 - val\_mae: 9.7676

Epoch 70/100

165/165 [==============================] - 2s 11ms/step - loss: 182.1213 - mse: 182.1213 - mae: 10.5230 - val\_loss: 166.3416 - val\_mse: 166.3416 - val\_mae: 9.9746

Epoch 71/100

165/165 [==============================] - 2s 11ms/step - loss: 183.9524 - mse: 183.9524 - mae: 10.6425 - val\_loss: 159.2296 - val\_mse: 159.2296 - val\_mae: 9.5841

Epoch 72/100

165/165 [==============================] - 2s 10ms/step - loss: 182.7892 - mse: 182.7892 - mae: 10.5971 - val\_loss: 171.9475 - val\_mse: 171.9475 - val\_mae: 10.0024

Epoch 73/100

165/165 [==============================] - 2s 10ms/step - loss: 187.7007 - mse: 187.7007 - mae: 10.7461 - val\_loss: 162.5880 - val\_mse: 162.5880 - val\_mae: 9.9138

Epoch 74/100

165/165 [==============================] - 2s 10ms/step - loss: 181.1916 - mse: 181.1916 - mae: 10.5675 - val\_loss: 158.3620 - val\_mse: 158.3620 - val\_mae: 9.5399

Epoch 75/100

165/165 [==============================] - 2s 10ms/step - loss: 183.6793 - mse: 183.6793 - mae: 10.6436 - val\_loss: 160.8980 - val\_mse: 160.8980 - val\_mae: 9.7204

Epoch 76/100

165/165 [==============================] - 2s 10ms/step - loss: 192.1843 - mse: 192.1843 - mae: 10.9428 - val\_loss: 172.9146 - val\_mse: 172.9146 - val\_mae: 10.0891

Epoch 77/100

165/165 [==============================] - 2s 11ms/step - loss: 181.0470 - mse: 181.0470 - mae: 10.5407 - val\_loss: 166.7557 - val\_mse: 166.7557 - val\_mae: 9.7501

Epoch 78/100

165/165 [==============================] - 2s 11ms/step - loss: 184.7052 - mse: 184.7052 - mae: 10.6038 - val\_loss: 188.6964 - val\_mse: 188.6964 - val\_mae: 10.8568

Epoch 79/100

165/165 [==============================] - 2s 10ms/step - loss: 182.1076 - mse: 182.1076 - mae: 10.5463 - val\_loss: 179.7655 - val\_mse: 179.7655 - val\_mae: 10.4127

Epoch 80/100

165/165 [==============================] - 2s 11ms/step - loss: 180.2527 - mse: 180.2527 - mae: 10.4705 - val\_loss: 160.4194 - val\_mse: 160.4194 - val\_mae: 9.6320

Epoch 81/100

165/165 [==============================] - 2s 11ms/step - loss: 180.7621 - mse: 180.7621 - mae: 10.4999 - val\_loss: 156.2311 - val\_mse: 156.2311 - val\_mae: 9.5481

Epoch 82/100

165/165 [==============================] - 2s 10ms/step - loss: 180.2270 - mse: 180.2270 - mae: 10.4487 - val\_loss: 159.5354 - val\_mse: 159.5354 - val\_mae: 9.5378

Epoch 83/100

165/165 [==============================] - 2s 10ms/step - loss: 185.4278 - mse: 185.4278 - mae: 10.6913 - val\_loss: 154.4282 - val\_mse: 154.4282 - val\_mae: 9.3935

Epoch 84/100

165/165 [==============================] - 2s 10ms/step - loss: 186.6127 - mse: 186.6127 - mae: 10.6732 - val\_loss: 170.4189 - val\_mse: 170.4189 - val\_mae: 9.9608

Epoch 85/100

165/165 [==============================] - 2s 10ms/step - loss: 180.5507 - mse: 180.5507 - mae: 10.5150 - val\_loss: 160.9895 - val\_mse: 160.9895 - val\_mae: 9.8589

