

# C1\_W1\_Lab\_2\_multi-output

February 8, 2021

## 1 Ungraded Lab: Build a Multi-output Model

In this lab, we'll show how you can build models with more than one output. The dataset we will be working on is available from the [UCI Machine Learning Repository](#). It is an Energy Efficiency dataset which uses the building features (e.g. wall area, roof area) as inputs and has two outputs: Cooling Load and Heating Load. Let's see how we can build a model to train on this data.

### 1.1 Imports

```
[1]: try:
      # %tensorflow_version only exists in Colab.
      %tensorflow_version 2.x
    except Exception:
        pass

    import tensorflow as tf
    import numpy as np
    import matplotlib.pyplot as plt
    import pandas as pd
    from tensorflow.keras.models import Model
    from tensorflow.keras.layers import Dense, Input
    from sklearn.model_selection import train_test_split
```

### 1.2 Utilities

We define a few utilities for data conversion and visualization to make our code more neat.

```
[2]: def format_output(data):
      y1 = data.pop('Y1')
      y1 = np.array(y1)
      y2 = data.pop('Y2')
      y2 = np.array(y2)
      return y1, y2

    def norm(x):
```

```

    return (x - train_stats['mean']) / train_stats['std']

def plot_diff(y_true, y_pred, title=''):
    plt.scatter(y_true, y_pred)
    plt.title(title)
    plt.xlabel('True Values')
    plt.ylabel('Predictions')
    plt.axis('equal')
    plt.axis('square')
    plt.xlim(plt.xlim())
    plt.ylim(plt.ylim())
    plt.plot([-100, 100], [-100, 100])
    plt.show()

def plot_metrics(metric_name, title, ylim=5):
    plt.title(title)
    plt.ylim(0, ylim)
    plt.plot(history.history[metric_name], color='blue', label=metric_name)
    plt.plot(history.history['val_' + metric_name], color='green', label='val_' +
    ↪ metric_name)
    plt.show()

```

### 1.3 Prepare the Data

We download the dataset and format it for training.

```

[3]: # Get the data from UCI dataset
URL = 'https://archive.ics.uci.edu/ml/machine-learning-databases/00242/
    ↪ ENB2012_data.xlsx'

# Use pandas excel reader
df = pd.read_excel(URL)
df = df.sample(frac=1).reset_index(drop=True)

# Split the data into train and test with 80 train / 20 test
train, test = train_test_split(df, test_size=0.2)
train_stats = train.describe()

# Get Y1 and Y2 as the 2 outputs and format them as np arrays
train_stats.pop('Y1')
train_stats.pop('Y2')
train_stats = train_stats.transpose()
train_Y = format_output(train)
test_Y = format_output(test)

```

```
# Normalize the training and test data
norm_train_X = norm(train)
norm_test_X = norm(test)
```

## 1.4 Build the Model

Here is how we'll build the model using the functional syntax. Notice that we can specify a list of outputs (i.e. [y1\_output, y2\_output]) when we instantiate the Model() class.

```
[4]: # Define model layers.
input_layer = Input(shape=(len(train.columns),))
first_dense = Dense(units='128', activation='relu')(input_layer)
second_dense = Dense(units='128', activation='relu')(first_dense)

# Y1 output will be fed directly from the second dense
y1_output = Dense(units='1', name='y1_output')(second_dense)
third_dense = Dense(units='64', activation='relu')(second_dense)

# Y2 output will come via the third dense
y2_output = Dense(units='1', name='y2_output')(third_dense)

# Define the model with the input layer and a list of output layers
model = Model(inputs=input_layer, outputs=[y1_output, y2_output])

print(model.summary())
```

Model: "model"

Layer (type)	Output Shape	Param #	Connected to
input_1 (InputLayer)	[(None, 8)]	0	
dense (Dense)	(None, 128)	1152	input_1[0][0]
dense_1 (Dense)	(None, 128)	16512	dense[0][0]
dense_2 (Dense)	(None, 64)	8256	dense_1[0][0]
y1_output (Dense)	(None, 1)	129	dense_1[0][0]

```

-----
y2_output (Dense)                (None, 1)                65                dense_2[0][0]
=====
Total params: 26,114
Trainable params: 26,114
Non-trainable params: 0
-----
None

```

## 1.5 Configure parameters

We specify the optimizer as well as the loss and metrics for each output.

```

[5]: # Specify the optimizer, and compile the model with loss functions for both
      ↪ outputs
optimizer = tf.keras.optimizers.SGD(lr=0.001)
model.compile(optimizer=optimizer,
              loss={'y1_output': 'mse', 'y2_output': 'mse'},
              metrics={'y1_output': tf.keras.metrics.RootMeanSquaredError(),
                       'y2_output': tf.keras.metrics.RootMeanSquaredError()})

```

## 1.6 Train the Model

```

[6]: # Train the model for 500 epochs
history = model.fit(norm_train_X, train_Y,
                    epochs=500, batch_size=10, validation_data=(norm_test_X,
      ↪test_Y))

```

Train on 614 samples, validate on 154 samples

Epoch 1/500

```

614/614 [=====] - 1s 904us/sample - loss: 253.4275 -
y1_output_loss: 122.3747 - y2_output_loss: 128.7015 -
y1_output_root_mean_squared_error: 11.1157 - y2_output_root_mean_squared_error:
11.3960 - val_loss: 35.9975 - val_y1_output_loss: 14.8563 - val_y2_output_loss:
20.1065 - val_y1_output_root_mean_squared_error: 3.9015 -
val_y2_output_root_mean_squared_error: 4.5580

```

Epoch 2/500

```

614/614 [=====] - 0s 145us/sample - loss: 33.6663 -
y1_output_loss: 13.1603 - y2_output_loss: 20.1966 -
y1_output_root_mean_squared_error: 3.6445 - y2_output_root_mean_squared_error:
4.5148 - val_loss: 27.0844 - val_y1_output_loss: 11.1483 - val_y2_output_loss:
15.2498 - val_y1_output_root_mean_squared_error: 3.3742 -
val_y2_output_root_mean_squared_error: 3.9622

```

Epoch 3/500  
614/614 [=====] - 0s 139us/sample - loss: 28.9396 -  
y1\_output\_loss: 11.3291 - y2\_output\_loss: 17.5187 -  
y1\_output\_root\_mean\_squared\_error: 3.3736 - y2\_output\_root\_mean\_squared\_error:  
4.1903 - val\_loss: 34.6927 - val\_y1\_output\_loss: 10.5265 - val\_y2\_output\_loss:  
23.2089 - val\_y1\_output\_root\_mean\_squared\_error: 3.2912 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.8847  
Epoch 4/500  
614/614 [=====] - 0s 129us/sample - loss: 24.5195 -  
y1\_output\_loss: 9.5115 - y2\_output\_loss: 14.8103 -  
y1\_output\_root\_mean\_squared\_error: 3.0940 - y2\_output\_root\_mean\_squared\_error:  
3.8661 - val\_loss: 33.8566 - val\_y1\_output\_loss: 11.7687 - val\_y2\_output\_loss:  
20.9813 - val\_y1\_output\_root\_mean\_squared\_error: 3.4816 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.6621  
Epoch 5/500  
614/614 [=====] - 0s 127us/sample - loss: 21.0938 -  
y1\_output\_loss: 8.6248 - y2\_output\_loss: 12.2996 -  
y1\_output\_root\_mean\_squared\_error: 2.9485 - y2\_output\_root\_mean\_squared\_error:  
3.5213 - val\_loss: 19.0975 - val\_y1\_output\_loss: 8.0242 - val\_y2\_output\_loss:  
10.8240 - val\_y1\_output\_root\_mean\_squared\_error: 2.8798 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.2870  
Epoch 6/500  
614/614 [=====] - 0s 126us/sample - loss: 23.2580 -  
y1\_output\_loss: 8.9947 - y2\_output\_loss: 14.2768 -  
y1\_output\_root\_mean\_squared\_error: 2.9875 - y2\_output\_root\_mean\_squared\_error:  
3.7859 - val\_loss: 40.1533 - val\_y1\_output\_loss: 15.6272 - val\_y2\_output\_loss:  
23.4759 - val\_y1\_output\_root\_mean\_squared\_error: 3.9852 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.9266  
Epoch 7/500  
614/614 [=====] - 0s 125us/sample - loss: 19.6035 -  
y1\_output\_loss: 8.2025 - y2\_output\_loss: 11.3590 -  
y1\_output\_root\_mean\_squared\_error: 2.8658 - y2\_output\_root\_mean\_squared\_error:  
3.3750 - val\_loss: 33.7577 - val\_y1\_output\_loss: 12.9435 - val\_y2\_output\_loss:  
19.8944 - val\_y1\_output\_root\_mean\_squared\_error: 3.6352 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.5325  
Epoch 8/500  
614/614 [=====] - 0s 134us/sample - loss: 21.3551 -  
y1\_output\_loss: 8.4892 - y2\_output\_loss: 13.1040 -  
y1\_output\_root\_mean\_squared\_error: 2.9146 - y2\_output\_root\_mean\_squared\_error:  
3.5861 - val\_loss: 45.8109 - val\_y1\_output\_loss: 10.2340 - val\_y2\_output\_loss:  
36.8283 - val\_y1\_output\_root\_mean\_squared\_error: 3.2072 -  
val\_y2\_output\_root\_mean\_squared\_error: 5.9603  
Epoch 9/500  
614/614 [=====] - 0s 135us/sample - loss: 24.0909 -  
y1\_output\_loss: 8.6889 - y2\_output\_loss: 15.4374 -  
y1\_output\_root\_mean\_squared\_error: 2.9465 - y2\_output\_root\_mean\_squared\_error:  
3.9254 - val\_loss: 33.3224 - val\_y1\_output\_loss: 10.5888 - val\_y2\_output\_loss:  
21.9366 - val\_y1\_output\_root\_mean\_squared\_error: 3.2941 -

```

val_y2_output_root_mean_squared_error: 4.7404
Epoch 10/500
614/614 [=====] - 0s 135us/sample - loss: 19.8814 -
y1_output_loss: 7.8972 - y2_output_loss: 11.8396 -
y1_output_root_mean_squared_error: 2.8225 - y2_output_root_mean_squared_error:
3.4518 - val_loss: 21.0315 - val_y1_output_loss: 8.6096 - val_y2_output_loss:
12.5476 - val_y1_output_root_mean_squared_error: 2.9582 -
val_y2_output_root_mean_squared_error: 3.5044
Epoch 11/500
614/614 [=====] - 0s 130us/sample - loss: 22.7599 -
y1_output_loss: 8.5384 - y2_output_loss: 14.2310 -
y1_output_root_mean_squared_error: 2.9086 - y2_output_root_mean_squared_error:
3.7815 - val_loss: 27.2110 - val_y1_output_loss: 9.3670 - val_y2_output_loss:
17.6918 - val_y1_output_root_mean_squared_error: 3.1082 -
val_y2_output_root_mean_squared_error: 4.1893
Epoch 12/500
614/614 [=====] - 0s 132us/sample - loss: 21.7433 -
y1_output_loss: 8.3499 - y2_output_loss: 13.2442 -
y1_output_root_mean_squared_error: 2.8989 - y2_output_root_mean_squared_error:
3.6524 - val_loss: 19.0236 - val_y1_output_loss: 7.9936 - val_y2_output_loss:
10.5657 - val_y1_output_root_mean_squared_error: 2.8776 -
val_y2_output_root_mean_squared_error: 3.2776
Epoch 13/500
614/614 [=====] - 0s 128us/sample - loss: 17.7967 -
y1_output_loss: 7.0569 - y2_output_loss: 10.6216 -
y1_output_root_mean_squared_error: 2.6668 - y2_output_root_mean_squared_error:
3.2687 - val_loss: 17.9560 - val_y1_output_loss: 6.8442 - val_y2_output_loss:
10.5805 - val_y1_output_root_mean_squared_error: 2.6606 -
val_y2_output_root_mean_squared_error: 3.2980
Epoch 14/500
614/614 [=====] - 0s 122us/sample - loss: 22.4105 -
y1_output_loss: 8.2785 - y2_output_loss: 14.6587 -
y1_output_root_mean_squared_error: 2.8522 - y2_output_root_mean_squared_error:
3.7783 - val_loss: 84.5477 - val_y1_output_loss: 21.7363 - val_y2_output_loss:
62.1279 - val_y1_output_root_mean_squared_error: 4.6632 -
val_y2_output_root_mean_squared_error: 7.9248
Epoch 15/500
614/614 [=====] - 0s 124us/sample - loss: 19.2813 -
y1_output_loss: 7.8333 - y2_output_loss: 11.5561 -
y1_output_root_mean_squared_error: 2.7887 - y2_output_root_mean_squared_error:
3.3918 - val_loss: 58.0642 - val_y1_output_loss: 14.5254 - val_y2_output_loss:
42.7929 - val_y1_output_root_mean_squared_error: 3.8192 -
val_y2_output_root_mean_squared_error: 6.5938
Epoch 16/500
614/614 [=====] - 0s 124us/sample - loss: 18.3534 -
y1_output_loss: 6.9470 - y2_output_loss: 11.3664 -
y1_output_root_mean_squared_error: 2.6318 - y2_output_root_mean_squared_error:
3.3804 - val_loss: 20.0576 - val_y1_output_loss: 7.6786 - val_y2_output_loss:

```

11.8708 - val\_y1\_output\_root\_mean\_squared\_error: 2.7976 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.4973  
 Epoch 17/500  
 614/614 [=====] - 0s 124us/sample - loss: 17.3386 -  
 y1\_output\_loss: 6.7247 - y2\_output\_loss: 10.7555 -  
 y1\_output\_root\_mean\_squared\_error: 2.5890 - y2\_output\_root\_mean\_squared\_error:  
 3.2613 - val\_loss: 18.7494 - val\_y1\_output\_loss: 6.8796 - val\_y2\_output\_loss:  
 11.9356 - val\_y1\_output\_root\_mean\_squared\_error: 2.6452 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.4282  
 Epoch 18/500  
 614/614 [=====] - 0s 128us/sample - loss: 16.2691 -  
 y1\_output\_loss: 6.5549 - y2\_output\_loss: 9.7397 -  
 y1\_output\_root\_mean\_squared\_error: 2.5658 - y2\_output\_root\_mean\_squared\_error:  
 3.1122 - val\_loss: 14.2377 - val\_y1\_output\_loss: 5.2866 - val\_y2\_output\_loss:  
 8.8577 - val\_y1\_output\_root\_mean\_squared\_error: 2.3407 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.9595  
 Epoch 19/500  
 614/614 [=====] - 0s 131us/sample - loss: 13.7237 -  
 y1\_output\_loss: 5.6631 - y2\_output\_loss: 8.1650 -  
 y1\_output\_root\_mean\_squared\_error: 2.3668 - y2\_output\_root\_mean\_squared\_error:  
 2.8499 - val\_loss: 31.3449 - val\_y1\_output\_loss: 9.0791 - val\_y2\_output\_loss:  
 21.8744 - val\_y1\_output\_root\_mean\_squared\_error: 3.0118 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.7195  
 Epoch 20/500  
 614/614 [=====] - 0s 129us/sample - loss: 13.5064 -  
 y1\_output\_loss: 5.4869 - y2\_output\_loss: 7.9020 -  
 y1\_output\_root\_mean\_squared\_error: 2.3518 - y2\_output\_root\_mean\_squared\_error:  
 2.8241 - val\_loss: 13.4296 - val\_y1\_output\_loss: 5.5348 - val\_y2\_output\_loss:  
 7.6140 - val\_y1\_output\_root\_mean\_squared\_error: 2.3728 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7927  
 Epoch 21/500  
 614/614 [=====] - 0s 124us/sample - loss: 16.9356 -  
 y1\_output\_loss: 6.3869 - y2\_output\_loss: 10.5305 -  
 y1\_output\_root\_mean\_squared\_error: 2.5121 - y2\_output\_root\_mean\_squared\_error:  
 3.2596 - val\_loss: 19.7763 - val\_y1\_output\_loss: 7.9598 - val\_y2\_output\_loss:  
 11.6718 - val\_y1\_output\_root\_mean\_squared\_error: 2.8606 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.4049  
 Epoch 22/500  
 614/614 [=====] - 0s 131us/sample - loss: 14.6777 -  
 y1\_output\_loss: 5.4828 - y2\_output\_loss: 9.2617 -  
 y1\_output\_root\_mean\_squared\_error: 2.3432 - y2\_output\_root\_mean\_squared\_error:  
 3.0310 - val\_loss: 29.7481 - val\_y1\_output\_loss: 7.5475 - val\_y2\_output\_loss:  
 22.6046 - val\_y1\_output\_root\_mean\_squared\_error: 2.7629 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.7026  
 Epoch 23/500  
 614/614 [=====] - 0s 124us/sample - loss: 14.4003 -  
 y1\_output\_loss: 5.5895 - y2\_output\_loss: 8.7143 -  
 y1\_output\_root\_mean\_squared\_error: 2.3753 - y2\_output\_root\_mean\_squared\_error:

2.9594 - val\_loss: 13.0870 - val\_y1\_output\_loss: 4.5076 - val\_y2\_output\_loss:  
 8.2606 - val\_y1\_output\_root\_mean\_squared\_error: 2.1434 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.9142  
 Epoch 24/500  
 614/614 [=====] - 0s 123us/sample - loss: 17.2808 -  
 y1\_output\_loss: 6.1669 - y2\_output\_loss: 11.0301 -  
 y1\_output\_root\_mean\_squared\_error: 2.4932 - y2\_output\_root\_mean\_squared\_error:  
 3.3263 - val\_loss: 12.3731 - val\_y1\_output\_loss: 4.7073 - val\_y2\_output\_loss:  
 7.3285 - val\_y1\_output\_root\_mean\_squared\_error: 2.1909 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7519  
 Epoch 25/500  
 614/614 [=====] - 0s 124us/sample - loss: 13.7609 -  
 y1\_output\_loss: 5.0507 - y2\_output\_loss: 8.6712 -  
 y1\_output\_root\_mean\_squared\_error: 2.2563 - y2\_output\_root\_mean\_squared\_error:  
 2.9445 - val\_loss: 30.6334 - val\_y1\_output\_loss: 6.6598 - val\_y2\_output\_loss:  
 23.9532 - val\_y1\_output\_root\_mean\_squared\_error: 2.6197 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.8755  
 Epoch 26/500  
 614/614 [=====] - 0s 129us/sample - loss: 15.8719 -  
 y1\_output\_loss: 5.2850 - y2\_output\_loss: 10.4902 -  
 y1\_output\_root\_mean\_squared\_error: 2.3030 - y2\_output\_root\_mean\_squared\_error:  
 3.2508 - val\_loss: 35.5846 - val\_y1\_output\_loss: 10.6076 - val\_y2\_output\_loss:  
 24.9171 - val\_y1\_output\_root\_mean\_squared\_error: 3.2128 -  
 val\_y2\_output\_root\_mean\_squared\_error: 5.0262  
 Epoch 27/500  
 614/614 [=====] - 0s 123us/sample - loss: 12.0931 -  
 y1\_output\_loss: 4.8099 - y2\_output\_loss: 7.3338 -  
 y1\_output\_root\_mean\_squared\_error: 2.1716 - y2\_output\_root\_mean\_squared\_error:  
 2.7161 - val\_loss: 28.9291 - val\_y1\_output\_loss: 7.7699 - val\_y2\_output\_loss:  
 21.1711 - val\_y1\_output\_root\_mean\_squared\_error: 2.7436 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.6262  
 Epoch 28/500  
 614/614 [=====] - 0s 123us/sample - loss: 12.1791 -  
 y1\_output\_loss: 4.6174 - y2\_output\_loss: 7.9535 -  
 y1\_output\_root\_mean\_squared\_error: 2.1309 - y2\_output\_root\_mean\_squared\_error:  
 2.7638 - val\_loss: 21.7419 - val\_y1\_output\_loss: 7.3525 - val\_y2\_output\_loss:  
 14.6718 - val\_y1\_output\_root\_mean\_squared\_error: 2.6614 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.8287  
 Epoch 29/500  
 614/614 [=====] - 0s 123us/sample - loss: 12.1037 -  
 y1\_output\_loss: 4.5246 - y2\_output\_loss: 7.5075 -  
 y1\_output\_root\_mean\_squared\_error: 2.1321 - y2\_output\_root\_mean\_squared\_error:  
 2.7491 - val\_loss: 11.0308 - val\_y1\_output\_loss: 4.3682 - val\_y2\_output\_loss:  
 6.3531 - val\_y1\_output\_root\_mean\_squared\_error: 2.1101 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.5648  
 Epoch 30/500  
 614/614 [=====] - 0s 122us/sample - loss: 10.2596 -  
 y1\_output\_loss: 3.9325 - y2\_output\_loss: 6.2469 -



y1\_output\_root\_mean\_squared\_error: 1.9923 - y2\_output\_root\_mean\_squared\_error:  
 2.5080 - val\_loss: 11.7801 - val\_y1\_output\_loss: 4.4998 - val\_y2\_output\_loss:  
 7.0424 - val\_y1\_output\_root\_mean\_squared\_error: 2.1193 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.6998  
 Epoch 31/500  
 614/614 [=====] - 0s 123us/sample - loss: 12.5389 -  
 y1\_output\_loss: 4.4384 - y2\_output\_loss: 8.0815 -  
 y1\_output\_root\_mean\_squared\_error: 2.1087 - y2\_output\_root\_mean\_squared\_error:  
 2.8447 - val\_loss: 15.8239 - val\_y1\_output\_loss: 4.5880 - val\_y2\_output\_loss:  
 11.1986 - val\_y1\_output\_root\_mean\_squared\_error: 2.1541 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.3442  
 Epoch 32/500  
 614/614 [=====] - 0s 123us/sample - loss: 10.9759 -  
 y1\_output\_loss: 3.9682 - y2\_output\_loss: 6.9778 -  
 y1\_output\_root\_mean\_squared\_error: 1.9932 - y2\_output\_root\_mean\_squared\_error:  
 2.6463 - val\_loss: 11.5667 - val\_y1\_output\_loss: 3.3458 - val\_y2\_output\_loss:  
 7.9658 - val\_y1\_output\_root\_mean\_squared\_error: 1.8264 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.8690  
 Epoch 33/500  
 614/614 [=====] - 0s 130us/sample - loss: 10.7901 -  
 y1\_output\_loss: 3.9256 - y2\_output\_loss: 6.7988 -  
 y1\_output\_root\_mean\_squared\_error: 1.9893 - y2\_output\_root\_mean\_squared\_error:  
 2.6140 - val\_loss: 12.8673 - val\_y1\_output\_loss: 4.3264 - val\_y2\_output\_loss:  
 8.3263 - val\_y1\_output\_root\_mean\_squared\_error: 2.1056 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.9041  
 Epoch 34/500  
 614/614 [=====] - 0s 128us/sample - loss: 9.8896 -  
 y1\_output\_loss: 3.7756 - y2\_output\_loss: 6.1677 -  
 y1\_output\_root\_mean\_squared\_error: 1.9453 - y2\_output\_root\_mean\_squared\_error:  
 2.4709 - val\_loss: 9.6947 - val\_y1\_output\_loss: 3.4299 - val\_y2\_output\_loss:  
 6.1077 - val\_y1\_output\_root\_mean\_squared\_error: 1.8618 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.4957  
 Epoch 35/500  
 614/614 [=====] - 0s 121us/sample - loss: 10.8180 -  
 y1\_output\_loss: 3.9122 - y2\_output\_loss: 7.0516 -  
 y1\_output\_root\_mean\_squared\_error: 1.9666 - y2\_output\_root\_mean\_squared\_error:  
 2.6364 - val\_loss: 12.5835 - val\_y1\_output\_loss: 5.2828 - val\_y2\_output\_loss:  
 7.2634 - val\_y1\_output\_root\_mean\_squared\_error: 2.2988 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7017  
 Epoch 36/500  
 614/614 [=====] - 0s 125us/sample - loss: 11.3427 -  
 y1\_output\_loss: 4.1929 - y2\_output\_loss: 7.1080 -  
 y1\_output\_root\_mean\_squared\_error: 2.0515 - y2\_output\_root\_mean\_squared\_error:  
 2.6710 - val\_loss: 10.3193 - val\_y1\_output\_loss: 3.8470 - val\_y2\_output\_loss:  
 6.2231 - val\_y1\_output\_root\_mean\_squared\_error: 1.9889 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.5226  
 Epoch 37/500  
 614/614 [=====] - 0s 133us/sample - loss: 9.2149 -