Epoch 86/100

165/165 [==============================] - 2s 10ms/step - loss: 178.3121 - mse: 178.3121 - mae: 10.3910 - val\_loss: 169.6448 - val\_mse: 169.6448 - val\_mae: 10.2218

Epoch 87/100

165/165 [==============================] - 2s 10ms/step - loss: 182.0007 - mse: 182.0007 - mae: 10.5349 - val\_loss: 171.8864 - val\_mse: 171.8864 - val\_mae: 10.4131

Epoch 88/100

165/165 [==============================] - 2s 10ms/step - loss: 181.7764 - mse: 181.7764 - mae: 10.5820 - val\_loss: 159.0234 - val\_mse: 159.0234 - val\_mae: 9.6101

Epoch 89/100

165/165 [==============================] - 2s 10ms/step - loss: 179.4773 - mse: 179.4773 - mae: 10.4713 - val\_loss: 156.4022 - val\_mse: 156.4022 - val\_mae: 9.4411

Epoch 90/100

165/165 [==============================] - 2s 10ms/step - loss: 181.0570 - mse: 181.0570 - mae: 10.5355 - val\_loss: 163.5821 - val\_mse: 163.5821 - val\_mae: 9.6150

Epoch 91/100

165/165 [==============================] - 2s 10ms/step - loss: 183.3298 - mse: 183.3298 - mae: 10.6257 - val\_loss: 161.5271 - val\_mse: 161.5271 - val\_mae: 9.6854

Epoch 92/100

165/165 [==============================] - 2s 10ms/step - loss: 176.0327 - mse: 176.0327 - mae: 10.3378 - val\_loss: 163.3448 - val\_mse: 163.3448 - val\_mae: 9.7618

Epoch 93/100

165/165 [==============================] - 2s 10ms/step - loss: 182.1218 - mse: 182.1218 - mae: 10.5715 - val\_loss: 154.6017 - val\_mse: 154.6017 - val\_mae: 9.4012

Epoch 94/100

165/165 [==============================] - 2s 10ms/step - loss: 181.2492 - mse: 181.2492 - mae: 10.5515 - val\_loss: 160.7543 - val\_mse: 160.7543 - val\_mae: 9.8873

Epoch 95/100

165/165 [==============================] - 2s 10ms/step - loss: 177.3877 - mse: 177.3877 - mae: 10.3877 - val\_loss: 165.0831 - val\_mse: 165.0831 - val\_mae: 10.1280

Epoch 96/100

165/165 [==============================] - 2s 10ms/step - loss: 181.4584 - mse: 181.4584 - mae: 10.5629 - val\_loss: 165.3227 - val\_mse: 165.3227 - val\_mae: 9.6751

Epoch 97/100

165/165 [==============================] - 2s 10ms/step - loss: 179.4767 - mse: 179.4767 - mae: 10.5230 - val\_loss: 159.3891 - val\_mse: 159.3891 - val\_mae: 9.5367

Epoch 98/100

165/165 [==============================] - 2s 10ms/step - loss: 180.0542 - mse: 180.0542 - mae: 10.5125 - val\_loss: 172.2770 - val\_mse: 172.2770 - val\_mae: 10.3184

Epoch 99/100

165/165 [==============================] - 2s 10ms/step - loss: 179.0205 - mse: 179.0205 - mae: 10.4698 - val\_loss: 159.8954 - val\_mse: 159.8954 - val\_mae: 9.5054

Epoch 100/100

165/165 [==============================] - 2s 10ms/step - loss: 181.8524 - mse: 181.8524 - mae: 10.5697 - val\_loss: 155.2457 - val\_mse: 155.2457 - val\_mae: 9.3761

Training model: Complex LSTM

Epoch 1/100

165/165 [==============================] - 9s 29ms/step - loss: 3988.9419 - mse: 3988.9419 - mae: 55.2144 - val\_loss: 3412.6775 - val\_mse: 3412.6775 - val\_mae: 49.7922

Epoch 2/100

165/165 [==============================] - 4s 23ms/step - loss: 3076.9067 - mse: 3076.9067 - mae: 46.6547 - val\_loss: 2692.4529 - val\_mse: 2692.4529 - val\_mae: 42.5337