y1\_output\_loss: 3.3723 - y2\_output\_loss: 6.0048 -  
 y1\_output\_root\_mean\_squared\_error: 1.8334 - y2\_output\_root\_mean\_squared\_error:  
 2.4194 - val\_loss: 30.4667 - val\_y1\_output\_loss: 6.5836 - val\_y2\_output\_loss:  
 24.1795 - val\_y1\_output\_root\_mean\_squared\_error: 2.5886 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.8750  
 Epoch 38/500  
 614/614 [=====] - 0s 132us/sample - loss: 8.4341 -  
 y1\_output\_loss: 3.1960 - y2\_output\_loss: 5.1976 -  
 y1\_output\_root\_mean\_squared\_error: 1.7910 - y2\_output\_root\_mean\_squared\_error:  
 2.2861 - val\_loss: 9.1304 - val\_y1\_output\_loss: 3.5541 - val\_y2\_output\_loss:  
 5.4699 - val\_y1\_output\_root\_mean\_squared\_error: 1.8685 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3747  
 Epoch 39/500  
 614/614 [=====] - 0s 132us/sample - loss: 8.8994 -  
 y1\_output\_loss: 3.3046 - y2\_output\_loss: 5.7126 -  
 y1\_output\_root\_mean\_squared\_error: 1.8175 - y2\_output\_root\_mean\_squared\_error:  
 2.3656 - val\_loss: 10.9335 - val\_y1\_output\_loss: 3.7225 - val\_y2\_output\_loss:  
 7.0846 - val\_y1\_output\_root\_mean\_squared\_error: 1.9593 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.6636  
 Epoch 40/500  
 614/614 [=====] - 0s 130us/sample - loss: 8.8518 -  
 y1\_output\_loss: 3.2351 - y2\_output\_loss: 5.5504 -  
 y1\_output\_root\_mean\_squared\_error: 1.8049 - y2\_output\_root\_mean\_squared\_error:  
 2.3652 - val\_loss: 8.4965 - val\_y1\_output\_loss: 2.9060 - val\_y2\_output\_loss:  
 5.4582 - val\_y1\_output\_root\_mean\_squared\_error: 1.6823 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3804  
 Epoch 41/500  
 614/614 [=====] - 0s 131us/sample - loss: 9.0726 -  
 y1\_output\_loss: 3.2860 - y2\_output\_loss: 5.7043 -  
 y1\_output\_root\_mean\_squared\_error: 1.8208 - y2\_output\_root\_mean\_squared\_error:  
 2.3994 - val\_loss: 7.7891 - val\_y1\_output\_loss: 2.8033 - val\_y2\_output\_loss:  
 4.9059 - val\_y1\_output\_root\_mean\_squared\_error: 1.6558 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2466  
 Epoch 42/500  
 614/614 [=====] - 0s 132us/sample - loss: 8.3617 -  
 y1\_output\_loss: 2.9216 - y2\_output\_loss: 5.3854 -  
 y1\_output\_root\_mean\_squared\_error: 1.7139 - y2\_output\_root\_mean\_squared\_error:  
 2.3290 - val\_loss: 7.6319 - val\_y1\_output\_loss: 2.6454 - val\_y2\_output\_loss:  
 4.8331 - val\_y1\_output\_root\_mean\_squared\_error: 1.6234 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2353  
 Epoch 43/500  
 614/614 [=====] - 0s 130us/sample - loss: 8.4770 -  
 y1\_output\_loss: 2.8616 - y2\_output\_loss: 5.5415 -  
 y1\_output\_root\_mean\_squared\_error: 1.6985 - y2\_output\_root\_mean\_squared\_error:  
 2.3648 - val\_loss: 7.2282 - val\_y1\_output\_loss: 2.5544 - val\_y2\_output\_loss:  
 4.5650 - val\_y1\_output\_root\_mean\_squared\_error: 1.5852 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1714  
 Epoch 44/500

```

614/614 [=====] - 0s 130us/sample - loss: 9.5156 -
y1_output_loss: 3.4864 - y2_output_loss: 6.0268 -
y1_output_root_mean_squared_error: 1.8583 - y2_output_root_mean_squared_error:
2.4622 - val_loss: 9.9703 - val_y1_output_loss: 4.2381 - val_y2_output_loss:
5.6066 - val_y1_output_root_mean_squared_error: 2.0640 -
val_y2_output_root_mean_squared_error: 2.3896
Epoch 45/500
614/614 [=====] - 0s 130us/sample - loss: 7.4403 -
y1_output_loss: 2.7893 - y2_output_loss: 4.8040 -
y1_output_root_mean_squared_error: 1.6631 - y2_output_root_mean_squared_error:
2.1621 - val_loss: 52.1521 - val_y1_output_loss: 13.1314 - val_y2_output_loss:
39.0386 - val_y1_output_root_mean_squared_error: 3.6676 -
val_y2_output_root_mean_squared_error: 6.2210
Epoch 46/500
614/614 [=====] - 0s 129us/sample - loss: 9.5034 -
y1_output_loss: 3.2285 - y2_output_loss: 6.8348 -
y1_output_root_mean_squared_error: 1.7791 - y2_output_root_mean_squared_error:
2.5176 - val_loss: 57.2659 - val_y1_output_loss: 7.6773 - val_y2_output_loss:
51.3026 - val_y1_output_root_mean_squared_error: 2.7470 -
val_y2_output_root_mean_squared_error: 7.0512
Epoch 47/500
614/614 [=====] - 0s 129us/sample - loss: 9.0154 -
y1_output_loss: 2.8720 - y2_output_loss: 6.1237 -
y1_output_root_mean_squared_error: 1.6964 - y2_output_root_mean_squared_error:
2.4774 - val_loss: 19.2864 - val_y1_output_loss: 6.1225 - val_y2_output_loss:
13.2339 - val_y1_output_root_mean_squared_error: 2.4087 -
val_y2_output_root_mean_squared_error: 3.6721
Epoch 48/500
614/614 [=====] - 0s 129us/sample - loss: 7.8179 -
y1_output_loss: 2.7836 - y2_output_loss: 5.0431 -
y1_output_root_mean_squared_error: 1.6725 - y2_output_root_mean_squared_error:
2.2407 - val_loss: 8.5408 - val_y1_output_loss: 3.0447 - val_y2_output_loss:
5.4880 - val_y1_output_root_mean_squared_error: 1.7369 -
val_y2_output_root_mean_squared_error: 2.3503
Epoch 49/500
614/614 [=====] - 0s 130us/sample - loss: 9.9039 -
y1_output_loss: 3.3521 - y2_output_loss: 6.4879 -
y1_output_root_mean_squared_error: 1.8370 - y2_output_root_mean_squared_error:
2.5553 - val_loss: 7.9421 - val_y1_output_loss: 2.8707 - val_y2_output_loss:
5.0500 - val_y1_output_root_mean_squared_error: 1.6903 -
val_y2_output_root_mean_squared_error: 2.2550
Epoch 50/500
614/614 [=====] - 0s 131us/sample - loss: 7.9491 -
y1_output_loss: 2.6959 - y2_output_loss: 5.3120 -
y1_output_root_mean_squared_error: 1.6372 - y2_output_root_mean_squared_error:
2.2954 - val_loss: 6.6924 - val_y1_output_loss: 2.3878 - val_y2_output_loss:
4.3002 - val_y1_output_root_mean_squared_error: 1.5159 -
val_y2_output_root_mean_squared_error: 2.0963

```

Epoch 51/500

614/614 [=====] - 0s 121us/sample - loss: 6.9172 -  
y1\_output\_loss: 2.4042 - y2\_output\_loss: 4.4738 -  
y1\_output\_root\_mean\_squared\_error: 1.5560 - y2\_output\_root\_mean\_squared\_error:  
2.1204 - val\_loss: 7.2717 - val\_y1\_output\_loss: 2.6145 - val\_y2\_output\_loss:  
4.7091 - val\_y1\_output\_root\_mean\_squared\_error: 1.5848 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1818

Epoch 52/500

614/614 [=====] - 0s 122us/sample - loss: 7.5316 -  
y1\_output\_loss: 2.3262 - y2\_output\_loss: 5.1463 -  
y1\_output\_root\_mean\_squared\_error: 1.5292 - y2\_output\_root\_mean\_squared\_error:  
2.2788 - val\_loss: 9.2154 - val\_y1\_output\_loss: 3.5548 - val\_y2\_output\_loss:  
5.6438 - val\_y1\_output\_root\_mean\_squared\_error: 1.8370 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4168

Epoch 53/500

614/614 [=====] - 0s 125us/sample - loss: 6.9797 -  
y1\_output\_loss: 2.5287 - y2\_output\_loss: 4.4115 -  
y1\_output\_root\_mean\_squared\_error: 1.5961 - y2\_output\_root\_mean\_squared\_error:  
2.1053 - val\_loss: 8.6050 - val\_y1\_output\_loss: 2.7819 - val\_y2\_output\_loss:  
5.7743 - val\_y1\_output\_root\_mean\_squared\_error: 1.6334 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4366

Epoch 54/500

614/614 [=====] - 0s 130us/sample - loss: 6.7060 -  
y1\_output\_loss: 2.2745 - y2\_output\_loss: 4.4658 -  
y1\_output\_root\_mean\_squared\_error: 1.5076 - y2\_output\_root\_mean\_squared\_error:  
2.1055 - val\_loss: 8.9144 - val\_y1\_output\_loss: 3.4304 - val\_y2\_output\_loss:  
5.6043 - val\_y1\_output\_root\_mean\_squared\_error: 1.7929 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3874

Epoch 55/500

614/614 [=====] - 0s 131us/sample - loss: 7.3120 -  
y1\_output\_loss: 2.3197 - y2\_output\_loss: 4.9304 -  
y1\_output\_root\_mean\_squared\_error: 1.5290 - y2\_output\_root\_mean\_squared\_error:  
2.2302 - val\_loss: 9.9873 - val\_y1\_output\_loss: 2.5361 - val\_y2\_output\_loss:  
7.3287 - val\_y1\_output\_root\_mean\_squared\_error: 1.5495 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.7543

Epoch 56/500

614/614 [=====] - 0s 131us/sample - loss: 7.9800 -  
y1\_output\_loss: 2.6268 - y2\_output\_loss: 5.4440 -  
y1\_output\_root\_mean\_squared\_error: 1.6193 - y2\_output\_root\_mean\_squared\_error:  
2.3147 - val\_loss: 10.4766 - val\_y1\_output\_loss: 3.9080 - val\_y2\_output\_loss:  
6.7319 - val\_y1\_output\_root\_mean\_squared\_error: 1.9392 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.5916

Epoch 57/500

614/614 [=====] - 0s 129us/sample - loss: 8.3657 -  
y1\_output\_loss: 2.6260 - y2\_output\_loss: 5.7289 -  
y1\_output\_root\_mean\_squared\_error: 1.6224 - y2\_output\_root\_mean\_squared\_error:  
2.3945 - val\_loss: 5.5425 - val\_y1\_output\_loss: 1.8220 - val\_y2\_output\_loss:  
3.7607 - val\_y1\_output\_root\_mean\_squared\_error: 1.3274 -

```

val_y2_output_root_mean_squared_error: 1.9443
Epoch 58/500
614/614 [=====] - 0s 130us/sample - loss: 8.4750 -
y1_output_loss: 2.6984 - y2_output_loss: 5.7275 -
y1_output_root_mean_squared_error: 1.6471 - y2_output_root_mean_squared_error:
2.4005 - val_loss: 11.0509 - val_y1_output_loss: 3.3963 - val_y2_output_loss:
7.6460 - val_y1_output_root_mean_squared_error: 1.7898 -
val_y2_output_root_mean_squared_error: 2.8013
Epoch 59/500
614/614 [=====] - 0s 130us/sample - loss: 7.3830 -
y1_output_loss: 2.2736 - y2_output_loss: 5.0876 -
y1_output_root_mean_squared_error: 1.5112 - y2_output_root_mean_squared_error:
2.2582 - val_loss: 5.4721 - val_y1_output_loss: 1.7167 - val_y2_output_loss:
3.7379 - val_y1_output_root_mean_squared_error: 1.2924 -
val_y2_output_root_mean_squared_error: 1.9498
Epoch 60/500
614/614 [=====] - 0s 129us/sample - loss: 6.2597 -
y1_output_loss: 1.8856 - y2_output_loss: 4.3941 -
y1_output_root_mean_squared_error: 1.3775 - y2_output_root_mean_squared_error:
2.0886 - val_loss: 5.6096 - val_y1_output_loss: 1.5304 - val_y2_output_loss:
4.1287 - val_y1_output_root_mean_squared_error: 1.2408 -
val_y2_output_root_mean_squared_error: 2.0174
Epoch 61/500
614/614 [=====] - 0s 123us/sample - loss: 5.7292 -
y1_output_loss: 1.7786 - y2_output_loss: 4.0078 -
y1_output_root_mean_squared_error: 1.3351 - y2_output_root_mean_squared_error:
1.9866 - val_loss: 6.9925 - val_y1_output_loss: 1.9697 - val_y2_output_loss:
4.9744 - val_y1_output_root_mean_squared_error: 1.3641 -
val_y2_output_root_mean_squared_error: 2.2653
Epoch 62/500
614/614 [=====] - 0s 121us/sample - loss: 6.2074 -
y1_output_loss: 1.8670 - y2_output_loss: 4.4374 -
y1_output_root_mean_squared_error: 1.3690 - y2_output_root_mean_squared_error:
2.0816 - val_loss: 35.9307 - val_y1_output_loss: 5.3532 - val_y2_output_loss:
31.5774 - val_y1_output_root_mean_squared_error: 2.3174 -
val_y2_output_root_mean_squared_error: 5.5281
Epoch 63/500
614/614 [=====] - 0s 125us/sample - loss: 8.0712 -
y1_output_loss: 2.4056 - y2_output_loss: 5.6109 -
y1_output_root_mean_squared_error: 1.5518 - y2_output_root_mean_squared_error:
2.3797 - val_loss: 5.2822 - val_y1_output_loss: 1.5945 - val_y2_output_loss:
3.6283 - val_y1_output_root_mean_squared_error: 1.2570 -
val_y2_output_root_mean_squared_error: 1.9241
Epoch 64/500
614/614 [=====] - 0s 128us/sample - loss: 6.3457 -
y1_output_loss: 1.9858 - y2_output_loss: 4.3250 -
y1_output_root_mean_squared_error: 1.4106 - y2_output_root_mean_squared_error:
2.0871 - val_loss: 5.9615 - val_y1_output_loss: 1.7452 - val_y2_output_loss:

```

4.1411 - val\_y1\_output\_root\_mean\_squared\_error: 1.2980 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0680  
 Epoch 65/500  
 614/614 [=====] - 0s 119us/sample - loss: 5.4884 -  
 y1\_output\_loss: 1.7025 - y2\_output\_loss: 3.7628 -  
 y1\_output\_root\_mean\_squared\_error: 1.3072 - y2\_output\_root\_mean\_squared\_error:  
 1.9441 - val\_loss: 7.3361 - val\_y1\_output\_loss: 1.4723 - val\_y2\_output\_loss:  
 6.0237 - val\_y1\_output\_root\_mean\_squared\_error: 1.2263 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.4150  
 Epoch 66/500  
 614/614 [=====] - 0s 129us/sample - loss: 5.6176 -  
 y1\_output\_loss: 1.6854 - y2\_output\_loss: 3.9178 -  
 y1\_output\_root\_mean\_squared\_error: 1.3016 - y2\_output\_root\_mean\_squared\_error:  
 1.9808 - val\_loss: 6.0685 - val\_y1\_output\_loss: 1.9155 - val\_y2\_output\_loss:  
 4.2301 - val\_y1\_output\_root\_mean\_squared\_error: 1.3322 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0721  
 Epoch 67/500  
 614/614 [=====] - 0s 132us/sample - loss: 5.7246 -  
 y1\_output\_loss: 1.7437 - y2\_output\_loss: 3.9711 -  
 y1\_output\_root\_mean\_squared\_error: 1.3244 - y2\_output\_root\_mean\_squared\_error:  
 1.9926 - val\_loss: 4.6979 - val\_y1\_output\_loss: 1.5743 - val\_y2\_output\_loss:  
 3.1624 - val\_y1\_output\_root\_mean\_squared\_error: 1.2121 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7969  
 Epoch 68/500  
 614/614 [=====] - 0s 129us/sample - loss: 5.0986 -  
 y1\_output\_loss: 1.5407 - y2\_output\_loss: 3.6090 -  
 y1\_output\_root\_mean\_squared\_error: 1.2315 - y2\_output\_root\_mean\_squared\_error:  
 1.8926 - val\_loss: 5.7708 - val\_y1\_output\_loss: 1.6489 - val\_y2\_output\_loss:  
 4.0720 - val\_y1\_output\_root\_mean\_squared\_error: 1.2672 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0408  
 Epoch 69/500  
 614/614 [=====] - 0s 121us/sample - loss: 7.7420 -  
 y1\_output\_loss: 2.2317 - y2\_output\_loss: 5.4569 -  
 y1\_output\_root\_mean\_squared\_error: 1.4943 - y2\_output\_root\_mean\_squared\_error:  
 2.3472 - val\_loss: 4.2157 - val\_y1\_output\_loss: 1.0937 - val\_y2\_output\_loss:  
 3.1116 - val\_y1\_output\_root\_mean\_squared\_error: 1.0328 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7746  
 Epoch 70/500  
 614/614 [=====] - 0s 130us/sample - loss: 4.9784 -  
 y1\_output\_loss: 1.2829 - y2\_output\_loss: 3.6556 -  
 y1\_output\_root\_mean\_squared\_error: 1.1358 - y2\_output\_root\_mean\_squared\_error:  
 1.9205 - val\_loss: 5.6910 - val\_y1\_output\_loss: 1.9495 - val\_y2\_output\_loss:  
 3.8434 - val\_y1\_output\_root\_mean\_squared\_error: 1.3404 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9734  
 Epoch 71/500  
 614/614 [=====] - 0s 124us/sample - loss: 5.9020 -  
 y1\_output\_loss: 1.5858 - y2\_output\_loss: 4.2644 -  
 y1\_output\_root\_mean\_squared\_error: 1.2639 - y2\_output\_root\_mean\_squared\_error:

2.0747 - val\_loss: 4.3265 - val\_y1\_output\_loss: 1.0351 - val\_y2\_output\_loss:  
 3.3537 - val\_y1\_output\_root\_mean\_squared\_error: 1.0210 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8122  
 Epoch 72/500  
 614/614 [=====] - 0s 124us/sample - loss: 5.5977 -  
 y1\_output\_loss: 1.5800 - y2\_output\_loss: 4.0240 -  
 y1\_output\_root\_mean\_squared\_error: 1.2593 - y2\_output\_root\_mean\_squared\_error:  
 2.0030 - val\_loss: 10.0945 - val\_y1\_output\_loss: 1.9932 - val\_y2\_output\_loss:  
 8.4104 - val\_y1\_output\_root\_mean\_squared\_error: 1.4323 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.8360  
 Epoch 73/500  
 614/614 [=====] - 0s 132us/sample - loss: 5.2862 -  
 y1\_output\_loss: 1.3753 - y2\_output\_loss: 4.2573 -  
 y1\_output\_root\_mean\_squared\_error: 1.1391 - y2\_output\_root\_mean\_squared\_error:  
 1.9971 - val\_loss: 108.0960 - val\_y1\_output\_loss: 34.6098 - val\_y2\_output\_loss:  
 75.7974 - val\_y1\_output\_root\_mean\_squared\_error: 5.7400 -  
 val\_y2\_output\_root\_mean\_squared\_error: 8.6688  
 Epoch 74/500  
 614/614 [=====] - 0s 121us/sample - loss: 5.5377 -  
 y1\_output\_loss: 1.6335 - y2\_output\_loss: 3.8634 -  
 y1\_output\_root\_mean\_squared\_error: 1.2830 - y2\_output\_root\_mean\_squared\_error:  
 1.9727 - val\_loss: 6.6124 - val\_y1\_output\_loss: 2.0116 - val\_y2\_output\_loss:  
 4.6348 - val\_y1\_output\_root\_mean\_squared\_error: 1.3697 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1763  
 Epoch 75/500  
 614/614 [=====] - 0s 121us/sample - loss: 4.7917 -  
 y1\_output\_loss: 1.2986 - y2\_output\_loss: 3.8117 -  
 y1\_output\_root\_mean\_squared\_error: 1.0899 - y2\_output\_root\_mean\_squared\_error:  
 1.8983 - val\_loss: 79.2513 - val\_y1\_output\_loss: 29.1342 - val\_y2\_output\_loss:  
 53.5073 - val\_y1\_output\_root\_mean\_squared\_error: 5.3185 -  
 val\_y2\_output\_root\_mean\_squared\_error: 7.1389  
 Epoch 76/500  
 614/614 [=====] - 0s 121us/sample - loss: 8.1182 -  
 y1\_output\_loss: 2.2872 - y2\_output\_loss: 5.7869 -  
 y1\_output\_root\_mean\_squared\_error: 1.5144 - y2\_output\_root\_mean\_squared\_error:  
 2.4135 - val\_loss: 6.6387 - val\_y1\_output\_loss: 1.6583 - val\_y2\_output\_loss:  
 4.8894 - val\_y1\_output\_root\_mean\_squared\_error: 1.2538 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2509  
 Epoch 77/500  
 614/614 [=====] - 0s 131us/sample - loss: 4.5464 -  
 y1\_output\_loss: 1.3838 - y2\_output\_loss: 3.1196 -  
 y1\_output\_root\_mean\_squared\_error: 1.1818 - y2\_output\_root\_mean\_squared\_error:  
 1.7748 - val\_loss: 3.7737 - val\_y1\_output\_loss: 0.8008 - val\_y2\_output\_loss:  
 2.9983 - val\_y1\_output\_root\_mean\_squared\_error: 0.8891 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7272  
 Epoch 78/500  
 614/614 [=====] - 0s 135us/sample - loss: 3.5916 -  
 y1\_output\_loss: 0.8987 - y2\_output\_loss: 2.7014 -

y1\_output\_root\_mean\_squared\_error: 0.9503 - y2\_output\_root\_mean\_squared\_error:  
 1.6397 - val\_loss: 6.4486 - val\_y1\_output\_loss: 0.8595 - val\_y2\_output\_loss:  
 5.8475 - val\_y1\_output\_root\_mean\_squared\_error: 0.9365 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3604  
 Epoch 79/500  
 614/614 [=====] - 0s 129us/sample - loss: 4.0523 -  
 y1\_output\_loss: 1.1491 - y2\_output\_loss: 2.9325 -  
 y1\_output\_root\_mean\_squared\_error: 1.0670 - y2\_output\_root\_mean\_squared\_error:  
 1.7070 - val\_loss: 4.9390 - val\_y1\_output\_loss: 1.6481 - val\_y2\_output\_loss:  
 3.3562 - val\_y1\_output\_root\_mean\_squared\_error: 1.2591 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8313  
 Epoch 80/500  
 614/614 [=====] - 0s 131us/sample - loss: 4.0902 -  
 y1\_output\_loss: 1.1141 - y2\_output\_loss: 2.9665 -  
 y1\_output\_root\_mean\_squared\_error: 1.0553 - y2\_output\_root\_mean\_squared\_error:  
 1.7253 - val\_loss: 5.4136 - val\_y1\_output\_loss: 0.7000 - val\_y2\_output\_loss:  
 4.9451 - val\_y1\_output\_root\_mean\_squared\_error: 0.8361 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1713  
 Epoch 81/500  
 614/614 [=====] - 0s 127us/sample - loss: 8.3288 -  
 y1\_output\_loss: 2.4304 - y2\_output\_loss: 5.8744 -  
 y1\_output\_root\_mean\_squared\_error: 1.5606 - y2\_output\_root\_mean\_squared\_error:  
 2.4276 - val\_loss: 10.2196 - val\_y1\_output\_loss: 2.3323 - val\_y2\_output\_loss:  
 7.7790 - val\_y1\_output\_root\_mean\_squared\_error: 1.4918 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.8274  
 Epoch 82/500  
 614/614 [=====] - 0s 131us/sample - loss: 5.1979 -  
 y1\_output\_loss: 1.6383 - y2\_output\_loss: 3.5237 -  
 y1\_output\_root\_mean\_squared\_error: 1.2831 - y2\_output\_root\_mean\_squared\_error:  
 1.8846 - val\_loss: 3.2793 - val\_y1\_output\_loss: 0.6689 - val\_y2\_output\_loss:  
 2.6331 - val\_y1\_output\_root\_mean\_squared\_error: 0.8169 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6162  
 Epoch 83/500  
 614/614 [=====] - 0s 131us/sample - loss: 4.5039 -  
 y1\_output\_loss: 1.1212 - y2\_output\_loss: 3.4590 -  
 y1\_output\_root\_mean\_squared\_error: 1.0626 - y2\_output\_root\_mean\_squared\_error:  
 1.8371 - val\_loss: 14.3952 - val\_y1\_output\_loss: 2.3153 - val\_y2\_output\_loss:  
 12.0171 - val\_y1\_output\_root\_mean\_squared\_error: 1.4713 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.4972  
 Epoch 84/500  
 614/614 [=====] - 0s 122us/sample - loss: 5.0079 -  
 y1\_output\_loss: 1.2661 - y2\_output\_loss: 3.7644 -  
 y1\_output\_root\_mean\_squared\_error: 1.1096 - y2\_output\_root\_mean\_squared\_error:  
 1.9434 - val\_loss: 4.5223 - val\_y1\_output\_loss: 1.1280 - val\_y2\_output\_loss:  
 3.4845 - val\_y1\_output\_root\_mean\_squared\_error: 1.0776 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8333  
 Epoch 85/500  
 614/614 [=====] - 0s 132us/sample - loss: 5.8819 -