Epoch 3/100

165/165 [==============================] - 4s 22ms/step - loss: 2448.5432 - mse: 2448.5432 - mae: 40.2693 - val\_loss: 2158.4045 - val\_mse: 2158.4045 - val\_mae: 37.0049

Epoch 4/100

165/165 [==============================] - 4s 21ms/step - loss: 1979.9044 - mse: 1979.9044 - mae: 35.6058 - val\_loss: 1764.5549 - val\_mse: 1764.5549 - val\_mae: 33.3515

Epoch 5/100

165/165 [==============================] - 4s 22ms/step - loss: 1639.3473 - mse: 1639.3473 - mae: 32.5891 - val\_loss: 1482.6487 - val\_mse: 1482.6487 - val\_mae: 31.1499

Epoch 6/100

165/165 [==============================] - 4s 22ms/step - loss: 1397.9446 - mse: 1397.9446 - mae: 30.6456 - val\_loss: 1286.8019 - val\_mse: 1286.8019 - val\_mae: 29.6608

Epoch 7/100

165/165 [==============================] - 4s 22ms/step - loss: 1228.7479 - mse: 1228.7479 - mae: 29.2530 - val\_loss: 1143.3871 - val\_mse: 1143.3871 - val\_mae: 28.2840

Epoch 8/100

165/165 [==============================] - 4s 22ms/step - loss: 987.5205 - mse: 987.5205 - mae: 24.9569 - val\_loss: 844.2460 - val\_mse: 844.2460 - val\_mae: 21.9112

Epoch 9/100

165/165 [==============================] - 4s 22ms/step - loss: 779.7372 - mse: 779.7372 - mae: 21.3437 - val\_loss: 683.8530 - val\_mse: 683.8530 - val\_mae: 19.4864

Epoch 10/100

165/165 [==============================] - 4s 22ms/step - loss: 644.1775 - mse: 644.1775 - mae: 19.3056 - val\_loss: 556.9162 - val\_mse: 556.9162 - val\_mae: 17.5725

Epoch 11/100

165/165 [==============================] - 4s 22ms/step - loss: 546.9266 - mse: 546.9266 - mae: 17.7418 - val\_loss: 488.6127 - val\_mse: 488.6127 - val\_mae: 16.6664

Epoch 12/100

165/165 [==============================] - 4s 22ms/step - loss: 463.4227 - mse: 463.4227 - mae: 16.4030 - val\_loss: 408.5771 - val\_mse: 408.5771 - val\_mae: 15.3177

Epoch 13/100

165/165 [==============================] - 4s 22ms/step - loss: 413.2423 - mse: 413.2423 - mae: 15.6301 - val\_loss: 362.9009 - val\_mse: 362.9009 - val\_mae: 14.3344

Epoch 14/100

165/165 [==============================] - 4s 23ms/step - loss: 382.5940 - mse: 382.5940 - mae: 15.2005 - val\_loss: 357.1658 - val\_mse: 357.1658 - val\_mae: 15.0551

Epoch 15/100

165/165 [==============================] - 4s 22ms/step - loss: 352.2625 - mse: 352.2625 - mae: 14.6887 - val\_loss: 314.2749 - val\_mse: 314.2749 - val\_mae: 13.5469

Epoch 16/100

165/165 [==============================] - 4s 22ms/step - loss: 345.6031 - mse: 345.6031 - mae: 14.7337 - val\_loss: 287.7744 - val\_mse: 287.7744 - val\_mae: 13.4753

Epoch 17/100

165/165 [==============================] - 4s 22ms/step - loss: 307.6132 - mse: 307.6132 - mae: 13.8986 - val\_loss: 270.1369 - val\_mse: 270.1369 - val\_mae: 12.9630

Epoch 18/100

165/165 [==============================] - 4s 22ms/step - loss: 288.6099 - mse: 288.6099 - mae: 13.5266 - val\_loss: 253.6253 - val\_mse: 253.6253 - val\_mae: 12.6518