y1\_output\_loss: 1.4477 - y2\_output\_loss: 4.4510 -  
y1\_output\_root\_mean\_squared\_error: 1.2000 - y2\_output\_root\_mean\_squared\_error:  
2.1076 - val\_loss: 9.6518 - val\_y1\_output\_loss: 2.4178 - val\_y2\_output\_loss:  
7.1235 - val\_y1\_output\_root\_mean\_squared\_error: 1.5137 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.7130  
Epoch 86/500  
614/614 [=====] - 0s 129us/sample - loss: 3.1802 -  
y1\_output\_loss: 0.7616 - y2\_output\_loss: 2.4249 -  
y1\_output\_root\_mean\_squared\_error: 0.8739 - y2\_output\_root\_mean\_squared\_error:  
1.5545 - val\_loss: 6.5364 - val\_y1\_output\_loss: 0.8801 - val\_y2\_output\_loss:  
5.5443 - val\_y1\_output\_root\_mean\_squared\_error: 0.9150 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3873  
Epoch 87/500  
614/614 [=====] - 0s 126us/sample - loss: 5.4698 -  
y1\_output\_loss: 1.5066 - y2\_output\_loss: 3.9404 -  
y1\_output\_root\_mean\_squared\_error: 1.2225 - y2\_output\_root\_mean\_squared\_error:  
1.9938 - val\_loss: 5.8142 - val\_y1\_output\_loss: 1.7995 - val\_y2\_output\_loss:  
4.3381 - val\_y1\_output\_root\_mean\_squared\_error: 1.3355 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.0077  
Epoch 88/500  
614/614 [=====] - 0s 119us/sample - loss: 3.7920 -  
y1\_output\_loss: 0.8727 - y2\_output\_loss: 2.9048 -  
y1\_output\_root\_mean\_squared\_error: 0.9373 - y2\_output\_root\_mean\_squared\_error:  
1.7069 - val\_loss: 5.0209 - val\_y1\_output\_loss: 1.0819 - val\_y2\_output\_loss:  
4.0957 - val\_y1\_output\_root\_mean\_squared\_error: 1.0596 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.9744  
Epoch 89/500  
614/614 [=====] - 0s 120us/sample - loss: 3.0511 -  
y1\_output\_loss: 0.7060 - y2\_output\_loss: 2.3502 -  
y1\_output\_root\_mean\_squared\_error: 0.8428 - y2\_output\_root\_mean\_squared\_error:  
1.5300 - val\_loss: 3.3936 - val\_y1\_output\_loss: 0.5776 - val\_y2\_output\_loss:  
2.9189 - val\_y1\_output\_root\_mean\_squared\_error: 0.7614 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6775  
Epoch 90/500  
614/614 [=====] - 0s 118us/sample - loss: 3.4019 -  
y1\_output\_loss: 0.8089 - y2\_output\_loss: 2.5959 -  
y1\_output\_root\_mean\_squared\_error: 0.9010 - y2\_output\_root\_mean\_squared\_error:  
1.6094 - val\_loss: 7.1494 - val\_y1\_output\_loss: 1.3078 - val\_y2\_output\_loss:  
5.7632 - val\_y1\_output\_root\_mean\_squared\_error: 1.1092 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4329  
Epoch 91/500  
614/614 [=====] - 0s 118us/sample - loss: 2.7824 -  
y1\_output\_loss: 0.6346 - y2\_output\_loss: 2.1359 -  
y1\_output\_root\_mean\_squared\_error: 0.7914 - y2\_output\_root\_mean\_squared\_error:  
1.4684 - val\_loss: 3.8542 - val\_y1\_output\_loss: 0.5999 - val\_y2\_output\_loss:  
3.2452 - val\_y1\_output\_root\_mean\_squared\_error: 0.7531 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.8130  
Epoch 92/500

```

614/614 [=====] - 0s 119us/sample - loss: 3.1345 -
y1_output_loss: 0.6341 - y2_output_loss: 2.4981 -
y1_output_root_mean_squared_error: 0.7968 - y2_output_root_mean_squared_error:
1.5810 - val_loss: 3.7796 - val_y1_output_loss: 0.6904 - val_y2_output_loss:
3.2131 - val_y1_output_root_mean_squared_error: 0.8301 -
val_y2_output_root_mean_squared_error: 1.7580
Epoch 93/500
614/614 [=====] - 0s 119us/sample - loss: 3.0501 -
y1_output_loss: 0.7084 - y2_output_loss: 2.3260 -
y1_output_root_mean_squared_error: 0.8449 - y2_output_root_mean_squared_error:
1.5285 - val_loss: 3.8098 - val_y1_output_loss: 0.5798 - val_y2_output_loss:
3.1939 - val_y1_output_root_mean_squared_error: 0.7576 -
val_y2_output_root_mean_squared_error: 1.7988
Epoch 94/500
614/614 [=====] - 0s 118us/sample - loss: 4.0126 -
y1_output_loss: 0.9841 - y2_output_loss: 2.9951 -
y1_output_root_mean_squared_error: 0.9948 - y2_output_root_mean_squared_error:
1.7387 - val_loss: 3.6091 - val_y1_output_loss: 0.8995 - val_y2_output_loss:
2.7505 - val_y1_output_root_mean_squared_error: 0.9411 -
val_y2_output_root_mean_squared_error: 1.6503
Epoch 95/500
614/614 [=====] - 0s 119us/sample - loss: 3.2167 -
y1_output_loss: 0.6513 - y2_output_loss: 2.5400 -
y1_output_root_mean_squared_error: 0.8095 - y2_output_root_mean_squared_error:
1.6004 - val_loss: 4.3061 - val_y1_output_loss: 1.1356 - val_y2_output_loss:
3.4169 - val_y1_output_root_mean_squared_error: 1.0434 -
val_y2_output_root_mean_squared_error: 1.7937
Epoch 96/500
614/614 [=====] - 0s 119us/sample - loss: 2.6270 -
y1_output_loss: 0.5379 - y2_output_loss: 2.0809 -
y1_output_root_mean_squared_error: 0.7298 - y2_output_root_mean_squared_error:
1.4472 - val_loss: 3.6295 - val_y1_output_loss: 1.0854 - val_y2_output_loss:
2.6333 - val_y1_output_root_mean_squared_error: 1.0034 -
val_y2_output_root_mean_squared_error: 1.6195
Epoch 97/500
614/614 [=====] - 0s 119us/sample - loss: 2.2982 -
y1_output_loss: 0.5822 - y2_output_loss: 1.7219 -
y1_output_root_mean_squared_error: 0.7658 - y2_output_root_mean_squared_error:
1.3084 - val_loss: 4.2935 - val_y1_output_loss: 0.7341 - val_y2_output_loss:
3.7339 - val_y1_output_root_mean_squared_error: 0.8702 -
val_y2_output_root_mean_squared_error: 1.8805
Epoch 98/500
614/614 [=====] - 0s 122us/sample - loss: 2.8922 -
y1_output_loss: 0.6356 - y2_output_loss: 2.2321 -
y1_output_root_mean_squared_error: 0.8002 - y2_output_root_mean_squared_error:
1.5006 - val_loss: 3.3567 - val_y1_output_loss: 0.6398 - val_y2_output_loss:
2.7132 - val_y1_output_root_mean_squared_error: 0.7842 -
val_y2_output_root_mean_squared_error: 1.6558

```

Epoch 99/500  
614/614 [=====] - 0s 127us/sample - loss: 2.9784 -  
y1\_output\_loss: 0.5818 - y2\_output\_loss: 2.3725 -  
y1\_output\_root\_mean\_squared\_error: 0.7656 - y2\_output\_root\_mean\_squared\_error:  
1.5467 - val\_loss: 2.8910 - val\_y1\_output\_loss: 0.5281 - val\_y2\_output\_loss:  
2.3714 - val\_y1\_output\_root\_mean\_squared\_error: 0.7167 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5419  
Epoch 100/500  
614/614 [=====] - 0s 118us/sample - loss: 4.7477 -  
y1\_output\_loss: 1.1915 - y2\_output\_loss: 3.5470 -  
y1\_output\_root\_mean\_squared\_error: 1.0941 - y2\_output\_root\_mean\_squared\_error:  
1.8843 - val\_loss: 7.9883 - val\_y1\_output\_loss: 1.9334 - val\_y2\_output\_loss:  
5.9702 - val\_y1\_output\_root\_mean\_squared\_error: 1.3598 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4778  
Epoch 101/500  
614/614 [=====] - 0s 124us/sample - loss: 3.0633 -  
y1\_output\_loss: 0.8378 - y2\_output\_loss: 2.1971 -  
y1\_output\_root\_mean\_squared\_error: 0.9194 - y2\_output\_root\_mean\_squared\_error:  
1.4893 - val\_loss: 3.2068 - val\_y1\_output\_loss: 0.6339 - val\_y2\_output\_loss:  
2.5656 - val\_y1\_output\_root\_mean\_squared\_error: 0.7864 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6088  
Epoch 102/500  
614/614 [=====] - 0s 125us/sample - loss: 2.2045 -  
y1\_output\_loss: 0.4723 - y2\_output\_loss: 1.7209 -  
y1\_output\_root\_mean\_squared\_error: 0.6875 - y2\_output\_root\_mean\_squared\_error:  
1.3160 - val\_loss: 3.3081 - val\_y1\_output\_loss: 0.6487 - val\_y2\_output\_loss:  
2.6411 - val\_y1\_output\_root\_mean\_squared\_error: 0.7930 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6369  
Epoch 103/500  
614/614 [=====] - 0s 125us/sample - loss: 2.4814 -  
y1\_output\_loss: 0.5432 - y2\_output\_loss: 1.9174 -  
y1\_output\_root\_mean\_squared\_error: 0.7397 - y2\_output\_root\_mean\_squared\_error:  
1.3907 - val\_loss: 3.7711 - val\_y1\_output\_loss: 0.6153 - val\_y2\_output\_loss:  
3.1190 - val\_y1\_output\_root\_mean\_squared\_error: 0.7646 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7851  
Epoch 104/500  
614/614 [=====] - 0s 121us/sample - loss: 3.2004 -  
y1\_output\_loss: 0.8483 - y2\_output\_loss: 2.3598 -  
y1\_output\_root\_mean\_squared\_error: 0.9245 - y2\_output\_root\_mean\_squared\_error:  
1.5316 - val\_loss: 5.6534 - val\_y1\_output\_loss: 1.2444 - val\_y2\_output\_loss:  
4.4641 - val\_y1\_output\_root\_mean\_squared\_error: 1.0633 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1267  
Epoch 105/500  
614/614 [=====] - 0s 126us/sample - loss: 5.4192 -  
y1\_output\_loss: 1.4783 - y2\_output\_loss: 3.9101 -  
y1\_output\_root\_mean\_squared\_error: 1.2212 - y2\_output\_root\_mean\_squared\_error:  
1.9819 - val\_loss: 5.5598 - val\_y1\_output\_loss: 1.3655 - val\_y2\_output\_loss:  
4.2444 - val\_y1\_output\_root\_mean\_squared\_error: 1.1434 -

```

val_y2_output_root_mean_squared_error: 2.0621
Epoch 106/500
614/614 [=====] - 0s 124us/sample - loss: 3.6525 -
y1_output_loss: 0.9157 - y2_output_loss: 2.7197 -
y1_output_root_mean_squared_error: 0.9612 - y2_output_root_mean_squared_error:
1.6518 - val_loss: 3.4246 - val_y1_output_loss: 0.5180 - val_y2_output_loss:
2.8396 - val_y1_output_root_mean_squared_error: 0.7067 -
val_y2_output_root_mean_squared_error: 1.7103
Epoch 107/500
614/614 [=====] - 0s 126us/sample - loss: 2.4990 -
y1_output_loss: 0.5539 - y2_output_loss: 1.9309 -
y1_output_root_mean_squared_error: 0.7462 - y2_output_root_mean_squared_error:
1.3936 - val_loss: 2.7266 - val_y1_output_loss: 0.4905 - val_y2_output_loss:
2.2490 - val_y1_output_root_mean_squared_error: 0.6952 -
val_y2_output_root_mean_squared_error: 1.4977
Epoch 108/500
614/614 [=====] - 0s 121us/sample - loss: 4.0525 -
y1_output_loss: 1.0633 - y2_output_loss: 2.9539 -
y1_output_root_mean_squared_error: 1.0351 - y2_output_root_mean_squared_error:
1.7266 - val_loss: 3.0803 - val_y1_output_loss: 0.4561 - val_y2_output_loss:
2.7291 - val_y1_output_root_mean_squared_error: 0.6835 -
val_y2_output_root_mean_squared_error: 1.6165
Epoch 109/500
614/614 [=====] - 0s 123us/sample - loss: 4.9290 -
y1_output_loss: 1.4113 - y2_output_loss: 3.4919 -
y1_output_root_mean_squared_error: 1.1880 - y2_output_root_mean_squared_error:
1.8755 - val_loss: 5.0011 - val_y1_output_loss: 1.6492 - val_y2_output_loss:
3.3232 - val_y1_output_root_mean_squared_error: 1.2788 -
val_y2_output_root_mean_squared_error: 1.8346
Epoch 110/500
614/614 [=====] - 0s 129us/sample - loss: 6.9719 -
y1_output_loss: 1.6037 - y2_output_loss: 5.3406 -
y1_output_root_mean_squared_error: 1.2668 - y2_output_root_mean_squared_error:
2.3167 - val_loss: 8.1392 - val_y1_output_loss: 2.8135 - val_y2_output_loss:
5.4185 - val_y1_output_root_mean_squared_error: 1.6406 -
val_y2_output_root_mean_squared_error: 2.3340
Epoch 111/500
614/614 [=====] - 0s 132us/sample - loss: 8.2446 -
y1_output_loss: 2.5848 - y2_output_loss: 5.6027 -
y1_output_root_mean_squared_error: 1.6094 - y2_output_root_mean_squared_error:
2.3779 - val_loss: 3.4016 - val_y1_output_loss: 0.4853 - val_y2_output_loss:
2.8576 - val_y1_output_root_mean_squared_error: 0.6861 -
val_y2_output_root_mean_squared_error: 1.7120
Epoch 112/500
614/614 [=====] - 0s 131us/sample - loss: 4.6351 -
y1_output_loss: 1.0098 - y2_output_loss: 3.6131 -
y1_output_root_mean_squared_error: 1.0061 - y2_output_root_mean_squared_error:
1.9034 - val_loss: 3.5303 - val_y1_output_loss: 0.5426 - val_y2_output_loss:

```

3.1303 - val\_y1\_output\_root\_mean\_squared\_error: 0.7430 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7258  
 Epoch 113/500  
 614/614 [=====] - 0s 120us/sample - loss: 2.4172 -  
 y1\_output\_loss: 0.5493 - y2\_output\_loss: 1.8498 -  
 y1\_output\_root\_mean\_squared\_error: 0.7441 - y2\_output\_root\_mean\_squared\_error:  
 1.3651 - val\_loss: 3.2278 - val\_y1\_output\_loss: 0.5912 - val\_y2\_output\_loss:  
 2.6089 - val\_y1\_output\_root\_mean\_squared\_error: 0.7574 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6291  
 Epoch 114/500  
 614/614 [=====] - 0s 126us/sample - loss: 2.2102 -  
 y1\_output\_loss: 0.4602 - y2\_output\_loss: 1.7408 -  
 y1\_output\_root\_mean\_squared\_error: 0.6797 - y2\_output\_root\_mean\_squared\_error:  
 1.3222 - val\_loss: 2.9043 - val\_y1\_output\_loss: 0.6927 - val\_y2\_output\_loss:  
 2.3036 - val\_y1\_output\_root\_mean\_squared\_error: 0.8196 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4942  
 Epoch 115/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.0984 -  
 y1\_output\_loss: 0.4859 - y2\_output\_loss: 1.6014 -  
 y1\_output\_root\_mean\_squared\_error: 0.6992 - y2\_output\_root\_mean\_squared\_error:  
 1.2687 - val\_loss: 3.2033 - val\_y1\_output\_loss: 0.4886 - val\_y2\_output\_loss:  
 2.6462 - val\_y1\_output\_root\_mean\_squared\_error: 0.6948 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6494  
 Epoch 116/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.0552 -  
 y1\_output\_loss: 0.3875 - y2\_output\_loss: 1.6488 -  
 y1\_output\_root\_mean\_squared\_error: 0.6252 - y2\_output\_root\_mean\_squared\_error:  
 1.2901 - val\_loss: 3.4669 - val\_y1\_output\_loss: 0.5375 - val\_y2\_output\_loss:  
 2.9083 - val\_y1\_output\_root\_mean\_squared\_error: 0.7111 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7208  
 Epoch 117/500  
 614/614 [=====] - 0s 124us/sample - loss: 4.8042 -  
 y1\_output\_loss: 0.9700 - y2\_output\_loss: 3.7930 -  
 y1\_output\_root\_mean\_squared\_error: 0.9874 - y2\_output\_root\_mean\_squared\_error:  
 1.9569 - val\_loss: 2.9998 - val\_y1\_output\_loss: 0.5727 - val\_y2\_output\_loss:  
 2.4362 - val\_y1\_output\_root\_mean\_squared\_error: 0.7565 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5581  
 Epoch 118/500  
 614/614 [=====] - 0s 124us/sample - loss: 2.4637 -  
 y1\_output\_loss: 0.5170 - y2\_output\_loss: 2.0023 -  
 y1\_output\_root\_mean\_squared\_error: 0.7199 - y2\_output\_root\_mean\_squared\_error:  
 1.3948 - val\_loss: 18.8724 - val\_y1\_output\_loss: 3.4175 - val\_y2\_output\_loss:  
 15.2371 - val\_y1\_output\_root\_mean\_squared\_error: 1.8265 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.9416  
 Epoch 119/500  
 614/614 [=====] - 0s 122us/sample - loss: 2.7493 -  
 y1\_output\_loss: 0.5075 - y2\_output\_loss: 2.2196 -  
 y1\_output\_root\_mean\_squared\_error: 0.7145 - y2\_output\_root\_mean\_squared\_error:

1.4963 - val\_loss: 2.7031 - val\_y1\_output\_loss: 0.4606 - val\_y2\_output\_loss:  
 2.2280 - val\_y1\_output\_root\_mean\_squared\_error: 0.6812 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4963  
 Epoch 120/500  
 614/614 [=====] - 0s 120us/sample - loss: 3.3061 -  
 y1\_output\_loss: 0.7206 - y2\_output\_loss: 2.6038 -  
 y1\_output\_root\_mean\_squared\_error: 0.8521 - y2\_output\_root\_mean\_squared\_error:  
 1.6062 - val\_loss: 8.5525 - val\_y1\_output\_loss: 1.0660 - val\_y2\_output\_loss:  
 7.6869 - val\_y1\_output\_root\_mean\_squared\_error: 1.0504 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7293  
 Epoch 121/500  
 614/614 [=====] - 0s 120us/sample - loss: 3.3833 -  
 y1\_output\_loss: 0.9635 - y2\_output\_loss: 2.4313 -  
 y1\_output\_root\_mean\_squared\_error: 0.9822 - y2\_output\_root\_mean\_squared\_error:  
 1.5552 - val\_loss: 6.5464 - val\_y1\_output\_loss: 0.4741 - val\_y2\_output\_loss:  
 6.3103 - val\_y1\_output\_root\_mean\_squared\_error: 0.6958 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.4622  
 Epoch 122/500  
 614/614 [=====] - 0s 121us/sample - loss: 2.9681 -  
 y1\_output\_loss: 0.5869 - y2\_output\_loss: 2.3613 -  
 y1\_output\_root\_mean\_squared\_error: 0.7692 - y2\_output\_root\_mean\_squared\_error:  
 1.5416 - val\_loss: 3.0522 - val\_y1\_output\_loss: 0.5756 - val\_y2\_output\_loss:  
 2.4811 - val\_y1\_output\_root\_mean\_squared\_error: 0.7509 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5775  
 Epoch 123/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.4029 -  
 y1\_output\_loss: 0.6263 - y2\_output\_loss: 1.8000 -  
 y1\_output\_root\_mean\_squared\_error: 0.7817 - y2\_output\_root\_mean\_squared\_error:  
 1.3386 - val\_loss: 6.4961 - val\_y1\_output\_loss: 1.2335 - val\_y2\_output\_loss:  
 5.1768 - val\_y1\_output\_root\_mean\_squared\_error: 1.0965 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3008  
 Epoch 124/500  
 614/614 [=====] - 0s 121us/sample - loss: 3.0612 -  
 y1\_output\_loss: 0.7377 - y2\_output\_loss: 2.2959 -  
 y1\_output\_root\_mean\_squared\_error: 0.8621 - y2\_output\_root\_mean\_squared\_error:  
 1.5225 - val\_loss: 2.9578 - val\_y1\_output\_loss: 0.5315 - val\_y2\_output\_loss:  
 2.4063 - val\_y1\_output\_root\_mean\_squared\_error: 0.7293 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5575  
 Epoch 125/500  
 614/614 [=====] - 0s 122us/sample - loss: 2.4023 -  
 y1\_output\_loss: 0.5580 - y2\_output\_loss: 1.8287 -  
 y1\_output\_root\_mean\_squared\_error: 0.7463 - y2\_output\_root\_mean\_squared\_error:  
 1.3584 - val\_loss: 3.0329 - val\_y1\_output\_loss: 0.5645 - val\_y2\_output\_loss:  
 2.5493 - val\_y1\_output\_root\_mean\_squared\_error: 0.7632 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5654  
 Epoch 126/500  
 614/614 [=====] - 0s 122us/sample - loss: 2.8884 -  
 y1\_output\_loss: 0.6380 - y2\_output\_loss: 2.2331 -

y1\_output\_root\_mean\_squared\_error: 0.7963 - y2\_output\_root\_mean\_squared\_error:  
1.5014 - val\_loss: 2.7712 - val\_y1\_output\_loss: 0.5636 - val\_y2\_output\_loss:  
2.2600 - val\_y1\_output\_root\_mean\_squared\_error: 0.7403 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.4910  
Epoch 127/500  
614/614 [=====] - 0s 128us/sample - loss: 1.6572 -  
y1\_output\_loss: 0.3752 - y2\_output\_loss: 1.2761 -  
y1\_output\_root\_mean\_squared\_error: 0.6105 - y2\_output\_root\_mean\_squared\_error:  
1.1333 - val\_loss: 3.5931 - val\_y1\_output\_loss: 0.7706 - val\_y2\_output\_loss:  
2.9516 - val\_y1\_output\_root\_mean\_squared\_error: 0.8792 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6793  
Epoch 128/500  
614/614 [=====] - 0s 123us/sample - loss: 1.9781 -  
y1\_output\_loss: 0.4072 - y2\_output\_loss: 1.5675 -  
y1\_output\_root\_mean\_squared\_error: 0.6388 - y2\_output\_root\_mean\_squared\_error:  
1.2530 - val\_loss: 2.8568 - val\_y1\_output\_loss: 0.5788 - val\_y2\_output\_loss:  
2.2617 - val\_y1\_output\_root\_mean\_squared\_error: 0.7600 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5097  
Epoch 129/500  
614/614 [=====] - 0s 131us/sample - loss: 1.9940 -  
y1\_output\_loss: 0.4051 - y2\_output\_loss: 1.6000 -  
y1\_output\_root\_mean\_squared\_error: 0.6380 - y2\_output\_root\_mean\_squared\_error:  
1.2597 - val\_loss: 5.7287 - val\_y1\_output\_loss: 0.6279 - val\_y2\_output\_loss:  
5.0254 - val\_y1\_output\_root\_mean\_squared\_error: 0.7791 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2631  
Epoch 130/500  
614/614 [=====] - 0s 129us/sample - loss: 1.8069 -  
y1\_output\_loss: 0.3585 - y2\_output\_loss: 1.4340 -  
y1\_output\_root\_mean\_squared\_error: 0.6016 - y2\_output\_root\_mean\_squared\_error:  
1.2021 - val\_loss: 2.9172 - val\_y1\_output\_loss: 0.4762 - val\_y2\_output\_loss:  
2.4006 - val\_y1\_output\_root\_mean\_squared\_error: 0.6850 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5646  
Epoch 131/500  
614/614 [=====] - 0s 129us/sample - loss: 2.1634 -  
y1\_output\_loss: 0.4519 - y2\_output\_loss: 1.6963 -  
y1\_output\_root\_mean\_squared\_error: 0.6726 - y2\_output\_root\_mean\_squared\_error:  
1.3081 - val\_loss: 2.3194 - val\_y1\_output\_loss: 0.4877 - val\_y2\_output\_loss:  
1.8585 - val\_y1\_output\_root\_mean\_squared\_error: 0.6837 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3609  
Epoch 132/500  
614/614 [=====] - 0s 126us/sample - loss: 1.8702 -  
y1\_output\_loss: 0.4205 - y2\_output\_loss: 1.4476 -  
y1\_output\_root\_mean\_squared\_error: 0.6474 - y2\_output\_root\_mean\_squared\_error:  
1.2046 - val\_loss: 3.6651 - val\_y1\_output\_loss: 0.5571 - val\_y2\_output\_loss:  
3.0201 - val\_y1\_output\_root\_mean\_squared\_error: 0.7452 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7634  
Epoch 133/500  
614/614 [=====] - 0s 129us/sample - loss: 1.7992 -

```

y1_output_loss: 0.3797 - y2_output_loss: 1.4242 -
y1_output_root_mean_squared_error: 0.6133 - y2_output_root_mean_squared_error:
1.1929 - val_loss: 2.6002 - val_y1_output_loss: 0.6140 - val_y2_output_loss:
2.0101 - val_y1_output_root_mean_squared_error: 0.7766 -
val_y2_output_root_mean_squared_error: 1.4132
Epoch 134/500
614/614 [=====] - 0s 122us/sample - loss: 2.2718 -
y1_output_loss: 0.4372 - y2_output_loss: 1.8364 -
y1_output_root_mean_squared_error: 0.6627 - y2_output_root_mean_squared_error:
1.3537 - val_loss: 6.0373 - val_y1_output_loss: 1.0558 - val_y2_output_loss:
5.1929 - val_y1_output_root_mean_squared_error: 1.0313 -
val_y2_output_root_mean_squared_error: 2.2302
Epoch 135/500
614/614 [=====] - 0s 123us/sample - loss: 2.0128 -
y1_output_loss: 0.4246 - y2_output_loss: 1.5831 -
y1_output_root_mean_squared_error: 0.6519 - y2_output_root_mean_squared_error:
1.2601 - val_loss: 2.3626 - val_y1_output_loss: 0.4756 - val_y2_output_loss:
1.8644 - val_y1_output_root_mean_squared_error: 0.6991 -
val_y2_output_root_mean_squared_error: 1.3689
Epoch 136/500
614/614 [=====] - 0s 131us/sample - loss: 1.6328 -
y1_output_loss: 0.3430 - y2_output_loss: 1.2871 -
y1_output_root_mean_squared_error: 0.5830 - y2_output_root_mean_squared_error:
1.1371 - val_loss: 3.0707 - val_y1_output_loss: 0.4415 - val_y2_output_loss:
2.7037 - val_y1_output_root_mean_squared_error: 0.6704 -
val_y2_output_root_mean_squared_error: 1.6190
Epoch 137/500
614/614 [=====] - 0s 122us/sample - loss: 8.4083 -
y1_output_loss: 2.5723 - y2_output_loss: 5.7569 -
y1_output_root_mean_squared_error: 1.6114 - y2_output_root_mean_squared_error:
2.4108 - val_loss: 2.6676 - val_y1_output_loss: 0.4838 - val_y2_output_loss:
2.2062 - val_y1_output_root_mean_squared_error: 0.6974 -
val_y2_output_root_mean_squared_error: 1.4769
Epoch 138/500
614/614 [=====] - 0s 129us/sample - loss: 2.2532 -
y1_output_loss: 0.4492 - y2_output_loss: 1.8825 -
y1_output_root_mean_squared_error: 0.6550 - y2_output_root_mean_squared_error:
1.3506 - val_loss: 27.0222 - val_y1_output_loss: 6.9193 - val_y2_output_loss:
21.0720 - val_y1_output_root_mean_squared_error: 2.6083 -
val_y2_output_root_mean_squared_error: 4.4965
Epoch 139/500
614/614 [=====] - 0s 128us/sample - loss: 7.6363 -
y1_output_loss: 2.2573 - y2_output_loss: 5.3075 -
y1_output_root_mean_squared_error: 1.5094 - y2_output_root_mean_squared_error:
2.3148 - val_loss: 2.4187 - val_y1_output_loss: 0.4703 - val_y2_output_loss:
1.9913 - val_y1_output_root_mean_squared_error: 0.6799 -
val_y2_output_root_mean_squared_error: 1.3987
Epoch 140/500