Epoch 19/100

165/165 [==============================] - 4s 22ms/step - loss: 290.4303 - mse: 290.4303 - mae: 13.6110 - val\_loss: 247.4297 - val\_mse: 247.4297 - val\_mae: 12.4611

Epoch 20/100

165/165 [==============================] - 4s 22ms/step - loss: 279.8737 - mse: 279.8737 - mae: 13.3604 - val\_loss: 257.7390 - val\_mse: 257.7390 - val\_mae: 12.8365

Epoch 21/100

165/165 [==============================] - 4s 22ms/step - loss: 274.3499 - mse: 274.3499 - mae: 13.1730 - val\_loss: 228.7473 - val\_mse: 228.7473 - val\_mae: 12.0395

Epoch 22/100

165/165 [==============================] - 4s 22ms/step - loss: 330.9108 - mse: 330.9108 - mae: 14.4570 - val\_loss: 297.6110 - val\_mse: 297.6110 - val\_mae: 13.5259

Epoch 23/100

165/165 [==============================] - 4s 21ms/step - loss: 305.1198 - mse: 305.1198 - mae: 13.8545 - val\_loss: 257.4147 - val\_mse: 257.4147 - val\_mae: 12.6959

Epoch 24/100

165/165 [==============================] - 4s 21ms/step - loss: 291.3003 - mse: 291.3003 - mae: 13.5696 - val\_loss: 238.7646 - val\_mse: 238.7646 - val\_mae: 12.3087

Epoch 25/100

165/165 [==============================] - 4s 22ms/step - loss: 273.9778 - mse: 273.9778 - mae: 13.2460 - val\_loss: 242.4350 - val\_mse: 242.4350 - val\_mae: 12.7142

Epoch 26/100

165/165 [==============================] - 4s 22ms/step - loss: 296.7081 - mse: 296.7081 - mae: 13.7631 - val\_loss: 243.2227 - val\_mse: 243.2227 - val\_mae: 12.5103

Epoch 27/100

165/165 [==============================] - 4s 21ms/step - loss: 266.4893 - mse: 266.4893 - mae: 12.9757 - val\_loss: 218.0845 - val\_mse: 218.0845 - val\_mae: 11.8209

Epoch 28/100

165/165 [==============================] - 4s 21ms/step - loss: 243.5391 - mse: 243.5391 - mae: 12.4108 - val\_loss: 209.5458 - val\_mse: 209.5458 - val\_mae: 11.6430

Epoch 29/100

165/165 [==============================] - 4s 21ms/step - loss: 240.0447 - mse: 240.0447 - mae: 12.2796 - val\_loss: 208.6922 - val\_mse: 208.6922 - val\_mae: 11.6983

Epoch 30/100

165/165 [==============================] - 4s 21ms/step - loss: 233.8375 - mse: 233.8375 - mae: 12.1138 - val\_loss: 226.6210 - val\_mse: 226.6210 - val\_mae: 11.8246

Epoch 31/100

165/165 [==============================] - 4s 22ms/step - loss: 231.5033 - mse: 231.5033 - mae: 12.0675 - val\_loss: 212.7144 - val\_mse: 212.7144 - val\_mae: 11.5513

Epoch 32/100

165/165 [==============================] - 4s 21ms/step - loss: 233.7659 - mse: 233.7659 - mae: 12.0190 - val\_loss: 194.7461 - val\_mse: 194.7461 - val\_mae: 11.0931

Epoch 33/100

165/165 [==============================] - 4s 22ms/step - loss: 220.8579 - mse: 220.8579 - mae: 11.7211 - val\_loss: 193.8967 - val\_mse: 193.8967 - val\_mae: 11.0535

Epoch 34/100

165/165 [==============================] - 4s 21ms/step - loss: 214.7473 - mse: 214.7473 - mae: 11.5370 - val\_loss: 190.9935 - val\_mse: 190.9935 - val\_mae: 11.0048

Epoch 35/100

165/165 [==============================] - 4s 22ms/step - loss: 213.1450 - mse: 213.1450 - mae: 11.4974 - val\_loss: 183.8281 - val\_mse: 183.8281 - val\_mae: 10.7040

Epoch 36/100

165/165 [==============================] - 4s 22ms/step - loss: 211.6778 - mse: 211.6778 - mae: 11.3951 - val\_loss: 179.3834 - val\_mse: 179.3834 - val\_mae: 10.5783

Epoch 37/100

165/165 [==============================] - 4s 22ms/step - loss: 210.7384 - mse: 210.7384 - mae: 11.3240 - val\_loss: 190.9453 - val\_mse: 190.9453 - val\_mae: 10.7418

Epoch 38/100

165/165 [==============================] - 4s 22ms/step - loss: 204.4664 - mse: 204.4664 - mae: 11.1986 - val\_loss: 183.4674 - val\_mse: 183.4674 - val\_mae: 10.7428

Epoch 39/100

165/165 [==============================] - 4s 22ms/step - loss: 202.2013 - mse: 202.2013 - mae: 11.0908 - val\_loss: 184.3169 - val\_mse: 184.3169 - val\_mae: 10.5227

Epoch 40/100

165/165 [==============================] - 4s 23ms/step - loss: 200.7834 - mse: 200.7834 - mae: 11.0513 - val\_loss: 182.1893 - val\_mse: 182.1893 - val\_mae: 10.4583

Epoch 41/100

165/165 [==============================] - 4s 22ms/step - loss: 199.5674 - mse: 199.5674 - mae: 11.0030 - val\_loss: 177.1648 - val\_mse: 177.1648 - val\_mae: 10.4274

Epoch 42/100

165/165 [==============================] - 4s 22ms/step - loss: 199.3578 - mse: 199.3578 - mae: 10.9679 - val\_loss: 177.2946 - val\_mse: 177.2946 - val\_mae: 10.4559

Epoch 43/100

165/165 [==============================] - 4s 23ms/step - loss: 193.6438 - mse: 193.6438 - mae: 10.8063 - val\_loss: 192.5394 - val\_mse: 192.5394 - val\_mae: 10.6480

Epoch 44/100

165/165 [==============================] - 4s 23ms/step - loss: 193.7426 - mse: 193.7426 - mae: 10.8051 - val\_loss: 166.9458 - val\_mse: 166.9458 - val\_mae: 9.9903

Epoch 45/100

165/165 [==============================] - 4s 22ms/step - loss: 195.6599 - mse: 195.6599 - mae: 10.9080 - val\_loss: 170.2012 - val\_mse: 170.2012 - val\_mae: 10.0380

Epoch 46/100

165/165 [==============================] - 4s 22ms/step - loss: 194.4674 - mse: 194.4674 - mae: 10.7909 - val\_loss: 162.1973 - val\_mse: 162.1973 - val\_mae: 9.7870

Epoch 47/100

165/165 [==============================] - 4s 22ms/step - loss: 189.9189 - mse: 189.9189 - mae: 10.6771 - val\_loss: 161.0553 - val\_mse: 161.0553 - val\_mae: 9.6692

Epoch 48/100

165/165 [==============================] - 4s 22ms/step - loss: 184.1203 - mse: 184.1203 - mae: 10.5170 - val\_loss: 162.8048 - val\_mse: 162.8048 - val\_mae: 9.8535

Epoch 49/100

165/165 [==============================] - 4s 22ms/step - loss: 182.6036 - mse: 182.6036 - mae: 10.4599 - val\_loss: 157.1995 - val\_mse: 157.1995 - val\_mae: 9.6359

Epoch 50/100

165/165 [==============================] - 4s 22ms/step - loss: 182.5761 - mse: 182.5761 - mae: 10.4874 - val\_loss: 156.9694 - val\_mse: 156.9694 - val\_mae: 9.5486

Epoch 51/100

165/165 [==============================] - 4s 22ms/step - loss: 178.8079 - mse: 178.8079 - mae: 10.3591 - val\_loss: 169.8935 - val\_mse: 169.8935 - val\_mae: 10.2099