```



```

614/614 [=====] - 0s 132us/sample - loss: 2.4104 -
y1_output_loss: 0.4799 - y2_output_loss: 1.9130 -
y1_output_root_mean_squared_error: 0.6947 - y2_output_root_mean_squared_error:
1.3885 - val_loss: 2.9696 - val_y1_output_loss: 0.3827 - val_y2_output_loss:
2.6847 - val_y1_output_root_mean_squared_error: 0.6239 -
val_y2_output_root_mean_squared_error: 1.6064
Epoch 141/500
614/614 [=====] - 0s 127us/sample - loss: 1.8738 -
y1_output_loss: 0.3471 - y2_output_loss: 1.5232 -
y1_output_root_mean_squared_error: 0.5895 - y2_output_root_mean_squared_error:
1.2354 - val_loss: 2.2336 - val_y1_output_loss: 0.3689 - val_y2_output_loss:
1.8930 - val_y1_output_root_mean_squared_error: 0.6038 -
val_y2_output_root_mean_squared_error: 1.3671
Epoch 142/500
614/614 [=====] - 0s 128us/sample - loss: 1.7010 -
y1_output_loss: 0.3461 - y2_output_loss: 1.3722 -
y1_output_root_mean_squared_error: 0.5856 - y2_output_root_mean_squared_error:
1.1654 - val_loss: 4.0721 - val_y1_output_loss: 0.7256 - val_y2_output_loss:
3.4984 - val_y1_output_root_mean_squared_error: 0.8590 -
val_y2_output_root_mean_squared_error: 1.8260
Epoch 143/500
614/614 [=====] - 0s 123us/sample - loss: 3.0407 -
y1_output_loss: 0.6631 - y2_output_loss: 2.3597 -
y1_output_root_mean_squared_error: 0.8159 - y2_output_root_mean_squared_error:
1.5411 - val_loss: 2.4226 - val_y1_output_loss: 0.3716 - val_y2_output_loss:
2.0768 - val_y1_output_root_mean_squared_error: 0.6154 -
val_y2_output_root_mean_squared_error: 1.4296
Epoch 144/500
614/614 [=====] - 0s 124us/sample - loss: 2.2545 -
y1_output_loss: 0.4312 - y2_output_loss: 1.8216 -
y1_output_root_mean_squared_error: 0.6544 - y2_output_root_mean_squared_error:
1.3514 - val_loss: 9.3433 - val_y1_output_loss: 2.5964 - val_y2_output_loss:
7.0342 - val_y1_output_root_mean_squared_error: 1.6061 -
val_y2_output_root_mean_squared_error: 2.6007
Epoch 145/500
614/614 [=====] - 0s 126us/sample - loss: 1.6575 -
y1_output_loss: 0.3629 - y2_output_loss: 1.2870 -
y1_output_root_mean_squared_error: 0.6039 - y2_output_root_mean_squared_error:
1.1370 - val_loss: 3.5562 - val_y1_output_loss: 0.4176 - val_y2_output_loss:
3.2433 - val_y1_output_root_mean_squared_error: 0.6546 -
val_y2_output_root_mean_squared_error: 1.7685
Epoch 146/500
614/614 [=====] - 0s 121us/sample - loss: 2.3003 -
y1_output_loss: 0.4483 - y2_output_loss: 1.9022 -
y1_output_root_mean_squared_error: 0.6621 - y2_output_root_mean_squared_error:
1.3646 - val_loss: 11.7681 - val_y1_output_loss: 2.6887 - val_y2_output_loss:
9.4134 - val_y1_output_root_mean_squared_error: 1.6367 -
val_y2_output_root_mean_squared_error: 3.0149

```

Epoch 147/500  
614/614 [=====] - 0s 122us/sample - loss: 2.4664 -  
y1\_output\_loss: 0.5259 - y2\_output\_loss: 1.9198 -  
y1\_output\_root\_mean\_squared\_error: 0.7282 - y2\_output\_root\_mean\_squared\_error:  
1.3915 - val\_loss: 2.5820 - val\_y1\_output\_loss: 0.5729 - val\_y2\_output\_loss:  
2.0903 - val\_y1\_output\_root\_mean\_squared\_error: 0.7492 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.4215  
Epoch 148/500  
614/614 [=====] - 0s 123us/sample - loss: 2.1088 -  
y1\_output\_loss: 0.3921 - y2\_output\_loss: 1.7086 -  
y1\_output\_root\_mean\_squared\_error: 0.6276 - y2\_output\_root\_mean\_squared\_error:  
1.3095 - val\_loss: 2.6714 - val\_y1\_output\_loss: 0.3873 - val\_y2\_output\_loss:  
2.2330 - val\_y1\_output\_root\_mean\_squared\_error: 0.6263 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5097  
Epoch 149/500  
614/614 [=====] - 0s 123us/sample - loss: 1.6273 -  
y1\_output\_loss: 0.3160 - y2\_output\_loss: 1.2996 -  
y1\_output\_root\_mean\_squared\_error: 0.5618 - y2\_output\_root\_mean\_squared\_error:  
1.1453 - val\_loss: 2.0242 - val\_y1\_output\_loss: 0.3512 - val\_y2\_output\_loss:  
1.6812 - val\_y1\_output\_root\_mean\_squared\_error: 0.5995 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2903  
Epoch 150/500  
614/614 [=====] - 0s 122us/sample - loss: 1.5777 -  
y1\_output\_loss: 0.3124 - y2\_output\_loss: 1.3341 -  
y1\_output\_root\_mean\_squared\_error: 0.5528 - y2\_output\_root\_mean\_squared\_error:  
1.1279 - val\_loss: 7.7836 - val\_y1\_output\_loss: 1.3848 - val\_y2\_output\_loss:  
6.5739 - val\_y1\_output\_root\_mean\_squared\_error: 1.1830 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.5267  
Epoch 151/500  
614/614 [=====] - 0s 119us/sample - loss: 2.2848 -  
y1\_output\_loss: 0.4328 - y2\_output\_loss: 1.8310 -  
y1\_output\_root\_mean\_squared\_error: 0.6607 - y2\_output\_root\_mean\_squared\_error:  
1.3595 - val\_loss: 3.7593 - val\_y1\_output\_loss: 1.1073 - val\_y2\_output\_loss:  
2.7063 - val\_y1\_output\_root\_mean\_squared\_error: 1.0136 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6529  
Epoch 152/500  
614/614 [=====] - 0s 120us/sample - loss: 1.8516 -  
y1\_output\_loss: 0.3442 - y2\_output\_loss: 1.5220 -  
y1\_output\_root\_mean\_squared\_error: 0.5786 - y2\_output\_root\_mean\_squared\_error:  
1.2316 - val\_loss: 6.5427 - val\_y1\_output\_loss: 1.7528 - val\_y2\_output\_loss:  
5.0183 - val\_y1\_output\_root\_mean\_squared\_error: 1.3180 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1922  
Epoch 153/500  
614/614 [=====] - 0s 122us/sample - loss: 2.8517 -  
y1\_output\_loss: 0.6961 - y2\_output\_loss: 2.1311 -  
y1\_output\_root\_mean\_squared\_error: 0.8378 - y2\_output\_root\_mean\_squared\_error:  
1.4662 - val\_loss: 2.3480 - val\_y1\_output\_loss: 0.3889 - val\_y2\_output\_loss:  
1.9360 - val\_y1\_output\_root\_mean\_squared\_error: 0.6194 -

```

val_y2_output_root_mean_squared_error: 1.4016
Epoch 154/500
614/614 [=====] - 0s 121us/sample - loss: 1.5215 -
y1_output_loss: 0.2966 - y2_output_loss: 1.2305 -
y1_output_root_mean_squared_error: 0.5468 - y2_output_root_mean_squared_error:
1.1057 - val_loss: 4.5797 - val_y1_output_loss: 0.5584 - val_y2_output_loss:
4.1887 - val_y1_output_root_mean_squared_error: 0.7363 -
val_y2_output_root_mean_squared_error: 2.0093
Epoch 155/500
614/614 [=====] - 0s 122us/sample - loss: 2.0939 -
y1_output_loss: 0.3516 - y2_output_loss: 1.7329 -
y1_output_root_mean_squared_error: 0.5948 - y2_output_root_mean_squared_error:
1.3191 - val_loss: 2.4762 - val_y1_output_loss: 0.4145 - val_y2_output_loss:
2.1259 - val_y1_output_root_mean_squared_error: 0.6499 -
val_y2_output_root_mean_squared_error: 1.4331
Epoch 156/500
614/614 [=====] - 0s 121us/sample - loss: 2.0057 -
y1_output_loss: 0.4012 - y2_output_loss: 1.5911 -
y1_output_root_mean_squared_error: 0.6349 - y2_output_root_mean_squared_error:
1.2659 - val_loss: 2.0533 - val_y1_output_loss: 0.3537 - val_y2_output_loss:
1.7057 - val_y1_output_root_mean_squared_error: 0.6035 -
val_y2_output_root_mean_squared_error: 1.2997
Epoch 157/500
614/614 [=====] - 0s 125us/sample - loss: 2.1598 -
y1_output_loss: 0.4204 - y2_output_loss: 1.7276 -
y1_output_root_mean_squared_error: 0.6451 - y2_output_root_mean_squared_error:
1.3205 - val_loss: 2.2309 - val_y1_output_loss: 0.3719 - val_y2_output_loss:
1.9009 - val_y1_output_root_mean_squared_error: 0.6180 -
val_y2_output_root_mean_squared_error: 1.3598
Epoch 158/500
614/614 [=====] - 0s 136us/sample - loss: 1.7307 -
y1_output_loss: 0.4055 - y2_output_loss: 1.3110 -
y1_output_root_mean_squared_error: 0.6396 - y2_output_root_mean_squared_error:
1.1496 - val_loss: 3.8544 - val_y1_output_loss: 0.7461 - val_y2_output_loss:
3.1849 - val_y1_output_root_mean_squared_error: 0.8794 -
val_y2_output_root_mean_squared_error: 1.7553
Epoch 159/500
614/614 [=====] - 0s 136us/sample - loss: 2.1010 -
y1_output_loss: 0.4019 - y2_output_loss: 1.7116 -
y1_output_root_mean_squared_error: 0.6310 - y2_output_root_mean_squared_error:
1.3049 - val_loss: 3.5539 - val_y1_output_loss: 0.4272 - val_y2_output_loss:
3.0325 - val_y1_output_root_mean_squared_error: 0.6456 -
val_y2_output_root_mean_squared_error: 1.7712
Epoch 160/500
614/614 [=====] - 0s 132us/sample - loss: 2.2366 -
y1_output_loss: 0.4383 - y2_output_loss: 1.7908 -
y1_output_root_mean_squared_error: 0.6632 - y2_output_root_mean_squared_error:
1.3404 - val_loss: 4.7347 - val_y1_output_loss: 1.4503 - val_y2_output_loss:

```

3.3139 - val\_y1\_output\_root\_mean\_squared\_error: 1.1827 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8265  
 Epoch 161/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.3540 -  
 y1\_output\_loss: 0.3093 - y2\_output\_loss: 1.0385 -  
 y1\_output\_root\_mean\_squared\_error: 0.5570 - y2\_output\_root\_mean\_squared\_error:  
 1.0217 - val\_loss: 2.5800 - val\_y1\_output\_loss: 0.5464 - val\_y2\_output\_loss:  
 2.0542 - val\_y1\_output\_root\_mean\_squared\_error: 0.7471 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4219  
 Epoch 162/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.5594 -  
 y1\_output\_loss: 0.2993 - y2\_output\_loss: 1.2600 -  
 y1\_output\_root\_mean\_squared\_error: 0.5444 - y2\_output\_root\_mean\_squared\_error:  
 1.1239 - val\_loss: 2.5228 - val\_y1\_output\_loss: 0.7387 - val\_y2\_output\_loss:  
 1.7800 - val\_y1\_output\_root\_mean\_squared\_error: 0.8415 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3471  
 Epoch 163/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.5633 -  
 y1\_output\_loss: 0.2868 - y2\_output\_loss: 1.2858 -  
 y1\_output\_root\_mean\_squared\_error: 0.5354 - y2\_output\_root\_mean\_squared\_error:  
 1.1299 - val\_loss: 5.3443 - val\_y1\_output\_loss: 1.0720 - val\_y2\_output\_loss:  
 4.1741 - val\_y1\_output\_root\_mean\_squared\_error: 1.0224 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0734  
 Epoch 164/500  
 614/614 [=====] - 0s 120us/sample - loss: 1.9835 -  
 y1\_output\_loss: 0.4189 - y2\_output\_loss: 1.5568 -  
 y1\_output\_root\_mean\_squared\_error: 0.6452 - y2\_output\_root\_mean\_squared\_error:  
 1.2519 - val\_loss: 2.0883 - val\_y1\_output\_loss: 0.3486 - val\_y2\_output\_loss:  
 1.7554 - val\_y1\_output\_root\_mean\_squared\_error: 0.5931 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3178  
 Epoch 165/500  
 614/614 [=====] - 0s 120us/sample - loss: 1.4479 -  
 y1\_output\_loss: 0.2865 - y2\_output\_loss: 1.1569 -  
 y1\_output\_root\_mean\_squared\_error: 0.5316 - y2\_output\_root\_mean\_squared\_error:  
 1.0795 - val\_loss: 2.4859 - val\_y1\_output\_loss: 0.6335 - val\_y2\_output\_loss:  
 1.8827 - val\_y1\_output\_root\_mean\_squared\_error: 0.7997 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3588  
 Epoch 166/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.8627 -  
 y1\_output\_loss: 0.3565 - y2\_output\_loss: 1.4932 -  
 y1\_output\_root\_mean\_squared\_error: 0.5966 - y2\_output\_root\_mean\_squared\_error:  
 1.2275 - val\_loss: 2.0557 - val\_y1\_output\_loss: 0.3993 - val\_y2\_output\_loss:  
 1.6291 - val\_y1\_output\_root\_mean\_squared\_error: 0.6290 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2884  
 Epoch 167/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.3764 -  
 y1\_output\_loss: 0.2526 - y2\_output\_loss: 1.1436 -  
 y1\_output\_root\_mean\_squared\_error: 0.5026 - y2\_output\_root\_mean\_squared\_error:

1.0601 - val\_loss: 8.9641 - val\_y1\_output\_loss: 1.2831 - val\_y2\_output\_loss:  
 7.6314 - val\_y1\_output\_root\_mean\_squared\_error: 1.1163 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7781  
 Epoch 168/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.3078 -  
 y1\_output\_loss: 0.2534 - y2\_output\_loss: 1.0509 -  
 y1\_output\_root\_mean\_squared\_error: 0.5016 - y2\_output\_root\_mean\_squared\_error:  
 1.0277 - val\_loss: 2.5748 - val\_y1\_output\_loss: 0.5096 - val\_y2\_output\_loss:  
 2.0378 - val\_y1\_output\_root\_mean\_squared\_error: 0.7064 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4408  
 Epoch 169/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.4904 -  
 y1\_output\_loss: 0.2565 - y2\_output\_loss: 1.2214 -  
 y1\_output\_root\_mean\_squared\_error: 0.5081 - y2\_output\_root\_mean\_squared\_error:  
 1.1101 - val\_loss: 2.8899 - val\_y1\_output\_loss: 0.6458 - val\_y2\_output\_loss:  
 2.3363 - val\_y1\_output\_root\_mean\_squared\_error: 0.8089 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4952  
 Epoch 170/500  
 614/614 [=====] - 0s 122us/sample - loss: 1.9631 -  
 y1\_output\_loss: 0.4217 - y2\_output\_loss: 1.5300 -  
 y1\_output\_root\_mean\_squared\_error: 0.6501 - y2\_output\_root\_mean\_squared\_error:  
 1.2412 - val\_loss: 1.9643 - val\_y1\_output\_loss: 0.3254 - val\_y2\_output\_loss:  
 1.6403 - val\_y1\_output\_root\_mean\_squared\_error: 0.5676 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2815  
 Epoch 171/500  
 614/614 [=====] - 0s 123us/sample - loss: 1.2929 -  
 y1\_output\_loss: 0.2341 - y2\_output\_loss: 1.0494 -  
 y1\_output\_root\_mean\_squared\_error: 0.4837 - y2\_output\_root\_mean\_squared\_error:  
 1.0291 - val\_loss: 2.1103 - val\_y1\_output\_loss: 0.3496 - val\_y2\_output\_loss:  
 1.7890 - val\_y1\_output\_root\_mean\_squared\_error: 0.5952 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3251  
 Epoch 172/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.1747 -  
 y1\_output\_loss: 0.2395 - y2\_output\_loss: 0.9479 -  
 y1\_output\_root\_mean\_squared\_error: 0.4864 - y2\_output\_root\_mean\_squared\_error:  
 0.9686 - val\_loss: 2.0151 - val\_y1\_output\_loss: 0.3036 - val\_y2\_output\_loss:  
 1.7351 - val\_y1\_output\_root\_mean\_squared\_error: 0.5584 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3051  
 Epoch 173/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.4747 -  
 y1\_output\_loss: 0.2552 - y2\_output\_loss: 1.2483 -  
 y1\_output\_root\_mean\_squared\_error: 0.5011 - y2\_output\_root\_mean\_squared\_error:  
 1.1062 - val\_loss: 5.2265 - val\_y1\_output\_loss: 1.5880 - val\_y2\_output\_loss:  
 3.6423 - val\_y1\_output\_root\_mean\_squared\_error: 1.2375 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9223  
 Epoch 174/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.6565 -  
 y1\_output\_loss: 0.3492 - y2\_output\_loss: 1.2990 -

y1\_output\_root\_mean\_squared\_error: 0.5919 - y2\_output\_root\_mean\_squared\_error:  
 1.1429 - val\_loss: 1.9918 - val\_y1\_output\_loss: 0.3478 - val\_y2\_output\_loss:  
 1.6525 - val\_y1\_output\_root\_mean\_squared\_error: 0.5870 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2834  
 Epoch 175/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.4457 -  
 y1\_output\_loss: 0.2880 - y2\_output\_loss: 1.1610 -  
 y1\_output\_root\_mean\_squared\_error: 0.5353 - y2\_output\_root\_mean\_squared\_error:  
 1.0767 - val\_loss: 6.4089 - val\_y1\_output\_loss: 1.6612 - val\_y2\_output\_loss:  
 4.7055 - val\_y1\_output\_root\_mean\_squared\_error: 1.2775 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1856  
 Epoch 176/500  
 614/614 [=====] - 0s 123us/sample - loss: 1.1874 -  
 y1\_output\_loss: 0.2704 - y2\_output\_loss: 0.9066 -  
 y1\_output\_root\_mean\_squared\_error: 0.5220 - y2\_output\_root\_mean\_squared\_error:  
 0.9565 - val\_loss: 1.9563 - val\_y1\_output\_loss: 0.3591 - val\_y2\_output\_loss:  
 1.5955 - val\_y1\_output\_root\_mean\_squared\_error: 0.5984 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2642  
 Epoch 177/500  
 614/614 [=====] - 0s 134us/sample - loss: 4.7005 -  
 y1\_output\_loss: 1.1798 - y2\_output\_loss: 3.5002 -  
 y1\_output\_root\_mean\_squared\_error: 1.0910 - y2\_output\_root\_mean\_squared\_error:  
 1.8736 - val\_loss: 4.3534 - val\_y1\_output\_loss: 0.4148 - val\_y2\_output\_loss:  
 4.0752 - val\_y1\_output\_root\_mean\_squared\_error: 0.6564 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9805  
 Epoch 178/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.2881 -  
 y1\_output\_loss: 0.2658 - y2\_output\_loss: 1.0170 -  
 y1\_output\_root\_mean\_squared\_error: 0.5171 - y2\_output\_root\_mean\_squared\_error:  
 1.0103 - val\_loss: 2.1722 - val\_y1\_output\_loss: 0.4426 - val\_y2\_output\_loss:  
 1.7533 - val\_y1\_output\_root\_mean\_squared\_error: 0.6685 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3135  
 Epoch 179/500  
 614/614 [=====] - 0s 122us/sample - loss: 1.4206 -  
 y1\_output\_loss: 0.2609 - y2\_output\_loss: 1.1530 -  
 y1\_output\_root\_mean\_squared\_error: 0.5119 - y2\_output\_root\_mean\_squared\_error:  
 1.0764 - val\_loss: 1.9263 - val\_y1\_output\_loss: 0.3170 - val\_y2\_output\_loss:  
 1.6367 - val\_y1\_output\_root\_mean\_squared\_error: 0.5653 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2676  
 Epoch 180/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.4431 -  
 y1\_output\_loss: 0.2618 - y2\_output\_loss: 1.1693 -  
 y1\_output\_root\_mean\_squared\_error: 0.5137 - y2\_output\_root\_mean\_squared\_error:  
 1.0859 - val\_loss: 2.1140 - val\_y1\_output\_loss: 0.3826 - val\_y2\_output\_loss:  
 1.7760 - val\_y1\_output\_root\_mean\_squared\_error: 0.6194 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3154  
 Epoch 181/500  
 614/614 [=====] - 0s 119us/sample - loss: 1.2525 -

```

y1_output_loss: 0.2213 - y2_output_loss: 1.0347 -
y1_output_root_mean_squared_error: 0.4723 - y2_output_root_mean_squared_error:
1.0146 - val_loss: 4.6832 - val_y1_output_loss: 0.6036 - val_y2_output_loss:
3.9854 - val_y1_output_root_mean_squared_error: 0.7716 -
val_y2_output_root_mean_squared_error: 2.0218
Epoch 182/500
614/614 [=====] - 0s 134us/sample - loss: 1.5524 -
y1_output_loss: 0.3219 - y2_output_loss: 1.2285 -
y1_output_root_mean_squared_error: 0.5701 - y2_output_root_mean_squared_error:
1.1079 - val_loss: 2.1643 - val_y1_output_loss: 0.3376 - val_y2_output_loss:
1.7751 - val_y1_output_root_mean_squared_error: 0.5801 -
val_y2_output_root_mean_squared_error: 1.3519
Epoch 183/500
614/614 [=====] - 0s 125us/sample - loss: 1.3544 -
y1_output_loss: 0.2360 - y2_output_loss: 1.1130 -
y1_output_root_mean_squared_error: 0.4845 - y2_output_root_mean_squared_error:
1.0582 - val_loss: 1.8808 - val_y1_output_loss: 0.3037 - val_y2_output_loss:
1.5583 - val_y1_output_root_mean_squared_error: 0.5498 -
val_y2_output_root_mean_squared_error: 1.2564
Epoch 184/500
614/614 [=====] - 0s 125us/sample - loss: 1.6207 -
y1_output_loss: 0.3218 - y2_output_loss: 1.2840 -
y1_output_root_mean_squared_error: 0.5696 - y2_output_root_mean_squared_error:
1.1386 - val_loss: 1.7975 - val_y1_output_loss: 0.2932 - val_y2_output_loss:
1.4901 - val_y1_output_root_mean_squared_error: 0.5419 -
val_y2_output_root_mean_squared_error: 1.2263
Epoch 185/500
614/614 [=====] - 0s 129us/sample - loss: 1.2720 -
y1_output_loss: 0.2552 - y2_output_loss: 1.0104 -
y1_output_root_mean_squared_error: 0.5065 - y2_output_root_mean_squared_error:
1.0077 - val_loss: 1.8501 - val_y1_output_loss: 0.3137 - val_y2_output_loss:
1.5369 - val_y1_output_root_mean_squared_error: 0.5662 -
val_y2_output_root_mean_squared_error: 1.2367
Epoch 186/500
614/614 [=====] - 0s 132us/sample - loss: 1.2423 -
y1_output_loss: 0.2357 - y2_output_loss: 1.0262 -
y1_output_root_mean_squared_error: 0.4857 - y2_output_root_mean_squared_error:
1.0032 - val_loss: 4.7122 - val_y1_output_loss: 0.6949 - val_y2_output_loss:
3.9695 - val_y1_output_root_mean_squared_error: 0.8193 -
val_y2_output_root_mean_squared_error: 2.0102
Epoch 187/500
614/614 [=====] - 0s 130us/sample - loss: 1.4375 -
y1_output_loss: 0.2771 - y2_output_loss: 1.1551 -
y1_output_root_mean_squared_error: 0.5245 - y2_output_root_mean_squared_error:
1.0781 - val_loss: 2.2016 - val_y1_output_loss: 0.4421 - val_y2_output_loss:
1.7553 - val_y1_output_root_mean_squared_error: 0.6521 -
val_y2_output_root_mean_squared_error: 1.3328
Epoch 188/500