Epoch 52/100

165/165 [==============================] - 4s 22ms/step - loss: 182.9211 - mse: 182.9211 - mae: 10.4813 - val\_loss: 170.9548 - val\_mse: 170.9548 - val\_mae: 10.1843

Epoch 53/100

165/165 [==============================] - 4s 22ms/step - loss: 182.6901 - mse: 182.6901 - mae: 10.4688 - val\_loss: 153.0526 - val\_mse: 153.0526 - val\_mae: 9.4899

Epoch 54/100

165/165 [==============================] - 4s 21ms/step - loss: 176.1633 - mse: 176.1633 - mae: 10.2427 - val\_loss: 152.7449 - val\_mse: 152.7449 - val\_mae: 9.6291

Epoch 55/100

165/165 [==============================] - 4s 22ms/step - loss: 173.4210 - mse: 173.4210 - mae: 10.1936 - val\_loss: 152.1203 - val\_mse: 152.1203 - val\_mae: 9.4429

Epoch 56/100

165/165 [==============================] - 4s 22ms/step - loss: 180.7927 - mse: 180.7927 - mae: 10.3853 - val\_loss: 150.2670 - val\_mse: 150.2670 - val\_mae: 9.4823

Epoch 57/100

165/165 [==============================] - 4s 22ms/step - loss: 173.2900 - mse: 173.2900 - mae: 10.1815 - val\_loss: 149.2152 - val\_mse: 149.2152 - val\_mae: 9.5134

Epoch 58/100

165/165 [==============================] - 4s 24ms/step - loss: 169.6565 - mse: 169.6565 - mae: 10.0587 - val\_loss: 149.0356 - val\_mse: 149.0356 - val\_mae: 9.2948

Epoch 59/100

165/165 [==============================] - 4s 23ms/step - loss: 168.1458 - mse: 168.1458 - mae: 10.0375 - val\_loss: 142.9140 - val\_mse: 142.9140 - val\_mae: 9.2246

Epoch 60/100

165/165 [==============================] - 4s 22ms/step - loss: 165.3692 - mse: 165.3692 - mae: 9.9405 - val\_loss: 144.9905 - val\_mse: 144.9905 - val\_mae: 9.3850

Epoch 61/100

165/165 [==============================] - 4s 23ms/step - loss: 170.5402 - mse: 170.5402 - mae: 10.1354 - val\_loss: 141.9673 - val\_mse: 141.9673 - val\_mae: 9.2785

Epoch 62/100

165/165 [==============================] - 4s 22ms/step - loss: 165.0663 - mse: 165.0663 - mae: 9.9498 - val\_loss: 137.2952 - val\_mse: 137.2952 - val\_mae: 8.9706

Epoch 63/100

165/165 [==============================] - 4s 23ms/step - loss: 156.1824 - mse: 156.1824 - mae: 9.6357 - val\_loss: 132.4775 - val\_mse: 132.4775 - val\_mae: 8.8424

Epoch 64/100

165/165 [==============================] - 4s 23ms/step - loss: 155.8948 - mse: 155.8948 - mae: 9.6456 - val\_loss: 134.5189 - val\_mse: 134.5189 - val\_mae: 8.9965

Epoch 65/100

165/165 [==============================] - 4s 22ms/step - loss: 156.7199 - mse: 156.7199 - mae: 9.6792 - val\_loss: 127.4723 - val\_mse: 127.4723 - val\_mae: 8.6649

Epoch 66/100

165/165 [==============================] - 4s 23ms/step - loss: 152.7586 - mse: 152.7586 - mae: 9.5273 - val\_loss: 127.6945 - val\_mse: 127.6945 - val\_mae: 8.6123

Epoch 67/100

165/165 [==============================] - 4s 22ms/step - loss: 150.3260 - mse: 150.3260 - mae: 9.4588 - val\_loss: 123.2682 - val\_mse: 123.2682 - val\_mae: 8.5747

Epoch 68/100

165/165 [==============================] - 4s 23ms/step - loss: 150.8871 - mse: 150.8871 - mae: 9.4819 - val\_loss: 123.6543 - val\_mse: 123.6543 - val\_mae: 8.5685

Epoch 69/100

165/165 [==============================] - 4s 22ms/step - loss: 147.8346 - mse: 147.8346 - mae: 9.3894 - val\_loss: 119.9865 - val\_mse: 119.9865 - val\_mae: 8.3824

Epoch 70/100

165/165 [==============================] - 4s 21ms/step - loss: 148.4485 - mse: 148.4485 - mae: 9.3971 - val\_loss: 119.8495 - val\_mse: 119.8495 - val\_mae: 8.4401

Epoch 71/100

165/165 [==============================] - 4s 22ms/step - loss: 146.3745 - mse: 146.3745 - mae: 9.3169 - val\_loss: 118.6067 - val\_mse: 118.6067 - val\_mae: 8.2663

Epoch 72/100

165/165 [==============================] - 4s 22ms/step - loss: 142.6682 - mse: 142.6682 - mae: 9.1866 - val\_loss: 117.6501 - val\_mse: 117.6501 - val\_mae: 8.3685

Epoch 73/100

165/165 [==============================] - 4s 22ms/step - loss: 148.0821 - mse: 148.0821 - mae: 9.3858 - val\_loss: 125.8119 - val\_mse: 125.8119 - val\_mae: 8.4622

Epoch 74/100

165/165 [==============================] - 4s 22ms/step - loss: 143.0104 - mse: 143.0104 - mae: 9.1857 - val\_loss: 115.9720 - val\_mse: 115.9720 - val\_mae: 8.2558

Epoch 75/100

165/165 [==============================] - 4s 22ms/step - loss: 138.0263 - mse: 138.0263 - mae: 9.0372 - val\_loss: 114.1691 - val\_mse: 114.1691 - val\_mae: 8.0095

Epoch 76/100

165/165 [==============================] - 4s 22ms/step - loss: 136.2360 - mse: 136.2360 - mae: 8.9636 - val\_loss: 111.3988 - val\_mse: 111.3988 - val\_mae: 8.0040

Epoch 77/100

165/165 [==============================] - 4s 22ms/step - loss: 134.5559 - mse: 134.5559 - mae: 8.8668 - val\_loss: 114.2672 - val\_mse: 114.2672 - val\_mae: 8.3036

Epoch 78/100

165/165 [==============================] - 4s 22ms/step - loss: 132.7140 - mse: 132.7140 - mae: 8.8023 - val\_loss: 123.9129 - val\_mse: 123.9129 - val\_mae: 8.7407

Epoch 79/100

165/165 [==============================] - 4s 21ms/step - loss: 131.4907 - mse: 131.4907 - mae: 8.7986 - val\_loss: 105.8993 - val\_mse: 105.8993 - val\_mae: 7.8190

Epoch 80/100

165/165 [==============================] - 4s 22ms/step - loss: 133.3407 - mse: 133.3407 - mae: 8.8572 - val\_loss: 107.2671 - val\_mse: 107.2671 - val\_mae: 7.7689

Epoch 81/100

165/165 [==============================] - 4s 22ms/step - loss: 131.5523 - mse: 131.5523 - mae: 8.7688 - val\_loss: 103.9321 - val\_mse: 103.9321 - val\_mae: 7.6222

Epoch 82/100

165/165 [==============================] - 4s 22ms/step - loss: 130.0201 - mse: 130.0201 - mae: 8.7115 - val\_loss: 120.8397 - val\_mse: 120.8397 - val\_mae: 8.4592

Epoch 83/100

165/165 [==============================] - 4s 22ms/step - loss: 129.8153 - mse: 129.8153 - mae: 8.6693 - val\_loss: 104.5797 - val\_mse: 104.5797 - val\_mae: 7.7768

Epoch 84/100

165/165 [==============================] - 4s 22ms/step - loss: 126.5038 - mse: 126.5038 - mae: 8.5883 - val\_loss: 103.0409 - val\_mse: 103.0409 - val\_mae: 7.5193