```

```

614/614 [=====] - 0s 125us/sample - loss: 1.5609 -
y1_output_loss: 0.2708 - y2_output_loss: 1.2761 -
y1_output_root_mean_squared_error: 0.5227 - y2_output_root_mean_squared_error:
1.1347 - val_loss: 1.8333 - val_y1_output_loss: 0.2781 - val_y2_output_loss:
1.5733 - val_y1_output_root_mean_squared_error: 0.5354 -
val_y2_output_root_mean_squared_error: 1.2437
Epoch 189/500
614/614 [=====] - 0s 126us/sample - loss: 1.3395 -
y1_output_loss: 0.2508 - y2_output_loss: 1.0844 -
y1_output_root_mean_squared_error: 0.5015 - y2_output_root_mean_squared_error:
1.0431 - val_loss: 2.1295 - val_y1_output_loss: 0.2847 - val_y2_output_loss:
1.8729 - val_y1_output_root_mean_squared_error: 0.5354 -
val_y2_output_root_mean_squared_error: 1.3575
Epoch 190/500
614/614 [=====] - 0s 119us/sample - loss: 1.2006 -
y1_output_loss: 0.2320 - y2_output_loss: 0.9578 -
y1_output_root_mean_squared_error: 0.4838 - y2_output_root_mean_squared_error:
0.9831 - val_loss: 1.7031 - val_y1_output_loss: 0.2718 - val_y2_output_loss:
1.4175 - val_y1_output_root_mean_squared_error: 0.5258 -
val_y2_output_root_mean_squared_error: 1.1944
Epoch 191/500
614/614 [=====] - 0s 119us/sample - loss: 1.1288 -
y1_output_loss: 0.2100 - y2_output_loss: 0.9385 -
y1_output_root_mean_squared_error: 0.4581 - y2_output_root_mean_squared_error:
0.9586 - val_loss: 4.9831 - val_y1_output_loss: 0.9693 - val_y2_output_loss:
3.9561 - val_y1_output_root_mean_squared_error: 0.9686 -
val_y2_output_root_mean_squared_error: 2.0112
Epoch 192/500
614/614 [=====] - 0s 119us/sample - loss: 1.1988 -
y1_output_loss: 0.2893 - y2_output_loss: 0.9041 -
y1_output_root_mean_squared_error: 0.5382 - y2_output_root_mean_squared_error:
0.9535 - val_loss: 2.1033 - val_y1_output_loss: 0.3516 - val_y2_output_loss:
1.7798 - val_y1_output_root_mean_squared_error: 0.5942 -
val_y2_output_root_mean_squared_error: 1.3230
Epoch 193/500
614/614 [=====] - 0s 125us/sample - loss: 1.0995 -
y1_output_loss: 0.2004 - y2_output_loss: 0.8924 -
y1_output_root_mean_squared_error: 0.4496 - y2_output_root_mean_squared_error:
0.9473 - val_loss: 1.9949 - val_y1_output_loss: 0.3700 - val_y2_output_loss:
1.6256 - val_y1_output_root_mean_squared_error: 0.6018 -
val_y2_output_root_mean_squared_error: 1.2778
Epoch 194/500
614/614 [=====] - 0s 127us/sample - loss: 1.0818 -
y1_output_loss: 0.1983 - y2_output_loss: 0.9042 -
y1_output_root_mean_squared_error: 0.4437 - y2_output_root_mean_squared_error:
0.9407 - val_loss: 4.3236 - val_y1_output_loss: 0.5441 - val_y2_output_loss:
3.8194 - val_y1_output_root_mean_squared_error: 0.7513 -
val_y2_output_root_mean_squared_error: 1.9389

```



Epoch 195/500  
614/614 [=====] - 0s 121us/sample - loss: 1.5904 -  
y1\_output\_loss: 0.3184 - y2\_output\_loss: 1.2626 -  
y1\_output\_root\_mean\_squared\_error: 0.5660 - y2\_output\_root\_mean\_squared\_error:  
1.1270 - val\_loss: 2.1157 - val\_y1\_output\_loss: 0.3192 - val\_y2\_output\_loss:  
1.8030 - val\_y1\_output\_root\_mean\_squared\_error: 0.5659 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3399  
Epoch 196/500  
614/614 [=====] - 0s 123us/sample - loss: 1.3620 -  
y1\_output\_loss: 0.2619 - y2\_output\_loss: 1.0900 -  
y1\_output\_root\_mean\_squared\_error: 0.5132 - y2\_output\_root\_mean\_squared\_error:  
1.0482 - val\_loss: 2.0483 - val\_y1\_output\_loss: 0.3588 - val\_y2\_output\_loss:  
1.6483 - val\_y1\_output\_root\_mean\_squared\_error: 0.6014 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2987  
Epoch 197/500  
614/614 [=====] - 0s 124us/sample - loss: 1.0364 -  
y1\_output\_loss: 0.2361 - y2\_output\_loss: 0.8144 -  
y1\_output\_root\_mean\_squared\_error: 0.4810 - y2\_output\_root\_mean\_squared\_error:  
0.8972 - val\_loss: 2.9786 - val\_y1\_output\_loss: 0.5261 - val\_y2\_output\_loss:  
2.5020 - val\_y1\_output\_root\_mean\_squared\_error: 0.7311 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5634  
Epoch 198/500  
614/614 [=====] - 0s 123us/sample - loss: 1.7573 -  
y1\_output\_loss: 0.3582 - y2\_output\_loss: 1.3852 -  
y1\_output\_root\_mean\_squared\_error: 0.6006 - y2\_output\_root\_mean\_squared\_error:  
1.1818 - val\_loss: 2.0943 - val\_y1\_output\_loss: 0.5035 - val\_y2\_output\_loss:  
1.5984 - val\_y1\_output\_root\_mean\_squared\_error: 0.7109 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2606  
Epoch 199/500  
614/614 [=====] - 0s 124us/sample - loss: 1.1845 -  
y1\_output\_loss: 0.2196 - y2\_output\_loss: 0.9589 -  
y1\_output\_root\_mean\_squared\_error: 0.4689 - y2\_output\_root\_mean\_squared\_error:  
0.9822 - val\_loss: 3.8095 - val\_y1\_output\_loss: 0.6528 - val\_y2\_output\_loss:  
3.2429 - val\_y1\_output\_root\_mean\_squared\_error: 0.8119 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7749  
Epoch 200/500  
614/614 [=====] - 0s 126us/sample - loss: 1.1479 -  
y1\_output\_loss: 0.2073 - y2\_output\_loss: 0.9299 -  
y1\_output\_root\_mean\_squared\_error: 0.4575 - y2\_output\_root\_mean\_squared\_error:  
0.9688 - val\_loss: 1.8151 - val\_y1\_output\_loss: 0.2697 - val\_y2\_output\_loss:  
1.5479 - val\_y1\_output\_root\_mean\_squared\_error: 0.5247 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2409  
Epoch 201/500  
614/614 [=====] - 0s 126us/sample - loss: 3.2997 -  
y1\_output\_loss: 0.6863 - y2\_output\_loss: 2.5899 -  
y1\_output\_root\_mean\_squared\_error: 0.8314 - y2\_output\_root\_mean\_squared\_error:  
1.6151 - val\_loss: 3.3050 - val\_y1\_output\_loss: 0.8618 - val\_y2\_output\_loss:  
2.4975 - val\_y1\_output\_root\_mean\_squared\_error: 0.9088 -

```

val_y2_output_root_mean_squared_error: 1.5745
Epoch 202/500
614/614 [=====] - 0s 126us/sample - loss: 1.0654 -
y1_output_loss: 0.2104 - y2_output_loss: 0.8514 -
y1_output_root_mean_squared_error: 0.4604 - y2_output_root_mean_squared_error:
0.9239 - val_loss: 1.8617 - val_y1_output_loss: 0.3833 - val_y2_output_loss:
1.5000 - val_y1_output_root_mean_squared_error: 0.6243 -
val_y2_output_root_mean_squared_error: 1.2132
Epoch 203/500
614/614 [=====] - 0s 123us/sample - loss: 3.9267 -
y1_output_loss: 1.1078 - y2_output_loss: 2.7886 -
y1_output_root_mean_squared_error: 1.0559 - y2_output_root_mean_squared_error:
1.6768 - val_loss: 1.9883 - val_y1_output_loss: 0.2840 - val_y2_output_loss:
1.7423 - val_y1_output_root_mean_squared_error: 0.5351 -
val_y2_output_root_mean_squared_error: 1.3046
Epoch 204/500
614/614 [=====] - 0s 123us/sample - loss: 1.2435 -
y1_output_loss: 0.2422 - y2_output_loss: 1.0185 -
y1_output_root_mean_squared_error: 0.4931 - y2_output_root_mean_squared_error:
1.0001 - val_loss: 4.3323 - val_y1_output_loss: 0.9756 - val_y2_output_loss:
3.2939 - val_y1_output_root_mean_squared_error: 0.9760 -
val_y2_output_root_mean_squared_error: 1.8384
Epoch 205/500
614/614 [=====] - 0s 132us/sample - loss: 1.0991 -
y1_output_loss: 0.2093 - y2_output_loss: 0.8848 -
y1_output_root_mean_squared_error: 0.4581 - y2_output_root_mean_squared_error:
0.9430 - val_loss: 1.8726 - val_y1_output_loss: 0.3152 - val_y2_output_loss:
1.5430 - val_y1_output_root_mean_squared_error: 0.5674 -
val_y2_output_root_mean_squared_error: 1.2453
Epoch 206/500
614/614 [=====] - 0s 121us/sample - loss: 1.2297 -
y1_output_loss: 0.2402 - y2_output_loss: 0.9858 -
y1_output_root_mean_squared_error: 0.4908 - y2_output_root_mean_squared_error:
0.9944 - val_loss: 3.4192 - val_y1_output_loss: 0.7897 - val_y2_output_loss:
2.6316 - val_y1_output_root_mean_squared_error: 0.8783 -
val_y2_output_root_mean_squared_error: 1.6272
Epoch 207/500
614/614 [=====] - 0s 121us/sample - loss: 1.0624 -
y1_output_loss: 0.2087 - y2_output_loss: 0.8500 -
y1_output_root_mean_squared_error: 0.4581 - y2_output_root_mean_squared_error:
0.9233 - val_loss: 2.2284 - val_y1_output_loss: 0.3503 - val_y2_output_loss:
1.9270 - val_y1_output_root_mean_squared_error: 0.5934 -
val_y2_output_root_mean_squared_error: 1.3698
Epoch 208/500
614/614 [=====] - 0s 123us/sample - loss: 1.0773 -
y1_output_loss: 0.1990 - y2_output_loss: 0.8832 -
y1_output_root_mean_squared_error: 0.4446 - y2_output_root_mean_squared_error:
0.9379 - val_loss: 2.8332 - val_y1_output_loss: 0.6584 - val_y2_output_loss:

```

2.1652 - val\_y1\_output\_root\_mean\_squared\_error: 0.7965 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4828  
 Epoch 209/500  
 614/614 [=====] - 0s 122us/sample - loss: 1.1111 -  
 y1\_output\_loss: 0.2071 - y2\_output\_loss: 0.9153 -  
 y1\_output\_root\_mean\_squared\_error: 0.4541 - y2\_output\_root\_mean\_squared\_error:  
 0.9513 - val\_loss: 3.7146 - val\_y1\_output\_loss: 0.9651 - val\_y2\_output\_loss:  
 2.6706 - val\_y1\_output\_root\_mean\_squared\_error: 0.9798 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6597  
 Epoch 210/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.0427 -  
 y1\_output\_loss: 0.2105 - y2\_output\_loss: 0.8360 -  
 y1\_output\_root\_mean\_squared\_error: 0.4580 - y2\_output\_root\_mean\_squared\_error:  
 0.9127 - val\_loss: 1.7547 - val\_y1\_output\_loss: 0.3264 - val\_y2\_output\_loss:  
 1.4301 - val\_y1\_output\_root\_mean\_squared\_error: 0.5695 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1960  
 Epoch 211/500  
 614/614 [=====] - 0s 125us/sample - loss: 1.6639 -  
 y1\_output\_loss: 0.3724 - y2\_output\_loss: 1.2828 -  
 y1\_output\_root\_mean\_squared\_error: 0.6123 - y2\_output\_root\_mean\_squared\_error:  
 1.1354 - val\_loss: 1.6233 - val\_y1\_output\_loss: 0.2972 - val\_y2\_output\_loss:  
 1.3069 - val\_y1\_output\_root\_mean\_squared\_error: 0.5525 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1481  
 Epoch 212/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.0864 -  
 y1\_output\_loss: 0.2060 - y2\_output\_loss: 0.8859 -  
 y1\_output\_root\_mean\_squared\_error: 0.4537 - y2\_output\_root\_mean\_squared\_error:  
 0.9383 - val\_loss: 2.4040 - val\_y1\_output\_loss: 0.4145 - val\_y2\_output\_loss:  
 1.9188 - val\_y1\_output\_root\_mean\_squared\_error: 0.6453 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4098  
 Epoch 213/500  
 614/614 [=====] - 0s 125us/sample - loss: 1.1067 -  
 y1\_output\_loss: 0.2130 - y2\_output\_loss: 0.9115 -  
 y1\_output\_root\_mean\_squared\_error: 0.4610 - y2\_output\_root\_mean\_squared\_error:  
 0.9456 - val\_loss: 3.5732 - val\_y1\_output\_loss: 0.5985 - val\_y2\_output\_loss:  
 2.9871 - val\_y1\_output\_root\_mean\_squared\_error: 0.7818 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7210  
 Epoch 214/500  
 614/614 [=====] - 0s 132us/sample - loss: 1.3172 -  
 y1\_output\_loss: 0.2564 - y2\_output\_loss: 1.0491 -  
 y1\_output\_root\_mean\_squared\_error: 0.5085 - y2\_output\_root\_mean\_squared\_error:  
 1.0289 - val\_loss: 1.7300 - val\_y1\_output\_loss: 0.2651 - val\_y2\_output\_loss:  
 1.4738 - val\_y1\_output\_root\_mean\_squared\_error: 0.5223 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2071  
 Epoch 215/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.0991 -  
 y1\_output\_loss: 0.2123 - y2\_output\_loss: 0.8797 -  
 y1\_output\_root\_mean\_squared\_error: 0.4622 - y2\_output\_root\_mean\_squared\_error:

0.9410 - val\_loss: 2.2373 - val\_y1\_output\_loss: 0.6724 - val\_y2\_output\_loss:  
 1.6099 - val\_y1\_output\_root\_mean\_squared\_error: 0.7999 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2639  
 Epoch 216/500  
 614/614 [=====] - 0s 121us/sample - loss: 1.0100 -  
 y1\_output\_loss: 0.1710 - y2\_output\_loss: 0.8342 -  
 y1\_output\_root\_mean\_squared\_error: 0.4140 - y2\_output\_root\_mean\_squared\_error:  
 0.9158 - val\_loss: 1.7190 - val\_y1\_output\_loss: 0.3106 - val\_y2\_output\_loss:  
 1.4060 - val\_y1\_output\_root\_mean\_squared\_error: 0.5603 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1854  
 Epoch 217/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.9709 -  
 y1\_output\_loss: 0.1827 - y2\_output\_loss: 0.7816 -  
 y1\_output\_root\_mean\_squared\_error: 0.4280 - y2\_output\_root\_mean\_squared\_error:  
 0.8875 - val\_loss: 1.6265 - val\_y1\_output\_loss: 0.3450 - val\_y2\_output\_loss:  
 1.2528 - val\_y1\_output\_root\_mean\_squared\_error: 0.5939 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1286  
 Epoch 218/500  
 614/614 [=====] - 0s 118us/sample - loss: 1.0690 -  
 y1\_output\_loss: 0.2131 - y2\_output\_loss: 0.8510 -  
 y1\_output\_root\_mean\_squared\_error: 0.4607 - y2\_output\_root\_mean\_squared\_error:  
 0.9256 - val\_loss: 1.7342 - val\_y1\_output\_loss: 0.3146 - val\_y2\_output\_loss:  
 1.4274 - val\_y1\_output\_root\_mean\_squared\_error: 0.5617 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1911  
 Epoch 219/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.9922 -  
 y1\_output\_loss: 0.1608 - y2\_output\_loss: 0.8267 -  
 y1\_output\_root\_mean\_squared\_error: 0.4025 - y2\_output\_root\_mean\_squared\_error:  
 0.9112 - val\_loss: 2.1376 - val\_y1\_output\_loss: 0.3618 - val\_y2\_output\_loss:  
 1.7331 - val\_y1\_output\_root\_mean\_squared\_error: 0.5984 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3340  
 Epoch 220/500  
 614/614 [=====] - 0s 118us/sample - loss: 1.0687 -  
 y1\_output\_loss: 0.1801 - y2\_output\_loss: 0.8806 -  
 y1\_output\_root\_mean\_squared\_error: 0.4253 - y2\_output\_root\_mean\_squared\_error:  
 0.9422 - val\_loss: 1.6223 - val\_y1\_output\_loss: 0.2887 - val\_y2\_output\_loss:  
 1.3288 - val\_y1\_output\_root\_mean\_squared\_error: 0.5397 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1537  
 Epoch 221/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.8053 -  
 y1\_output\_loss: 0.1629 - y2\_output\_loss: 0.6389 -  
 y1\_output\_root\_mean\_squared\_error: 0.4029 - y2\_output\_root\_mean\_squared\_error:  
 0.8019 - val\_loss: 1.9596 - val\_y1\_output\_loss: 0.4043 - val\_y2\_output\_loss:  
 1.5780 - val\_y1\_output\_root\_mean\_squared\_error: 0.6415 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2442  
 Epoch 222/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.3963 -  
 y1\_output\_loss: 0.2291 - y2\_output\_loss: 1.1573 -

y1\_output\_root\_mean\_squared\_error: 0.4804 - y2\_output\_root\_mean\_squared\_error:  
1.0796 - val\_loss: 1.5782 - val\_y1\_output\_loss: 0.2867 - val\_y2\_output\_loss:  
1.2834 - val\_y1\_output\_root\_mean\_squared\_error: 0.5404 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1341  
Epoch 223/500  
614/614 [=====] - 0s 121us/sample - loss: 1.1678 -  
y1\_output\_loss: 0.2095 - y2\_output\_loss: 0.9489 -  
y1\_output\_root\_mean\_squared\_error: 0.4594 - y2\_output\_root\_mean\_squared\_error:  
0.9782 - val\_loss: 1.7665 - val\_y1\_output\_loss: 0.2992 - val\_y2\_output\_loss:  
1.4655 - val\_y1\_output\_root\_mean\_squared\_error: 0.5510 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2095  
Epoch 224/500  
614/614 [=====] - 0s 129us/sample - loss: 0.9568 -  
y1\_output\_loss: 0.1997 - y2\_output\_loss: 0.7527 -  
y1\_output\_root\_mean\_squared\_error: 0.4479 - y2\_output\_root\_mean\_squared\_error:  
0.8696 - val\_loss: 1.5722 - val\_y1\_output\_loss: 0.2873 - val\_y2\_output\_loss:  
1.2754 - val\_y1\_output\_root\_mean\_squared\_error: 0.5443 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1296  
Epoch 225/500  
614/614 [=====] - 0s 119us/sample - loss: 1.6666 -  
y1\_output\_loss: 0.2680 - y2\_output\_loss: 1.3831 -  
y1\_output\_root\_mean\_squared\_error: 0.5202 - y2\_output\_root\_mean\_squared\_error:  
1.1815 - val\_loss: 1.5780 - val\_y1\_output\_loss: 0.2813 - val\_y2\_output\_loss:  
1.2940 - val\_y1\_output\_root\_mean\_squared\_error: 0.5366 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1358  
Epoch 226/500  
614/614 [=====] - 0s 131us/sample - loss: 1.0949 -  
y1\_output\_loss: 0.2048 - y2\_output\_loss: 0.8821 -  
y1\_output\_root\_mean\_squared\_error: 0.4528 - y2\_output\_root\_mean\_squared\_error:  
0.9434 - val\_loss: 1.5981 - val\_y1\_output\_loss: 0.3008 - val\_y2\_output\_loss:  
1.2880 - val\_y1\_output\_root\_mean\_squared\_error: 0.5539 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1364  
Epoch 227/500  
614/614 [=====] - 0s 129us/sample - loss: 1.2171 -  
y1\_output\_loss: 0.2267 - y2\_output\_loss: 0.9920 -  
y1\_output\_root\_mean\_squared\_error: 0.4757 - y2\_output\_root\_mean\_squared\_error:  
0.9954 - val\_loss: 3.1948 - val\_y1\_output\_loss: 0.6767 - val\_y2\_output\_loss:  
2.6193 - val\_y1\_output\_root\_mean\_squared\_error: 0.8082 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5942  
Epoch 228/500  
614/614 [=====] - 0s 119us/sample - loss: 1.1952 -  
y1\_output\_loss: 0.2210 - y2\_output\_loss: 0.9638 -  
y1\_output\_root\_mean\_squared\_error: 0.4717 - y2\_output\_root\_mean\_squared\_error:  
0.9863 - val\_loss: 1.6643 - val\_y1\_output\_loss: 0.2999 - val\_y2\_output\_loss:  
1.3598 - val\_y1\_output\_root\_mean\_squared\_error: 0.5537 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1652  
Epoch 229/500  
614/614 [=====] - 0s 130us/sample - loss: 2.0379 -

```

y1_output_loss: 0.3317 - y2_output_loss: 1.6877 -
y1_output_root_mean_squared_error: 0.5782 - y2_output_root_mean_squared_error:
1.3053 - val_loss: 1.7851 - val_y1_output_loss: 0.2805 - val_y2_output_loss:
1.5237 - val_y1_output_root_mean_squared_error: 0.5341 -
val_y2_output_root_mean_squared_error: 1.2247
Epoch 230/500
614/614 [=====] - 0s 127us/sample - loss: 1.3683 -
y1_output_loss: 0.2815 - y2_output_loss: 1.0756 -
y1_output_root_mean_squared_error: 0.5316 - y2_output_root_mean_squared_error:
1.0420 - val_loss: 1.6637 - val_y1_output_loss: 0.2968 - val_y2_output_loss:
1.3690 - val_y1_output_root_mean_squared_error: 0.5485 -
val_y2_output_root_mean_squared_error: 1.1674
Epoch 231/500
614/614 [=====] - 0s 134us/sample - loss: 0.9275 -
y1_output_loss: 0.1685 - y2_output_loss: 0.7543 -
y1_output_root_mean_squared_error: 0.4111 - y2_output_root_mean_squared_error:
0.8709 - val_loss: 1.6261 - val_y1_output_loss: 0.2891 - val_y2_output_loss:
1.3253 - val_y1_output_root_mean_squared_error: 0.5388 -
val_y2_output_root_mean_squared_error: 1.1558
Epoch 232/500
614/614 [=====] - 0s 132us/sample - loss: 2.2232 -
y1_output_loss: 0.5871 - y2_output_loss: 1.6186 -
y1_output_root_mean_squared_error: 0.7684 - y2_output_root_mean_squared_error:
1.2778 - val_loss: 1.7473 - val_y1_output_loss: 0.3208 - val_y2_output_loss:
1.4438 - val_y1_output_root_mean_squared_error: 0.5722 -
val_y2_output_root_mean_squared_error: 1.1916
Epoch 233/500
614/614 [=====] - 0s 132us/sample - loss: 1.4926 -
y1_output_loss: 0.2411 - y2_output_loss: 1.2498 -
y1_output_root_mean_squared_error: 0.4910 - y2_output_root_mean_squared_error:
1.1187 - val_loss: 1.7180 - val_y1_output_loss: 0.3632 - val_y2_output_loss:
1.4046 - val_y1_output_root_mean_squared_error: 0.5929 -
val_y2_output_root_mean_squared_error: 1.1690
Epoch 234/500
614/614 [=====] - 0s 125us/sample - loss: 1.8252 -
y1_output_loss: 0.3464 - y2_output_loss: 1.4654 -
y1_output_root_mean_squared_error: 0.5899 - y2_output_root_mean_squared_error:
1.2154 - val_loss: 2.0254 - val_y1_output_loss: 0.4725 - val_y2_output_loss:
1.5052 - val_y1_output_root_mean_squared_error: 0.6912 -
val_y2_output_root_mean_squared_error: 1.2440
Epoch 235/500
614/614 [=====] - 0s 128us/sample - loss: 0.8655 -
y1_output_loss: 0.1676 - y2_output_loss: 0.6935 -
y1_output_root_mean_squared_error: 0.4090 - y2_output_root_mean_squared_error:
0.8356 - val_loss: 1.7665 - val_y1_output_loss: 0.3083 - val_y2_output_loss:
1.4665 - val_y1_output_root_mean_squared_error: 0.5632 -
val_y2_output_root_mean_squared_error: 1.2039
Epoch 236/500