Epoch 85/100

165/165 [==============================] - 4s 22ms/step - loss: 127.2528 - mse: 127.2528 - mae: 8.5839 - val\_loss: 102.9294 - val\_mse: 102.9294 - val\_mae: 7.7476

Epoch 86/100

165/165 [==============================] - 4s 22ms/step - loss: 126.5605 - mse: 126.5605 - mae: 8.5674 - val\_loss: 100.3922 - val\_mse: 100.3922 - val\_mae: 7.5826

Epoch 87/100

165/165 [==============================] - 4s 22ms/step - loss: 125.2008 - mse: 125.2008 - mae: 8.4955 - val\_loss: 102.6255 - val\_mse: 102.6255 - val\_mae: 7.6300

Epoch 88/100

165/165 [==============================] - 4s 22ms/step - loss: 128.0037 - mse: 128.0037 - mae: 8.6014 - val\_loss: 101.9621 - val\_mse: 101.9621 - val\_mae: 7.6290

Epoch 89/100

165/165 [==============================] - 4s 22ms/step - loss: 123.3555 - mse: 123.3555 - mae: 8.4815 - val\_loss: 99.2132 - val\_mse: 99.2132 - val\_mae: 7.4829

Epoch 90/100

165/165 [==============================] - 4s 22ms/step - loss: 123.1814 - mse: 123.1814 - mae: 8.4687 - val\_loss: 98.8838 - val\_mse: 98.8838 - val\_mae: 7.4524

Epoch 91/100

165/165 [==============================] - 4s 22ms/step - loss: 122.5897 - mse: 122.5897 - mae: 8.4002 - val\_loss: 108.4027 - val\_mse: 108.4027 - val\_mae: 8.0198

Epoch 92/100

165/165 [==============================] - 4s 22ms/step - loss: 122.0400 - mse: 122.0400 - mae: 8.3945 - val\_loss: 96.0521 - val\_mse: 96.0521 - val\_mae: 7.3710

Epoch 93/100

165/165 [==============================] - 4s 22ms/step - loss: 122.5415 - mse: 122.5415 - mae: 8.4239 - val\_loss: 96.7306 - val\_mse: 96.7306 - val\_mae: 7.4847

Epoch 94/100

165/165 [==============================] - 4s 22ms/step - loss: 124.0027 - mse: 124.0027 - mae: 8.4781 - val\_loss: 97.7435 - val\_mse: 97.7435 - val\_mae: 7.5238

Epoch 95/100

165/165 [==============================] - 4s 22ms/step - loss: 120.0830 - mse: 120.0830 - mae: 8.3207 - val\_loss: 96.0866 - val\_mse: 96.0866 - val\_mae: 7.4266

Epoch 96/100

165/165 [==============================] - 4s 22ms/step - loss: 117.5011 - mse: 117.5011 - mae: 8.2331 - val\_loss: 93.9325 - val\_mse: 93.9325 - val\_mae: 7.3090

Epoch 97/100

165/165 [==============================] - 4s 22ms/step - loss: 119.2477 - mse: 119.2477 - mae: 8.2958 - val\_loss: 92.7876 - val\_mse: 92.7876 - val\_mae: 7.1719

Epoch 98/100

165/165 [==============================] - 4s 22ms/step - loss: 116.4625 - mse: 116.4625 - mae: 8.1667 - val\_loss: 93.9560 - val\_mse: 93.9560 - val\_mae: 7.1915

Epoch 99/100

165/165 [==============================] - 4s 22ms/step - loss: 117.9615 - mse: 117.9615 - mae: 8.1747 - val\_loss: 89.3030 - val\_mse: 89.3030 - val\_mae: 7.0153

Epoch 100/100

165/165 [==============================] - 4s 22ms/step - loss: 118.0919 - mse: 118.0919 - mae: 8.1824 - val\_loss: 91.8229 - val\_mse: 91.8229 - val\_mae: 7.1034

Process finished with exit code 0