```

```

614/614 [=====] - 0s 126us/sample - loss: 1.1281 -
y1_output_loss: 0.2261 - y2_output_loss: 0.9101 -
y1_output_root_mean_squared_error: 0.4774 - y2_output_root_mean_squared_error:
0.9488 - val_loss: 5.3317 - val_y1_output_loss: 0.7452 - val_y2_output_loss:
4.6213 - val_y1_output_root_mean_squared_error: 0.8633 -
val_y2_output_root_mean_squared_error: 2.1416
Epoch 237/500
614/614 [=====] - 0s 121us/sample - loss: 1.0082 -
y1_output_loss: 0.2013 - y2_output_loss: 0.8040 -
y1_output_root_mean_squared_error: 0.4499 - y2_output_root_mean_squared_error:
0.8976 - val_loss: 2.3039 - val_y1_output_loss: 0.3516 - val_y2_output_loss:
1.8999 - val_y1_output_root_mean_squared_error: 0.5977 -
val_y2_output_root_mean_squared_error: 1.3952
Epoch 238/500
614/614 [=====] - 0s 121us/sample - loss: 0.9391 -
y1_output_loss: 0.1716 - y2_output_loss: 0.7768 -
y1_output_root_mean_squared_error: 0.4127 - y2_output_root_mean_squared_error:
0.8768 - val_loss: 3.2864 - val_y1_output_loss: 0.3780 - val_y2_output_loss:
2.9917 - val_y1_output_root_mean_squared_error: 0.6220 -
val_y2_output_root_mean_squared_error: 1.7028
Epoch 239/500
614/614 [=====] - 0s 123us/sample - loss: 2.3787 -
y1_output_loss: 0.5497 - y2_output_loss: 1.8138 -
y1_output_root_mean_squared_error: 0.7430 - y2_output_root_mean_squared_error:
1.3516 - val_loss: 2.0166 - val_y1_output_loss: 0.4469 - val_y2_output_loss:
1.5374 - val_y1_output_root_mean_squared_error: 0.6600 -
val_y2_output_root_mean_squared_error: 1.2574
Epoch 240/500
614/614 [=====] - 0s 133us/sample - loss: 0.9819 -
y1_output_loss: 0.2232 - y2_output_loss: 0.7577 -
y1_output_root_mean_squared_error: 0.4705 - y2_output_root_mean_squared_error:
0.8721 - val_loss: 4.4348 - val_y1_output_loss: 1.2527 - val_y2_output_loss:
3.3486 - val_y1_output_root_mean_squared_error: 1.1024 -
val_y2_output_root_mean_squared_error: 1.7943
Epoch 241/500
614/614 [=====] - 0s 122us/sample - loss: 1.1284 -
y1_output_loss: 0.2301 - y2_output_loss: 0.8978 -
y1_output_root_mean_squared_error: 0.4810 - y2_output_root_mean_squared_error:
0.9471 - val_loss: 2.0112 - val_y1_output_loss: 0.3089 - val_y2_output_loss:
1.7315 - val_y1_output_root_mean_squared_error: 0.5593 -
val_y2_output_root_mean_squared_error: 1.3032
Epoch 242/500
614/614 [=====] - 0s 120us/sample - loss: 1.0048 -
y1_output_loss: 0.1790 - y2_output_loss: 0.8296 -
y1_output_root_mean_squared_error: 0.4251 - y2_output_root_mean_squared_error:
0.9078 - val_loss: 3.3183 - val_y1_output_loss: 0.5758 - val_y2_output_loss:
2.8057 - val_y1_output_root_mean_squared_error: 0.7508 -
val_y2_output_root_mean_squared_error: 1.6597

```

Epoch 243/500

614/614 [=====] - 0s 120us/sample - loss: 0.8880 -  
y1\_output\_loss: 0.1764 - y2\_output\_loss: 0.7037 -  
y1\_output\_root\_mean\_squared\_error: 0.4216 - y2\_output\_root\_mean\_squared\_error:  
0.8427 - val\_loss: 1.5449 - val\_y1\_output\_loss: 0.2692 - val\_y2\_output\_loss:  
1.2993 - val\_y1\_output\_root\_mean\_squared\_error: 0.5266 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1259

Epoch 244/500

614/614 [=====] - 0s 120us/sample - loss: 0.9528 -  
y1\_output\_loss: 0.1721 - y2\_output\_loss: 0.7732 -  
y1\_output\_root\_mean\_squared\_error: 0.4152 - y2\_output\_root\_mean\_squared\_error:  
0.8834 - val\_loss: 1.4409 - val\_y1\_output\_loss: 0.2812 - val\_y2\_output\_loss:  
1.1473 - val\_y1\_output\_root\_mean\_squared\_error: 0.5364 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0738

Epoch 245/500

614/614 [=====] - 0s 133us/sample - loss: 1.5835 -  
y1\_output\_loss: 0.3752 - y2\_output\_loss: 1.2082 -  
y1\_output\_root\_mean\_squared\_error: 0.6148 - y2\_output\_root\_mean\_squared\_error:  
1.0980 - val\_loss: 2.3136 - val\_y1\_output\_loss: 0.5269 - val\_y2\_output\_loss:  
1.7967 - val\_y1\_output\_root\_mean\_squared\_error: 0.7374 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3304

Epoch 246/500

614/614 [=====] - 0s 131us/sample - loss: 0.8947 -  
y1\_output\_loss: 0.1906 - y2\_output\_loss: 0.7488 -  
y1\_output\_root\_mean\_squared\_error: 0.4200 - y2\_output\_root\_mean\_squared\_error:  
0.8475 - val\_loss: 17.7101 - val\_y1\_output\_loss: 5.9171 - val\_y2\_output\_loss:  
12.6220 - val\_y1\_output\_root\_mean\_squared\_error: 2.3860 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.4666

Epoch 247/500

614/614 [=====] - 0s 130us/sample - loss: 1.2711 -  
y1\_output\_loss: 0.3017 - y2\_output\_loss: 0.9594 -  
y1\_output\_root\_mean\_squared\_error: 0.5517 - y2\_output\_root\_mean\_squared\_error:  
0.9833 - val\_loss: 1.7433 - val\_y1\_output\_loss: 0.3395 - val\_y2\_output\_loss:  
1.4479 - val\_y1\_output\_root\_mean\_squared\_error: 0.5822 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1850

Epoch 248/500

614/614 [=====] - 0s 130us/sample - loss: 1.3570 -  
y1\_output\_loss: 0.2342 - y2\_output\_loss: 1.1131 -  
y1\_output\_root\_mean\_squared\_error: 0.4857 - y2\_output\_root\_mean\_squared\_error:  
1.0588 - val\_loss: 1.8126 - val\_y1\_output\_loss: 0.2925 - val\_y2\_output\_loss:  
1.4761 - val\_y1\_output\_root\_mean\_squared\_error: 0.5475 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2300

Epoch 249/500

614/614 [=====] - 0s 121us/sample - loss: 1.0381 -  
y1\_output\_loss: 0.1817 - y2\_output\_loss: 0.8623 -  
y1\_output\_root\_mean\_squared\_error: 0.4222 - y2\_output\_root\_mean\_squared\_error:  
0.9273 - val\_loss: 2.3508 - val\_y1\_output\_loss: 0.4144 - val\_y2\_output\_loss:  
1.9688 - val\_y1\_output\_root\_mean\_squared\_error: 0.6487 -



```

val_y2_output_root_mean_squared_error: 1.3893
Epoch 250/500
614/614 [=====] - 0s 122us/sample - loss: 0.9851 -
y1_output_loss: 0.1797 - y2_output_loss: 0.8024 -
y1_output_root_mean_squared_error: 0.4253 - y2_output_root_mean_squared_error:
0.8968 - val_loss: 2.1561 - val_y1_output_loss: 0.4387 - val_y2_output_loss:
1.7652 - val_y1_output_root_mean_squared_error: 0.6603 -
val_y2_output_root_mean_squared_error: 1.3115
Epoch 251/500
614/614 [=====] - 0s 122us/sample - loss: 0.7857 -
y1_output_loss: 0.1714 - y2_output_loss: 0.6093 -
y1_output_root_mean_squared_error: 0.4151 - y2_output_root_mean_squared_error:
0.7832 - val_loss: 1.5916 - val_y1_output_loss: 0.3283 - val_y2_output_loss:
1.2824 - val_y1_output_root_mean_squared_error: 0.5779 -
val_y2_output_root_mean_squared_error: 1.1214
Epoch 252/500
614/614 [=====] - 0s 120us/sample - loss: 1.1036 -
y1_output_loss: 0.2173 - y2_output_loss: 0.9013 -
y1_output_root_mean_squared_error: 0.4680 - y2_output_root_mean_squared_error:
0.9405 - val_loss: 3.2978 - val_y1_output_loss: 0.3162 - val_y2_output_loss:
2.9221 - val_y1_output_root_mean_squared_error: 0.5636 -
val_y2_output_root_mean_squared_error: 1.7263
Epoch 253/500
614/614 [=====] - 0s 120us/sample - loss: 0.8975 -
y1_output_loss: 0.1736 - y2_output_loss: 0.7312 -
y1_output_root_mean_squared_error: 0.4123 - y2_output_root_mean_squared_error:
0.8530 - val_loss: 3.5325 - val_y1_output_loss: 1.2869 - val_y2_output_loss:
2.3754 - val_y1_output_root_mean_squared_error: 1.1088 -
val_y2_output_root_mean_squared_error: 1.5176
Epoch 254/500
614/614 [=====] - 0s 120us/sample - loss: 0.9204 -
y1_output_loss: 0.1799 - y2_output_loss: 0.7357 -
y1_output_root_mean_squared_error: 0.4243 - y2_output_root_mean_squared_error:
0.8605 - val_loss: 2.0850 - val_y1_output_loss: 0.2601 - val_y2_output_loss:
1.8553 - val_y1_output_root_mean_squared_error: 0.5169 -
val_y2_output_root_mean_squared_error: 1.3483
Epoch 255/500
614/614 [=====] - 0s 121us/sample - loss: 0.8080 -
y1_output_loss: 0.1753 - y2_output_loss: 0.6500 -
y1_output_root_mean_squared_error: 0.4180 - y2_output_root_mean_squared_error:
0.7958 - val_loss: 4.5052 - val_y1_output_loss: 1.1205 - val_y2_output_loss:
3.4339 - val_y1_output_root_mean_squared_error: 1.0444 -
val_y2_output_root_mean_squared_error: 1.8478
Epoch 256/500
614/614 [=====] - 0s 119us/sample - loss: 0.9972 -
y1_output_loss: 0.2273 - y2_output_loss: 0.7661 -
y1_output_root_mean_squared_error: 0.4772 - y2_output_root_mean_squared_error:
0.8772 - val_loss: 1.6399 - val_y1_output_loss: 0.3105 - val_y2_output_loss:

```

1.3250 - val\_y1\_output\_root\_mean\_squared\_error: 0.5616 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1509  
 Epoch 257/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.8158 -  
 y1\_output\_loss: 0.1610 - y2\_output\_loss: 0.6527 -  
 y1\_output\_root\_mean\_squared\_error: 0.4026 - y2\_output\_root\_mean\_squared\_error:  
 0.8086 - val\_loss: 1.6330 - val\_y1\_output\_loss: 0.2712 - val\_y2\_output\_loss:  
 1.3217 - val\_y1\_output\_root\_mean\_squared\_error: 0.5278 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1638  
 Epoch 258/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.8268 -  
 y1\_output\_loss: 0.1386 - y2\_output\_loss: 0.6862 -  
 y1\_output\_root\_mean\_squared\_error: 0.3736 - y2\_output\_root\_mean\_squared\_error:  
 0.8290 - val\_loss: 1.5380 - val\_y1\_output\_loss: 0.3120 - val\_y2\_output\_loss:  
 1.2151 - val\_y1\_output\_root\_mean\_squared\_error: 0.5612 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1059  
 Epoch 259/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.7701 -  
 y1\_output\_loss: 0.1507 - y2\_output\_loss: 0.6238 -  
 y1\_output\_root\_mean\_squared\_error: 0.3840 - y2\_output\_root\_mean\_squared\_error:  
 0.7891 - val\_loss: 1.5523 - val\_y1\_output\_loss: 0.3038 - val\_y2\_output\_loss:  
 1.2482 - val\_y1\_output\_root\_mean\_squared\_error: 0.5586 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1137  
 Epoch 260/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.7894 -  
 y1\_output\_loss: 0.1628 - y2\_output\_loss: 0.6264 -  
 y1\_output\_root\_mean\_squared\_error: 0.4038 - y2\_output\_root\_mean\_squared\_error:  
 0.7914 - val\_loss: 1.5902 - val\_y1\_output\_loss: 0.2912 - val\_y2\_output\_loss:  
 1.2906 - val\_y1\_output\_root\_mean\_squared\_error: 0.5465 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1365  
 Epoch 261/500  
 614/614 [=====] - 0s 118us/sample - loss: 1.1197 -  
 y1\_output\_loss: 0.1961 - y2\_output\_loss: 0.9418 -  
 y1\_output\_root\_mean\_squared\_error: 0.4444 - y2\_output\_root\_mean\_squared\_error:  
 0.9603 - val\_loss: 5.8887 - val\_y1\_output\_loss: 0.4217 - val\_y2\_output\_loss:  
 5.4866 - val\_y1\_output\_root\_mean\_squared\_error: 0.6597 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3353  
 Epoch 262/500  
 614/614 [=====] - 0s 120us/sample - loss: 1.1312 -  
 y1\_output\_loss: 0.2129 - y2\_output\_loss: 0.9154 -  
 y1\_output\_root\_mean\_squared\_error: 0.4622 - y2\_output\_root\_mean\_squared\_error:  
 0.9579 - val\_loss: 1.4818 - val\_y1\_output\_loss: 0.3210 - val\_y2\_output\_loss:  
 1.1481 - val\_y1\_output\_root\_mean\_squared\_error: 0.5761 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0724  
 Epoch 263/500  
 614/614 [=====] - 0s 122us/sample - loss: 1.0392 -  
 y1\_output\_loss: 0.2291 - y2\_output\_loss: 0.8090 -  
 y1\_output\_root\_mean\_squared\_error: 0.4770 - y2\_output\_root\_mean\_squared\_error:

0.9009 - val\_loss: 3.5861 - val\_y1\_output\_loss: 1.0044 - val\_y2\_output\_loss:  
 2.5653 - val\_y1\_output\_root\_mean\_squared\_error: 0.9986 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6090  
 Epoch 264/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.8392 -  
 y1\_output\_loss: 0.1977 - y2\_output\_loss: 0.6386 -  
 y1\_output\_root\_mean\_squared\_error: 0.4451 - y2\_output\_root\_mean\_squared\_error:  
 0.8007 - val\_loss: 1.5966 - val\_y1\_output\_loss: 0.3308 - val\_y2\_output\_loss:  
 1.2601 - val\_y1\_output\_root\_mean\_squared\_error: 0.5796 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1228  
 Epoch 265/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.6659 -  
 y1\_output\_loss: 0.1491 - y2\_output\_loss: 0.5259 -  
 y1\_output\_root\_mean\_squared\_error: 0.3861 - y2\_output\_root\_mean\_squared\_error:  
 0.7189 - val\_loss: 2.5752 - val\_y1\_output\_loss: 0.3884 - val\_y2\_output\_loss:  
 2.2634 - val\_y1\_output\_root\_mean\_squared\_error: 0.6241 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4784  
 Epoch 266/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.0849 -  
 y1\_output\_loss: 0.1677 - y2\_output\_loss: 0.9137 -  
 y1\_output\_root\_mean\_squared\_error: 0.4111 - y2\_output\_root\_mean\_squared\_error:  
 0.9571 - val\_loss: 1.4368 - val\_y1\_output\_loss: 0.3093 - val\_y2\_output\_loss:  
 1.1300 - val\_y1\_output\_root\_mean\_squared\_error: 0.5636 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0579  
 Epoch 267/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.9969 -  
 y1\_output\_loss: 0.2140 - y2\_output\_loss: 0.7760 -  
 y1\_output\_root\_mean\_squared\_error: 0.4636 - y2\_output\_root\_mean\_squared\_error:  
 0.8843 - val\_loss: 1.4145 - val\_y1\_output\_loss: 0.3215 - val\_y2\_output\_loss:  
 1.0888 - val\_y1\_output\_root\_mean\_squared\_error: 0.5687 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0445  
 Epoch 268/500  
 614/614 [=====] - 0s 118us/sample - loss: 0.9301 -  
 y1\_output\_loss: 0.1671 - y2\_output\_loss: 0.7583 -  
 y1\_output\_root\_mean\_squared\_error: 0.4097 - y2\_output\_root\_mean\_squared\_error:  
 0.8730 - val\_loss: 1.8336 - val\_y1\_output\_loss: 0.3086 - val\_y2\_output\_loss:  
 1.5326 - val\_y1\_output\_root\_mean\_squared\_error: 0.5642 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2309  
 Epoch 269/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.7092 -  
 y1\_output\_loss: 0.1469 - y2\_output\_loss: 0.5602 -  
 y1\_output\_root\_mean\_squared\_error: 0.3836 - y2\_output\_root\_mean\_squared\_error:  
 0.7497 - val\_loss: 1.4239 - val\_y1\_output\_loss: 0.3071 - val\_y2\_output\_loss:  
 1.1102 - val\_y1\_output\_root\_mean\_squared\_error: 0.5579 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0548  
 Epoch 270/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.8893 -  
 y1\_output\_loss: 0.1715 - y2\_output\_loss: 0.7115 -

y1\_output\_root\_mean\_squared\_error: 0.4159 - y2\_output\_root\_mean\_squared\_error:  
0.8464 - val\_loss: 1.4216 - val\_y1\_output\_loss: 0.2668 - val\_y2\_output\_loss:  
1.1596 - val\_y1\_output\_root\_mean\_squared\_error: 0.5228 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0716  
Epoch 271/500  
614/614 [=====] - 0s 122us/sample - loss: 0.8317 -  
y1\_output\_loss: 0.1544 - y2\_output\_loss: 0.6727 -  
y1\_output\_root\_mean\_squared\_error: 0.3942 - y2\_output\_root\_mean\_squared\_error:  
0.8224 - val\_loss: 1.7350 - val\_y1\_output\_loss: 0.3172 - val\_y2\_output\_loss:  
1.4398 - val\_y1\_output\_root\_mean\_squared\_error: 0.5737 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1857  
Epoch 272/500  
614/614 [=====] - 0s 121us/sample - loss: 0.8930 -  
y1\_output\_loss: 0.1681 - y2\_output\_loss: 0.7296 -  
y1\_output\_root\_mean\_squared\_error: 0.4103 - y2\_output\_root\_mean\_squared\_error:  
0.8513 - val\_loss: 2.8188 - val\_y1\_output\_loss: 0.4233 - val\_y2\_output\_loss:  
2.4725 - val\_y1\_output\_root\_mean\_squared\_error: 0.6564 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5453  
Epoch 273/500  
614/614 [=====] - 0s 129us/sample - loss: 0.8506 -  
y1\_output\_loss: 0.1633 - y2\_output\_loss: 0.6844 -  
y1\_output\_root\_mean\_squared\_error: 0.4022 - y2\_output\_root\_mean\_squared\_error:  
0.8300 - val\_loss: 1.3849 - val\_y1\_output\_loss: 0.2520 - val\_y2\_output\_loss:  
1.1156 - val\_y1\_output\_root\_mean\_squared\_error: 0.5092 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0610  
Epoch 274/500  
614/614 [=====] - 0s 128us/sample - loss: 0.8318 -  
y1\_output\_loss: 0.1502 - y2\_output\_loss: 0.6847 -  
y1\_output\_root\_mean\_squared\_error: 0.3877 - y2\_output\_root\_mean\_squared\_error:  
0.8255 - val\_loss: 1.6768 - val\_y1\_output\_loss: 0.3929 - val\_y2\_output\_loss:  
1.2498 - val\_y1\_output\_root\_mean\_squared\_error: 0.6267 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1332  
Epoch 275/500  
614/614 [=====] - 0s 133us/sample - loss: 0.9905 -  
y1\_output\_loss: 0.1812 - y2\_output\_loss: 0.8098 -  
y1\_output\_root\_mean\_squared\_error: 0.4272 - y2\_output\_root\_mean\_squared\_error:  
0.8989 - val\_loss: 2.9847 - val\_y1\_output\_loss: 0.3197 - val\_y2\_output\_loss:  
2.7313 - val\_y1\_output\_root\_mean\_squared\_error: 0.5738 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6296  
Epoch 276/500  
614/614 [=====] - 0s 126us/sample - loss: 0.8448 -  
y1\_output\_loss: 0.1541 - y2\_output\_loss: 0.6847 -  
y1\_output\_root\_mean\_squared\_error: 0.3936 - y2\_output\_root\_mean\_squared\_error:  
0.8306 - val\_loss: 1.4340 - val\_y1\_output\_loss: 0.2720 - val\_y2\_output\_loss:  
1.1608 - val\_y1\_output\_root\_mean\_squared\_error: 0.5275 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0750  
Epoch 277/500  
614/614 [=====] - 0s 129us/sample - loss: 1.2085 -

y1\_output\_loss: 0.3179 - y2\_output\_loss: 0.8896 -  
 y1\_output\_root\_mean\_squared\_error: 0.5656 - y2\_output\_root\_mean\_squared\_error:  
 0.9426 - val\_loss: 3.6946 - val\_y1\_output\_loss: 0.6163 - val\_y2\_output\_loss:  
 3.0279 - val\_y1\_output\_root\_mean\_squared\_error: 0.7798 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7569  
 Epoch 278/500  
 614/614 [=====] - 0s 129us/sample - loss: 0.8685 -  
 y1\_output\_loss: 0.1582 - y2\_output\_loss: 0.7101 -  
 y1\_output\_root\_mean\_squared\_error: 0.3970 - y2\_output\_root\_mean\_squared\_error:  
 0.8431 - val\_loss: 1.6208 - val\_y1\_output\_loss: 0.3936 - val\_y2\_output\_loss:  
 1.2266 - val\_y1\_output\_root\_mean\_squared\_error: 0.6262 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1084  
 Epoch 279/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.9676 -  
 y1\_output\_loss: 0.1840 - y2\_output\_loss: 0.7881 -  
 y1\_output\_root\_mean\_squared\_error: 0.4285 - y2\_output\_root\_mean\_squared\_error:  
 0.8854 - val\_loss: 3.4444 - val\_y1\_output\_loss: 0.3596 - val\_y2\_output\_loss:  
 3.1371 - val\_y1\_output\_root\_mean\_squared\_error: 0.6063 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7541  
 Epoch 280/500  
 614/614 [=====] - 0s 126us/sample - loss: 0.9596 -  
 y1\_output\_loss: 0.1835 - y2\_output\_loss: 0.7701 -  
 y1\_output\_root\_mean\_squared\_error: 0.4294 - y2\_output\_root\_mean\_squared\_error:  
 0.8805 - val\_loss: 1.4074 - val\_y1\_output\_loss: 0.2576 - val\_y2\_output\_loss:  
 1.1321 - val\_y1\_output\_root\_mean\_squared\_error: 0.5128 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0698  
 Epoch 281/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.7740 -  
 y1\_output\_loss: 0.1272 - y2\_output\_loss: 0.6498 -  
 y1\_output\_root\_mean\_squared\_error: 0.3530 - y2\_output\_root\_mean\_squared\_error:  
 0.8058 - val\_loss: 1.5121 - val\_y1\_output\_loss: 0.3706 - val\_y2\_output\_loss:  
 1.1302 - val\_y1\_output\_root\_mean\_squared\_error: 0.6096 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0679  
 Epoch 282/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.7704 -  
 y1\_output\_loss: 0.1402 - y2\_output\_loss: 0.6272 -  
 y1\_output\_root\_mean\_squared\_error: 0.3760 - y2\_output\_root\_mean\_squared\_error:  
 0.7931 - val\_loss: 2.1873 - val\_y1\_output\_loss: 0.4702 - val\_y2\_output\_loss:  
 1.7171 - val\_y1\_output\_root\_mean\_squared\_error: 0.6827 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3119  
 Epoch 283/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.7248 -  
 y1\_output\_loss: 0.1489 - y2\_output\_loss: 0.5734 -  
 y1\_output\_root\_mean\_squared\_error: 0.3855 - y2\_output\_root\_mean\_squared\_error:  
 0.7591 - val\_loss: 1.5404 - val\_y1\_output\_loss: 0.2824 - val\_y2\_output\_loss:  
 1.2464 - val\_y1\_output\_root\_mean\_squared\_error: 0.5350 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1199  
 Epoch 284/500

614/614 [=====] - 0s 119us/sample - loss: 0.8249 -  
y1\_output\_loss: 0.1718 - y2\_output\_loss: 0.6559 -  
y1\_output\_root\_mean\_squared\_error: 0.4157 - y2\_output\_root\_mean\_squared\_error:  
0.8075 - val\_loss: 1.4158 - val\_y1\_output\_loss: 0.2876 - val\_y2\_output\_loss:  
1.1541 - val\_y1\_output\_root\_mean\_squared\_error: 0.5423 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0591  
Epoch 285/500  
614/614 [=====] - 0s 129us/sample - loss: 0.9698 -  
y1\_output\_loss: 0.1893 - y2\_output\_loss: 0.7721 -  
y1\_output\_root\_mean\_squared\_error: 0.4368 - y2\_output\_root\_mean\_squared\_error:  
0.8826 - val\_loss: 1.4201 - val\_y1\_output\_loss: 0.3023 - val\_y2\_output\_loss:  
1.1229 - val\_y1\_output\_root\_mean\_squared\_error: 0.5544 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0548  
Epoch 286/500  
614/614 [=====] - 0s 131us/sample - loss: 0.6664 -  
y1\_output\_loss: 0.1310 - y2\_output\_loss: 0.5294 -  
y1\_output\_root\_mean\_squared\_error: 0.3634 - y2\_output\_root\_mean\_squared\_error:  
0.7309 - val\_loss: 1.7706 - val\_y1\_output\_loss: 0.2684 - val\_y2\_output\_loss:  
1.5429 - val\_y1\_output\_root\_mean\_squared\_error: 0.5268 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2219  
Epoch 287/500  
614/614 [=====] - 0s 126us/sample - loss: 0.6741 -  
y1\_output\_loss: 0.1468 - y2\_output\_loss: 0.5300 -  
y1\_output\_root\_mean\_squared\_error: 0.3831 - y2\_output\_root\_mean\_squared\_error:  
0.7262 - val\_loss: 3.1010 - val\_y1\_output\_loss: 0.2730 - val\_y2\_output\_loss:  
2.8781 - val\_y1\_output\_root\_mean\_squared\_error: 0.5314 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6789  
Epoch 288/500  
614/614 [=====] - 0s 121us/sample - loss: 0.6135 -  
y1\_output\_loss: 0.1334 - y2\_output\_loss: 0.4754 -  
y1\_output\_root\_mean\_squared\_error: 0.3666 - y2\_output\_root\_mean\_squared\_error:  
0.6922 - val\_loss: 2.1402 - val\_y1\_output\_loss: 0.3174 - val\_y2\_output\_loss:  
1.8734 - val\_y1\_output\_root\_mean\_squared\_error: 0.5736 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3458  
Epoch 289/500  
614/614 [=====] - 0s 121us/sample - loss: 0.6775 -  
y1\_output\_loss: 0.1527 - y2\_output\_loss: 0.5214 -  
y1\_output\_root\_mean\_squared\_error: 0.3908 - y2\_output\_root\_mean\_squared\_error:  
0.7244 - val\_loss: 1.4405 - val\_y1\_output\_loss: 0.2961 - val\_y2\_output\_loss:  
1.1273 - val\_y1\_output\_root\_mean\_squared\_error: 0.5472 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0682  
Epoch 290/500  
614/614 [=====] - 0s 128us/sample - loss: 0.7109 -  
y1\_output\_loss: 0.1335 - y2\_output\_loss: 0.5790 -  
y1\_output\_root\_mean\_squared\_error: 0.3617 - y2\_output\_root\_mean\_squared\_error:  
0.7616 - val\_loss: 1.9796 - val\_y1\_output\_loss: 0.4218 - val\_y2\_output\_loss:  
1.5166 - val\_y1\_output\_root\_mean\_squared\_error: 0.6499 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2479

Epoch 291/500  
614/614 [=====] - 0s 120us/sample - loss: 1.1393 -  
y1\_output\_loss: 0.2212 - y2\_output\_loss: 0.9181 -  
y1\_output\_root\_mean\_squared\_error: 0.4723 - y2\_output\_root\_mean\_squared\_error:  
0.9572 - val\_loss: 2.1636 - val\_y1\_output\_loss: 0.2789 - val\_y2\_output\_loss:  
1.9211 - val\_y1\_output\_root\_mean\_squared\_error: 0.5295 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3723  
Epoch 292/500  
614/614 [=====] - 0s 120us/sample - loss: 0.6637 -  
y1\_output\_loss: 0.1483 - y2\_output\_loss: 0.5275 -  
y1\_output\_root\_mean\_squared\_error: 0.3849 - y2\_output\_root\_mean\_squared\_error:  
0.7180 - val\_loss: 5.6005 - val\_y1\_output\_loss: 0.4236 - val\_y2\_output\_loss:  
5.2890 - val\_y1\_output\_root\_mean\_squared\_error: 0.6603 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2726  
Epoch 293/500  
614/614 [=====] - 0s 121us/sample - loss: 0.9706 -  
y1\_output\_loss: 0.2158 - y2\_output\_loss: 0.7487 -  
y1\_output\_root\_mean\_squared\_error: 0.4647 - y2\_output\_root\_mean\_squared\_error:  
0.8687 - val\_loss: 1.5530 - val\_y1\_output\_loss: 0.3241 - val\_y2\_output\_loss:  
1.2540 - val\_y1\_output\_root\_mean\_squared\_error: 0.5749 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1056  
Epoch 294/500  
614/614 [=====] - 0s 120us/sample - loss: 0.7281 -  
y1\_output\_loss: 0.1351 - y2\_output\_loss: 0.5944 -  
y1\_output\_root\_mean\_squared\_error: 0.3672 - y2\_output\_root\_mean\_squared\_error:  
0.7703 - val\_loss: 1.2777 - val\_y1\_output\_loss: 0.2771 - val\_y2\_output\_loss:  
0.9937 - val\_y1\_output\_root\_mean\_squared\_error: 0.5272 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9999  
Epoch 295/500  
614/614 [=====] - 0s 122us/sample - loss: 0.7098 -  
y1\_output\_loss: 0.1307 - y2\_output\_loss: 0.5798 -  
y1\_output\_root\_mean\_squared\_error: 0.3602 - y2\_output\_root\_mean\_squared\_error:  
0.7616 - val\_loss: 1.9947 - val\_y1\_output\_loss: 0.4609 - val\_y2\_output\_loss:  
1.5566 - val\_y1\_output\_root\_mean\_squared\_error: 0.6881 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2334  
Epoch 296/500  
614/614 [=====] - 0s 122us/sample - loss: 0.6859 -  
y1\_output\_loss: 0.1447 - y2\_output\_loss: 0.5574 -  
y1\_output\_root\_mean\_squared\_error: 0.3805 - y2\_output\_root\_mean\_squared\_error:  
0.7356 - val\_loss: 4.8272 - val\_y1\_output\_loss: 0.3143 - val\_y2\_output\_loss:  
4.6238 - val\_y1\_output\_root\_mean\_squared\_error: 0.5640 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1235  
Epoch 297/500  
614/614 [=====] - 0s 122us/sample - loss: 0.9430 -  
y1\_output\_loss: 0.1893 - y2\_output\_loss: 0.7474 -  
y1\_output\_root\_mean\_squared\_error: 0.4369 - y2\_output\_root\_mean\_squared\_error:  
0.8672 - val\_loss: 1.3002 - val\_y1\_output\_loss: 0.2482 - val\_y2\_output\_loss:  
1.0555 - val\_y1\_output\_root\_mean\_squared\_error: 0.5051 -

```

val_y2_output_root_mean_squared_error: 1.0223
Epoch 298/500
614/614 [=====] - 0s 121us/sample - loss: 0.7477 -
y1_output_loss: 0.1340 - y2_output_loss: 0.6125 -
y1_output_root_mean_squared_error: 0.3671 - y2_output_root_mean_squared_error:
0.7829 - val_loss: 1.2974 - val_y1_output_loss: 0.2548 - val_y2_output_loss:
1.0506 - val_y1_output_root_mean_squared_error: 0.5116 -
val_y2_output_root_mean_squared_error: 1.0177
Epoch 299/500
614/614 [=====] - 0s 121us/sample - loss: 0.6517 -
y1_output_loss: 0.1375 - y2_output_loss: 0.5508 -
y1_output_root_mean_squared_error: 0.3713 - y2_output_root_mean_squared_error:
0.7168 - val_loss: 9.5987 - val_y1_output_loss: 0.6021 - val_y2_output_loss:
8.9240 - val_y1_output_root_mean_squared_error: 0.7703 -
val_y2_output_root_mean_squared_error: 3.0009
Epoch 300/500
614/614 [=====] - 0s 121us/sample - loss: 0.9263 -
y1_output_loss: 0.1877 - y2_output_loss: 0.7318 -
y1_output_root_mean_squared_error: 0.4344 - y2_output_root_mean_squared_error:
0.8588 - val_loss: 1.2256 - val_y1_output_loss: 0.2518 - val_y2_output_loss:
0.9664 - val_y1_output_root_mean_squared_error: 0.5066 -
val_y2_output_root_mean_squared_error: 0.9844
Epoch 301/500
614/614 [=====] - 0s 123us/sample - loss: 0.7175 -
y1_output_loss: 0.1453 - y2_output_loss: 0.5760 -
y1_output_root_mean_squared_error: 0.3763 - y2_output_root_mean_squared_error:
0.7589 - val_loss: 2.6931 - val_y1_output_loss: 0.8725 - val_y2_output_loss:
1.8426 - val_y1_output_root_mean_squared_error: 0.9236 -
val_y2_output_root_mean_squared_error: 1.3565
Epoch 302/500
614/614 [=====] - 0s 127us/sample - loss: 0.6788 -
y1_output_loss: 0.1512 - y2_output_loss: 0.5246 -
y1_output_root_mean_squared_error: 0.3887 - y2_output_root_mean_squared_error:
0.7264 - val_loss: 1.4849 - val_y1_output_loss: 0.2813 - val_y2_output_loss:
1.2146 - val_y1_output_root_mean_squared_error: 0.5360 -
val_y2_output_root_mean_squared_error: 1.0944
Epoch 303/500
614/614 [=====] - 0s 123us/sample - loss: 0.8365 -
y1_output_loss: 0.1715 - y2_output_loss: 0.6657 -
y1_output_root_mean_squared_error: 0.4095 - y2_output_root_mean_squared_error:
0.8178 - val_loss: 1.8781 - val_y1_output_loss: 0.5571 - val_y2_output_loss:
1.3732 - val_y1_output_root_mean_squared_error: 0.7399 -
val_y2_output_root_mean_squared_error: 1.1536
Epoch 304/500
614/614 [=====] - 0s 129us/sample - loss: 0.8810 -
y1_output_loss: 0.1866 - y2_output_loss: 0.6873 -
y1_output_root_mean_squared_error: 0.4328 - y2_output_root_mean_squared_error:
0.8329 - val_loss: 1.2844 - val_y1_output_loss: 0.2712 - val_y2_output_loss:

```



1.0074 - val\_y1\_output\_root\_mean\_squared\_error: 0.5257 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0040  
 Epoch 305/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.7492 -  
 y1\_output\_loss: 0.1565 - y2\_output\_loss: 0.5922 -  
 y1\_output\_root\_mean\_squared\_error: 0.3962 - y2\_output\_root\_mean\_squared\_error:  
 0.7695 - val\_loss: 2.0930 - val\_y1\_output\_loss: 0.2837 - val\_y2\_output\_loss:  
 1.8617 - val\_y1\_output\_root\_mean\_squared\_error: 0.5421 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3413  
 Epoch 306/500  
 614/614 [=====] - 0s 122us/sample - loss: 0.7032 -  
 y1\_output\_loss: 0.1450 - y2\_output\_loss: 0.5547 -  
 y1\_output\_root\_mean\_squared\_error: 0.3819 - y2\_output\_root\_mean\_squared\_error:  
 0.7465 - val\_loss: 1.2674 - val\_y1\_output\_loss: 0.2630 - val\_y2\_output\_loss:  
 1.0095 - val\_y1\_output\_root\_mean\_squared\_error: 0.5209 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9980  
 Epoch 307/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.8240 -  
 y1\_output\_loss: 0.1600 - y2\_output\_loss: 0.6658 -  
 y1\_output\_root\_mean\_squared\_error: 0.4000 - y2\_output\_root\_mean\_squared\_error:  
 0.8148 - val\_loss: 2.8361 - val\_y1\_output\_loss: 0.4514 - val\_y2\_output\_loss:  
 2.4459 - val\_y1\_output\_root\_mean\_squared\_error: 0.6771 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5420  
 Epoch 308/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.6877 -  
 y1\_output\_loss: 0.1440 - y2\_output\_loss: 0.5385 -  
 y1\_output\_root\_mean\_squared\_error: 0.3802 - y2\_output\_root\_mean\_squared\_error:  
 0.7370 - val\_loss: 1.4096 - val\_y1\_output\_loss: 0.3031 - val\_y2\_output\_loss:  
 1.1224 - val\_y1\_output\_root\_mean\_squared\_error: 0.5547 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0497  
 Epoch 309/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.6430 -  
 y1\_output\_loss: 0.1479 - y2\_output\_loss: 0.4947 -  
 y1\_output\_root\_mean\_squared\_error: 0.3835 - y2\_output\_root\_mean\_squared\_error:  
 0.7042 - val\_loss: 1.2335 - val\_y1\_output\_loss: 0.2449 - val\_y2\_output\_loss:  
 0.9864 - val\_y1\_output\_root\_mean\_squared\_error: 0.5031 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9901  
 Epoch 310/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.6545 -  
 y1\_output\_loss: 0.1416 - y2\_output\_loss: 0.5091 -  
 y1\_output\_root\_mean\_squared\_error: 0.3764 - y2\_output\_root\_mean\_squared\_error:  
 0.7161 - val\_loss: 1.2696 - val\_y1\_output\_loss: 0.3109 - val\_y2\_output\_loss:  
 0.9527 - val\_y1\_output\_root\_mean\_squared\_error: 0.5598 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9779  
 Epoch 311/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.7963 -  
 y1\_output\_loss: 0.1549 - y2\_output\_loss: 0.6355 -  
 y1\_output\_root\_mean\_squared\_error: 0.3950 - y2\_output\_root\_mean\_squared\_error:

0.8001 - val\_loss: 1.5707 - val\_y1\_output\_loss: 0.2605 - val\_y2\_output\_loss:  
 1.3354 - val\_y1\_output\_root\_mean\_squared\_error: 0.5195 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1405  
 Epoch 312/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.7475 -  
 y1\_output\_loss: 0.1568 - y2\_output\_loss: 0.5883 -  
 y1\_output\_root\_mean\_squared\_error: 0.3955 - y2\_output\_root\_mean\_squared\_error:  
 0.7688 - val\_loss: 1.7093 - val\_y1\_output\_loss: 0.3457 - val\_y2\_output\_loss:  
 1.3783 - val\_y1\_output\_root\_mean\_squared\_error: 0.5839 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1698  
 Epoch 313/500  
 614/614 [=====] - 0s 123us/sample - loss: 0.6129 -  
 y1\_output\_loss: 0.1353 - y2\_output\_loss: 0.4752 -  
 y1\_output\_root\_mean\_squared\_error: 0.3688 - y2\_output\_root\_mean\_squared\_error:  
 0.6906 - val\_loss: 1.4281 - val\_y1\_output\_loss: 0.3192 - val\_y2\_output\_loss:  
 1.1322 - val\_y1\_output\_root\_mean\_squared\_error: 0.5682 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0513  
 Epoch 314/500  
 614/614 [=====] - 0s 131us/sample - loss: 0.7803 -  
 y1\_output\_loss: 0.1634 - y2\_output\_loss: 0.6121 -  
 y1\_output\_root\_mean\_squared\_error: 0.4053 - y2\_output\_root\_mean\_squared\_error:  
 0.7849 - val\_loss: 1.4109 - val\_y1\_output\_loss: 0.3398 - val\_y2\_output\_loss:  
 1.0471 - val\_y1\_output\_root\_mean\_squared\_error: 0.5838 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0344  
 Epoch 315/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.8081 -  
 y1\_output\_loss: 0.1727 - y2\_output\_loss: 0.6356 -  
 y1\_output\_root\_mean\_squared\_error: 0.4142 - y2\_output\_root\_mean\_squared\_error:  
 0.7978 - val\_loss: 3.1066 - val\_y1\_output\_loss: 0.8843 - val\_y2\_output\_loss:  
 2.2751 - val\_y1\_output\_root\_mean\_squared\_error: 0.9414 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4901  
 Epoch 316/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.8921 -  
 y1\_output\_loss: 0.1643 - y2\_output\_loss: 0.7221 -  
 y1\_output\_root\_mean\_squared\_error: 0.4066 - y2\_output\_root\_mean\_squared\_error:  
 0.8525 - val\_loss: 1.4489 - val\_y1\_output\_loss: 0.3285 - val\_y2\_output\_loss:  
 1.1331 - val\_y1\_output\_root\_mean\_squared\_error: 0.5739 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0581  
 Epoch 317/500  
 614/614 [=====] - 0s 119us/sample - loss: 0.6139 -  
 y1\_output\_loss: 0.1343 - y2\_output\_loss: 0.4800 -  
 y1\_output\_root\_mean\_squared\_error: 0.3660 - y2\_output\_root\_mean\_squared\_error:  
 0.6927 - val\_loss: 1.5810 - val\_y1\_output\_loss: 0.3227 - val\_y2\_output\_loss:  
 1.2377 - val\_y1\_output\_root\_mean\_squared\_error: 0.5691 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1212  
 Epoch 318/500  
 614/614 [=====] - 0s 120us/sample - loss: 0.8458 -  
 y1\_output\_loss: 0.1571 - y2\_output\_loss: 0.6830 -

y1\_output\_root\_mean\_squared\_error: 0.3960 - y2\_output\_root\_mean\_squared\_error:  
0.8300 - val\_loss: 1.5397 - val\_y1\_output\_loss: 0.3985 - val\_y2\_output\_loss:  
1.1644 - val\_y1\_output\_root\_mean\_squared\_error: 0.6328 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0674  
Epoch 319/500  
614/614 [=====] - 0s 124us/sample - loss: 0.7564 -  
y1\_output\_loss: 0.1542 - y2\_output\_loss: 0.6143 -  
y1\_output\_root\_mean\_squared\_error: 0.3943 - y2\_output\_root\_mean\_squared\_error:  
0.7752 - val\_loss: 2.0721 - val\_y1\_output\_loss: 0.3887 - val\_y2\_output\_loss:  
1.6303 - val\_y1\_output\_root\_mean\_squared\_error: 0.6300 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2943  
Epoch 320/500  
614/614 [=====] - 0s 129us/sample - loss: 0.7441 -  
y1\_output\_loss: 0.1530 - y2\_output\_loss: 0.6138 -  
y1\_output\_root\_mean\_squared\_error: 0.3897 - y2\_output\_root\_mean\_squared\_error:  
0.7696 - val\_loss: 6.2099 - val\_y1\_output\_loss: 0.4759 - val\_y2\_output\_loss:  
5.8963 - val\_y1\_output\_root\_mean\_squared\_error: 0.6953 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3930  
Epoch 321/500  
614/614 [=====] - 0s 119us/sample - loss: 0.7353 -  
y1\_output\_loss: 0.1446 - y2\_output\_loss: 0.6061 -  
y1\_output\_root\_mean\_squared\_error: 0.3794 - y2\_output\_root\_mean\_squared\_error:  
0.7690 - val\_loss: 4.8147 - val\_y1\_output\_loss: 0.3600 - val\_y2\_output\_loss:  
4.5472 - val\_y1\_output\_root\_mean\_squared\_error: 0.6067 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1087  
Epoch 322/500  
614/614 [=====] - 0s 130us/sample - loss: 1.0000 -  
y1\_output\_loss: 0.1935 - y2\_output\_loss: 0.8049 -  
y1\_output\_root\_mean\_squared\_error: 0.4383 - y2\_output\_root\_mean\_squared\_error:  
0.8989 - val\_loss: 1.5189 - val\_y1\_output\_loss: 0.2664 - val\_y2\_output\_loss:  
1.2674 - val\_y1\_output\_root\_mean\_squared\_error: 0.5184 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1181  
Epoch 323/500  
614/614 [=====] - 0s 127us/sample - loss: 0.4989 -  
y1\_output\_loss: 0.1343 - y2\_output\_loss: 0.3622 -  
y1\_output\_root\_mean\_squared\_error: 0.3660 - y2\_output\_root\_mean\_squared\_error:  
0.6041 - val\_loss: 1.4384 - val\_y1\_output\_loss: 0.3044 - val\_y2\_output\_loss:  
1.1563 - val\_y1\_output\_root\_mean\_squared\_error: 0.5576 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0618  
Epoch 324/500  
614/614 [=====] - 0s 122us/sample - loss: 0.6488 -  
y1\_output\_loss: 0.1358 - y2\_output\_loss: 0.5115 -  
y1\_output\_root\_mean\_squared\_error: 0.3675 - y2\_output\_root\_mean\_squared\_error:  
0.7167 - val\_loss: 1.9562 - val\_y1\_output\_loss: 0.5249 - val\_y2\_output\_loss:  
1.4296 - val\_y1\_output\_root\_mean\_squared\_error: 0.7198 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1992  
Epoch 325/500  
614/614 [=====] - 0s 128us/sample - loss: 0.6560 -

```

y1_output_loss: 0.1656 - y2_output_loss: 0.4891 -
y1_output_root_mean_squared_error: 0.4060 - y2_output_root_mean_squared_error:
0.7008 - val_loss: 1.4407 - val_y1_output_loss: 0.3612 - val_y2_output_loss:
1.0875 - val_y1_output_root_mean_squared_error: 0.6054 -
val_y2_output_root_mean_squared_error: 1.0364
Epoch 326/500
614/614 [=====] - 0s 125us/sample - loss: 0.9861 -
y1_output_loss: 0.2081 - y2_output_loss: 0.7701 -
y1_output_root_mean_squared_error: 0.4580 - y2_output_root_mean_squared_error:
0.8811 - val_loss: 1.2739 - val_y1_output_loss: 0.3212 - val_y2_output_loss:
0.9633 - val_y1_output_root_mean_squared_error: 0.5660 -
val_y2_output_root_mean_squared_error: 0.9765
Epoch 327/500
614/614 [=====] - 0s 129us/sample - loss: 0.9912 -
y1_output_loss: 0.1964 - y2_output_loss: 0.7895 -
y1_output_root_mean_squared_error: 0.4450 - y2_output_root_mean_squared_error:
0.8906 - val_loss: 1.2321 - val_y1_output_loss: 0.2760 - val_y2_output_loss:
0.9399 - val_y1_output_root_mean_squared_error: 0.5327 -
val_y2_output_root_mean_squared_error: 0.9738
Epoch 328/500
614/614 [=====] - 0s 129us/sample - loss: 0.6438 -
y1_output_loss: 0.1270 - y2_output_loss: 0.5122 -
y1_output_root_mean_squared_error: 0.3575 - y2_output_root_mean_squared_error:
0.7183 - val_loss: 1.2401 - val_y1_output_loss: 0.2466 - val_y2_output_loss:
1.0132 - val_y1_output_root_mean_squared_error: 0.5009 -
val_y2_output_root_mean_squared_error: 0.9946
Epoch 329/500
614/614 [=====] - 0s 123us/sample - loss: 0.7564 -
y1_output_loss: 0.1701 - y2_output_loss: 0.5819 -
y1_output_root_mean_squared_error: 0.4141 - y2_output_root_mean_squared_error:
0.7649 - val_loss: 2.1267 - val_y1_output_loss: 0.3061 - val_y2_output_loss:
1.8938 - val_y1_output_root_mean_squared_error: 0.5582 -
val_y2_output_root_mean_squared_error: 1.3472
Epoch 330/500
614/614 [=====] - 0s 129us/sample - loss: 1.2462 -
y1_output_loss: 0.2589 - y2_output_loss: 0.9852 -
y1_output_root_mean_squared_error: 0.5108 - y2_output_root_mean_squared_error:
0.9926 - val_loss: 2.1141 - val_y1_output_loss: 0.3227 - val_y2_output_loss:
1.8312 - val_y1_output_root_mean_squared_error: 0.5785 -
val_y2_output_root_mean_squared_error: 1.3340
Epoch 331/500
614/614 [=====] - 0s 136us/sample - loss: 0.7028 -
y1_output_loss: 0.1581 - y2_output_loss: 0.5416 -
y1_output_root_mean_squared_error: 0.3986 - y2_output_root_mean_squared_error:
0.7376 - val_loss: 1.6609 - val_y1_output_loss: 0.3356 - val_y2_output_loss:
1.3666 - val_y1_output_root_mean_squared_error: 0.5867 -
val_y2_output_root_mean_squared_error: 1.1475
Epoch 332/500

```

614/614 [=====] - 0s 134us/sample - loss: 0.6701 -  
y1\_output\_loss: 0.1631 - y2\_output\_loss: 0.5847 -  
y1\_output\_root\_mean\_squared\_error: 0.3803 - y2\_output\_root\_mean\_squared\_error:  
0.7249 - val\_loss: 25.8079 - val\_y1\_output\_loss: 8.3137 - val\_y2\_output\_loss:  
18.0814 - val\_y1\_output\_root\_mean\_squared\_error: 2.8372 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.2141  
Epoch 333/500  
614/614 [=====] - 0s 128us/sample - loss: 1.0881 -  
y1\_output\_loss: 0.2970 - y2\_output\_loss: 0.7874 -  
y1\_output\_root\_mean\_squared\_error: 0.5458 - y2\_output\_root\_mean\_squared\_error:  
0.8889 - val\_loss: 1.3851 - val\_y1\_output\_loss: 0.3714 - val\_y2\_output\_loss:  
1.0069 - val\_y1\_output\_root\_mean\_squared\_error: 0.6022 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0112  
Epoch 334/500  
614/614 [=====] - 0s 130us/sample - loss: 0.6153 -  
y1\_output\_loss: 0.1234 - y2\_output\_loss: 0.4889 -  
y1\_output\_root\_mean\_squared\_error: 0.3514 - y2\_output\_root\_mean\_squared\_error:  
0.7013 - val\_loss: 1.2109 - val\_y1\_output\_loss: 0.2479 - val\_y2\_output\_loss:  
0.9677 - val\_y1\_output\_root\_mean\_squared\_error: 0.5039 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9783  
Epoch 335/500  
614/614 [=====] - 0s 125us/sample - loss: 0.9449 -  
y1\_output\_loss: 0.2018 - y2\_output\_loss: 0.7355 -  
y1\_output\_root\_mean\_squared\_error: 0.4514 - y2\_output\_root\_mean\_squared\_error:  
0.8609 - val\_loss: 1.2387 - val\_y1\_output\_loss: 0.2529 - val\_y2\_output\_loss:  
0.9690 - val\_y1\_output\_root\_mean\_squared\_error: 0.5104 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9890  
Epoch 336/500  
614/614 [=====] - 0s 122us/sample - loss: 0.8132 -  
y1\_output\_loss: 0.1557 - y2\_output\_loss: 0.6518 -  
y1\_output\_root\_mean\_squared\_error: 0.3950 - y2\_output\_root\_mean\_squared\_error:  
0.8106 - val\_loss: 1.6133 - val\_y1\_output\_loss: 0.3561 - val\_y2\_output\_loss:  
1.2735 - val\_y1\_output\_root\_mean\_squared\_error: 0.6057 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1164  
Epoch 337/500  
614/614 [=====] - 0s 121us/sample - loss: 0.6418 -  
y1\_output\_loss: 0.1360 - y2\_output\_loss: 0.5068 -  
y1\_output\_root\_mean\_squared\_error: 0.3685 - y2\_output\_root\_mean\_squared\_error:  
0.7114 - val\_loss: 1.2904 - val\_y1\_output\_loss: 0.2869 - val\_y2\_output\_loss:  
1.0146 - val\_y1\_output\_root\_mean\_squared\_error: 0.5416 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9985  
Epoch 338/500  
614/614 [=====] - 0s 128us/sample - loss: 0.4608 -  
y1\_output\_loss: 0.1218 - y2\_output\_loss: 0.3420 -  
y1\_output\_root\_mean\_squared\_error: 0.3487 - y2\_output\_root\_mean\_squared\_error:  
0.5824 - val\_loss: 2.1531 - val\_y1\_output\_loss: 0.4786 - val\_y2\_output\_loss:  
1.6770 - val\_y1\_output\_root\_mean\_squared\_error: 0.6871 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2965

Epoch 339/500

614/614 [=====] - 0s 133us/sample - loss: 0.8055 -  
y1\_output\_loss: 0.1635 - y2\_output\_loss: 0.6408 -  
y1\_output\_root\_mean\_squared\_error: 0.4052 - y2\_output\_root\_mean\_squared\_error:  
0.8008 - val\_loss: 1.3055 - val\_y1\_output\_loss: 0.2722 - val\_y2\_output\_loss:  
1.0594 - val\_y1\_output\_root\_mean\_squared\_error: 0.5246 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0150

Epoch 340/500

614/614 [=====] - 0s 127us/sample - loss: 0.5675 -  
y1\_output\_loss: 0.1377 - y2\_output\_loss: 0.4259 -  
y1\_output\_root\_mean\_squared\_error: 0.3714 - y2\_output\_root\_mean\_squared\_error:  
0.6554 - val\_loss: 1.7748 - val\_y1\_output\_loss: 0.5463 - val\_y2\_output\_loss:  
1.2815 - val\_y1\_output\_root\_mean\_squared\_error: 0.7313 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1136

Epoch 341/500

614/614 [=====] - 0s 119us/sample - loss: 0.5117 -  
y1\_output\_loss: 0.1300 - y2\_output\_loss: 0.3805 -  
y1\_output\_root\_mean\_squared\_error: 0.3621 - y2\_output\_root\_mean\_squared\_error:  
0.6169 - val\_loss: 1.4350 - val\_y1\_output\_loss: 0.3583 - val\_y2\_output\_loss:  
1.0497 - val\_y1\_output\_root\_mean\_squared\_error: 0.5979 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0380

Epoch 342/500

614/614 [=====] - 0s 123us/sample - loss: 0.6102 -  
y1\_output\_loss: 0.1340 - y2\_output\_loss: 0.4738 -  
y1\_output\_root\_mean\_squared\_error: 0.3671 - y2\_output\_root\_mean\_squared\_error:  
0.6895 - val\_loss: 2.0026 - val\_y1\_output\_loss: 0.2477 - val\_y2\_output\_loss:  
1.7969 - val\_y1\_output\_root\_mean\_squared\_error: 0.5054 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3218

Epoch 343/500

614/614 [=====] - 0s 126us/sample - loss: 0.6267 -  
y1\_output\_loss: 0.1566 - y2\_output\_loss: 0.4656 -  
y1\_output\_root\_mean\_squared\_error: 0.3964 - y2\_output\_root\_mean\_squared\_error:  
0.6853 - val\_loss: 1.3403 - val\_y1\_output\_loss: 0.3396 - val\_y2\_output\_loss:  
1.0299 - val\_y1\_output\_root\_mean\_squared\_error: 0.5820 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0008

Epoch 344/500

614/614 [=====] - 0s 131us/sample - loss: 0.5590 -  
y1\_output\_loss: 0.1263 - y2\_output\_loss: 0.4338 -  
y1\_output\_root\_mean\_squared\_error: 0.3526 - y2\_output\_root\_mean\_squared\_error:  
0.6593 - val\_loss: 2.4531 - val\_y1\_output\_loss: 0.5912 - val\_y2\_output\_loss:  
1.9225 - val\_y1\_output\_root\_mean\_squared\_error: 0.7777 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3595

Epoch 345/500

614/614 [=====] - 0s 122us/sample - loss: 0.6579 -  
y1\_output\_loss: 0.1766 - y2\_output\_loss: 0.4820 -  
y1\_output\_root\_mean\_squared\_error: 0.4200 - y2\_output\_root\_mean\_squared\_error:  
0.6939 - val\_loss: 1.3876 - val\_y1\_output\_loss: 0.2738 - val\_y2\_output\_loss:  
1.1396 - val\_y1\_output\_root\_mean\_squared\_error: 0.5297 -

```

val_y2_output_root_mean_squared_error: 1.0521
Epoch 346/500
614/614 [=====] - 0s 124us/sample - loss: 0.6195 -
y1_output_loss: 0.1497 - y2_output_loss: 0.4700 -
y1_output_root_mean_squared_error: 0.3877 - y2_output_root_mean_squared_error:
0.6850 - val_loss: 1.4830 - val_y1_output_loss: 0.3646 - val_y2_output_loss:
1.0971 - val_y1_output_root_mean_squared_error: 0.5985 -
val_y2_output_root_mean_squared_error: 1.0605
Epoch 347/500
614/614 [=====] - 0s 123us/sample - loss: 0.5759 -
y1_output_loss: 0.1305 - y2_output_loss: 0.4411 -
y1_output_root_mean_squared_error: 0.3624 - y2_output_root_mean_squared_error:
0.6668 - val_loss: 1.2860 - val_y1_output_loss: 0.2893 - val_y2_output_loss:
1.0141 - val_y1_output_root_mean_squared_error: 0.5456 -
val_y2_output_root_mean_squared_error: 0.9941
Epoch 348/500
614/614 [=====] - 0s 124us/sample - loss: 0.4977 -
y1_output_loss: 0.1194 - y2_output_loss: 0.3765 -
y1_output_root_mean_squared_error: 0.3468 - y2_output_root_mean_squared_error:
0.6143 - val_loss: 1.5347 - val_y1_output_loss: 0.2902 - val_y2_output_loss:
1.2800 - val_y1_output_root_mean_squared_error: 0.5442 -
val_y2_output_root_mean_squared_error: 1.1129
Epoch 349/500
614/614 [=====] - 0s 134us/sample - loss: 0.6587 -
y1_output_loss: 0.1367 - y2_output_loss: 0.5173 -
y1_output_root_mean_squared_error: 0.3698 - y2_output_root_mean_squared_error:
0.7224 - val_loss: 1.2822 - val_y1_output_loss: 0.2623 - val_y2_output_loss:
1.0422 - val_y1_output_root_mean_squared_error: 0.5189 -
val_y2_output_root_mean_squared_error: 1.0065
Epoch 350/500
614/614 [=====] - 0s 129us/sample - loss: 0.6085 -
y1_output_loss: 0.1177 - y2_output_loss: 0.4883 -
y1_output_root_mean_squared_error: 0.3442 - y2_output_root_mean_squared_error:
0.7000 - val_loss: 1.5682 - val_y1_output_loss: 0.2772 - val_y2_output_loss:
1.3232 - val_y1_output_root_mean_squared_error: 0.5339 -
val_y2_output_root_mean_squared_error: 1.1327
Epoch 351/500
614/614 [=====] - 0s 126us/sample - loss: 0.5925 -
y1_output_loss: 0.1310 - y2_output_loss: 0.4622 -
y1_output_root_mean_squared_error: 0.3632 - y2_output_root_mean_squared_error:
0.6787 - val_loss: 1.1565 - val_y1_output_loss: 0.2612 - val_y2_output_loss:
0.9033 - val_y1_output_root_mean_squared_error: 0.5163 -
val_y2_output_root_mean_squared_error: 0.9434
Epoch 352/500
614/614 [=====] - 0s 130us/sample - loss: 0.4680 -
y1_output_loss: 0.1328 - y2_output_loss: 0.3384 -
y1_output_root_mean_squared_error: 0.3598 - y2_output_root_mean_squared_error:
0.5818 - val_loss: 2.2737 - val_y1_output_loss: 0.3530 - val_y2_output_loss:

```

1.9270 - val\_y1\_output\_root\_mean\_squared\_error: 0.5938 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3860  
 Epoch 353/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.7372 -  
 y1\_output\_loss: 0.1831 - y2\_output\_loss: 0.5534 -  
 y1\_output\_root\_mean\_squared\_error: 0.4269 - y2\_output\_root\_mean\_squared\_error:  
 0.7449 - val\_loss: 2.7142 - val\_y1\_output\_loss: 0.5534 - val\_y2\_output\_loss:  
 2.2355 - val\_y1\_output\_root\_mean\_squared\_error: 0.7488 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4674  
 Epoch 354/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.6183 -  
 y1\_output\_loss: 0.1360 - y2\_output\_loss: 0.4827 -  
 y1\_output\_root\_mean\_squared\_error: 0.3622 - y2\_output\_root\_mean\_squared\_error:  
 0.6979 - val\_loss: 1.3208 - val\_y1\_output\_loss: 0.3720 - val\_y2\_output\_loss:  
 0.9774 - val\_y1\_output\_root\_mean\_squared\_error: 0.6123 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9725  
 Epoch 355/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.8650 -  
 y1\_output\_loss: 0.2134 - y2\_output\_loss: 0.6467 -  
 y1\_output\_root\_mean\_squared\_error: 0.4637 - y2\_output\_root\_mean\_squared\_error:  
 0.8062 - val\_loss: 1.3140 - val\_y1\_output\_loss: 0.2628 - val\_y2\_output\_loss:  
 1.0939 - val\_y1\_output\_root\_mean\_squared\_error: 0.5207 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0212  
 Epoch 356/500  
 614/614 [=====] - 0s 122us/sample - loss: 0.6433 -  
 y1\_output\_loss: 0.1350 - y2\_output\_loss: 0.5367 -  
 y1\_output\_root\_mean\_squared\_error: 0.3690 - y2\_output\_root\_mean\_squared\_error:  
 0.7121 - val\_loss: 8.8334 - val\_y1\_output\_loss: 0.6610 - val\_y2\_output\_loss:  
 8.4478 - val\_y1\_output\_root\_mean\_squared\_error: 0.8047 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.8611  
 Epoch 357/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.9886 -  
 y1\_output\_loss: 0.1850 - y2\_output\_loss: 0.8006 -  
 y1\_output\_root\_mean\_squared\_error: 0.4307 - y2\_output\_root\_mean\_squared\_error:  
 0.8962 - val\_loss: 1.9911 - val\_y1\_output\_loss: 0.5507 - val\_y2\_output\_loss:  
 1.4766 - val\_y1\_output\_root\_mean\_squared\_error: 0.7463 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1975  
 Epoch 358/500  
 614/614 [=====] - 0s 122us/sample - loss: 0.6176 -  
 y1\_output\_loss: 0.1361 - y2\_output\_loss: 0.4827 -  
 y1\_output\_root\_mean\_squared\_error: 0.3671 - y2\_output\_root\_mean\_squared\_error:  
 0.6949 - val\_loss: 1.3812 - val\_y1\_output\_loss: 0.2715 - val\_y2\_output\_loss:  
 1.1541 - val\_y1\_output\_root\_mean\_squared\_error: 0.5243 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0518  
 Epoch 359/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.5405 -  
 y1\_output\_loss: 0.1304 - y2\_output\_loss: 0.4067 -  
 y1\_output\_root\_mean\_squared\_error: 0.3620 - y2\_output\_root\_mean\_squared\_error:



0.6399 - val\_loss: 1.2222 - val\_y1\_output\_loss: 0.2976 - val\_y2\_output\_loss:  
 0.9237 - val\_y1\_output\_root\_mean\_squared\_error: 0.5485 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9599  
 Epoch 360/500  
 614/614 [=====] - 0s 123us/sample - loss: 0.7206 -  
 y1\_output\_loss: 0.1853 - y2\_output\_loss: 0.5603 -  
 y1\_output\_root\_mean\_squared\_error: 0.4239 - y2\_output\_root\_mean\_squared\_error:  
 0.7355 - val\_loss: 2.4561 - val\_y1\_output\_loss: 0.8429 - val\_y2\_output\_loss:  
 1.5756 - val\_y1\_output\_root\_mean\_squared\_error: 0.9160 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2716  
 Epoch 361/500  
 614/614 [=====] - 0s 122us/sample - loss: 0.7967 -  
 y1\_output\_loss: 0.1662 - y2\_output\_loss: 0.6277 -  
 y1\_output\_root\_mean\_squared\_error: 0.4090 - y2\_output\_root\_mean\_squared\_error:  
 0.7934 - val\_loss: 1.3634 - val\_y1\_output\_loss: 0.3076 - val\_y2\_output\_loss:  
 1.0250 - val\_y1\_output\_root\_mean\_squared\_error: 0.5571 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0262  
 Epoch 362/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.6962 -  
 y1\_output\_loss: 0.1668 - y2\_output\_loss: 0.5244 -  
 y1\_output\_root\_mean\_squared\_error: 0.4097 - y2\_output\_root\_mean\_squared\_error:  
 0.7269 - val\_loss: 1.1671 - val\_y1\_output\_loss: 0.2720 - val\_y2\_output\_loss:  
 0.9016 - val\_y1\_output\_root\_mean\_squared\_error: 0.5289 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9420  
 Epoch 363/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.6664 -  
 y1\_output\_loss: 0.1377 - y2\_output\_loss: 0.5394 -  
 y1\_output\_root\_mean\_squared\_error: 0.3724 - y2\_output\_root\_mean\_squared\_error:  
 0.7265 - val\_loss: 1.7267 - val\_y1\_output\_loss: 0.2668 - val\_y2\_output\_loss:  
 1.4243 - val\_y1\_output\_root\_mean\_squared\_error: 0.5213 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2062  
 Epoch 364/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.5182 -  
 y1\_output\_loss: 0.1176 - y2\_output\_loss: 0.3965 -  
 y1\_output\_root\_mean\_squared\_error: 0.3438 - y2\_output\_root\_mean\_squared\_error:  
 0.6325 - val\_loss: 1.2411 - val\_y1\_output\_loss: 0.2509 - val\_y2\_output\_loss:  
 1.0149 - val\_y1\_output\_root\_mean\_squared\_error: 0.5057 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9927  
 Epoch 365/500  
 614/614 [=====] - 0s 126us/sample - loss: 0.5731 -  
 y1\_output\_loss: 0.1556 - y2\_output\_loss: 0.4143 -  
 y1\_output\_root\_mean\_squared\_error: 0.3949 - y2\_output\_root\_mean\_squared\_error:  
 0.6459 - val\_loss: 1.2466 - val\_y1\_output\_loss: 0.3333 - val\_y2\_output\_loss:  
 0.9107 - val\_y1\_output\_root\_mean\_squared\_error: 0.5814 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9532  
 Epoch 366/500  
 614/614 [=====] - 0s 123us/sample - loss: 0.5987 -  
 y1\_output\_loss: 0.1343 - y2\_output\_loss: 0.4640 -

y1\_output\_root\_mean\_squared\_error: 0.3675 - y2\_output\_root\_mean\_squared\_error:  
 0.6809 - val\_loss: 1.5640 - val\_y1\_output\_loss: 0.2664 - val\_y2\_output\_loss:  
 1.2672 - val\_y1\_output\_root\_mean\_squared\_error: 0.5212 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1368  
 Epoch 367/500  
 614/614 [=====] - 0s 122us/sample - loss: 0.6673 -  
 y1\_output\_loss: 0.1489 - y2\_output\_loss: 0.5135 -  
 y1\_output\_root\_mean\_squared\_error: 0.3868 - y2\_output\_root\_mean\_squared\_error:  
 0.7195 - val\_loss: 1.3768 - val\_y1\_output\_loss: 0.3903 - val\_y2\_output\_loss:  
 0.9917 - val\_y1\_output\_root\_mean\_squared\_error: 0.6313 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9891  
 Epoch 368/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.5018 -  
 y1\_output\_loss: 0.1313 - y2\_output\_loss: 0.3674 -  
 y1\_output\_root\_mean\_squared\_error: 0.3633 - y2\_output\_root\_mean\_squared\_error:  
 0.6081 - val\_loss: 1.1679 - val\_y1\_output\_loss: 0.2847 - val\_y2\_output\_loss:  
 0.8916 - val\_y1\_output\_root\_mean\_squared\_error: 0.5382 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9371  
 Epoch 369/500  
 614/614 [=====] - 0s 123us/sample - loss: 0.4145 -  
 y1\_output\_loss: 0.1077 - y2\_output\_loss: 0.3046 -  
 y1\_output\_root\_mean\_squared\_error: 0.3292 - y2\_output\_root\_mean\_squared\_error:  
 0.5533 - val\_loss: 1.0848 - val\_y1\_output\_loss: 0.2507 - val\_y2\_output\_loss:  
 0.8334 - val\_y1\_output\_root\_mean\_squared\_error: 0.5095 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9084  
 Epoch 370/500  
 614/614 [=====] - 0s 121us/sample - loss: 0.4598 -  
 y1\_output\_loss: 0.1117 - y2\_output\_loss: 0.3469 -  
 y1\_output\_root\_mean\_squared\_error: 0.3352 - y2\_output\_root\_mean\_squared\_error:  
 0.5895 - val\_loss: 1.3608 - val\_y1\_output\_loss: 0.3592 - val\_y2\_output\_loss:  
 1.0199 - val\_y1\_output\_root\_mean\_squared\_error: 0.6022 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9991  
 Epoch 371/500  
 614/614 [=====] - 0s 118us/sample - loss: 0.5225 -  
 y1\_output\_loss: 0.1255 - y2\_output\_loss: 0.3964 -  
 y1\_output\_root\_mean\_squared\_error: 0.3536 - y2\_output\_root\_mean\_squared\_error:  
 0.6305 - val\_loss: 1.2603 - val\_y1\_output\_loss: 0.2626 - val\_y2\_output\_loss:  
 1.0199 - val\_y1\_output\_root\_mean\_squared\_error: 0.5211 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9943  
 Epoch 372/500  
 614/614 [=====] - 0s 121us/sample - loss: 0.5055 -  
 y1\_output\_loss: 0.1230 - y2\_output\_loss: 0.3803 -  
 y1\_output\_root\_mean\_squared\_error: 0.3517 - y2\_output\_root\_mean\_squared\_error:  
 0.6179 - val\_loss: 1.2552 - val\_y1\_output\_loss: 0.2906 - val\_y2\_output\_loss:  
 1.0068 - val\_y1\_output\_root\_mean\_squared\_error: 0.5440 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9794  
 Epoch 373/500  
 614/614 [=====] - 0s 121us/sample - loss: 0.4471 -

```

y1_output_loss: 0.1113 - y2_output_loss: 0.3328 -
y1_output_root_mean_squared_error: 0.3348 - y2_output_root_mean_squared_error:
0.5788 - val_loss: 1.1105 - val_y1_output_loss: 0.2718 - val_y2_output_loss:
0.8422 - val_y1_output_root_mean_squared_error: 0.5267 -
val_y2_output_root_mean_squared_error: 0.9127
Epoch 374/500
614/614 [=====] - 0s 119us/sample - loss: 0.8423 -
y1_output_loss: 0.1870 - y2_output_loss: 0.6482 -
y1_output_root_mean_squared_error: 0.4342 - y2_output_root_mean_squared_error:
0.8086 - val_loss: 1.2164 - val_y1_output_loss: 0.3640 - val_y2_output_loss:
0.8685 - val_y1_output_root_mean_squared_error: 0.6035 -
val_y2_output_root_mean_squared_error: 0.9231
Epoch 375/500
614/614 [=====] - 0s 119us/sample - loss: 0.5700 -
y1_output_loss: 0.1369 - y2_output_loss: 0.4285 -
y1_output_root_mean_squared_error: 0.3713 - y2_output_root_mean_squared_error:
0.6574 - val_loss: 1.1912 - val_y1_output_loss: 0.2962 - val_y2_output_loss:
0.9035 - val_y1_output_root_mean_squared_error: 0.5479 -
val_y2_output_root_mean_squared_error: 0.9439
Epoch 376/500
614/614 [=====] - 0s 120us/sample - loss: 0.5931 -
y1_output_loss: 0.1307 - y2_output_loss: 0.4604 -
y1_output_root_mean_squared_error: 0.3617 - y2_output_root_mean_squared_error:
0.6799 - val_loss: 1.3081 - val_y1_output_loss: 0.3289 - val_y2_output_loss:
0.9906 - val_y1_output_root_mean_squared_error: 0.5790 -
val_y2_output_root_mean_squared_error: 0.9863
Epoch 377/500
614/614 [=====] - 0s 119us/sample - loss: 0.5530 -
y1_output_loss: 0.1121 - y2_output_loss: 0.4405 -
y1_output_root_mean_squared_error: 0.3354 - y2_output_root_mean_squared_error:
0.6637 - val_loss: 1.3227 - val_y1_output_loss: 0.2724 - val_y2_output_loss:
1.0752 - val_y1_output_root_mean_squared_error: 0.5312 -
val_y2_output_root_mean_squared_error: 1.0201
Epoch 378/500
614/614 [=====] - 0s 120us/sample - loss: 0.4339 -
y1_output_loss: 0.1110 - y2_output_loss: 0.3235 -
y1_output_root_mean_squared_error: 0.3326 - y2_output_root_mean_squared_error:
0.5686 - val_loss: 1.2631 - val_y1_output_loss: 0.3781 - val_y2_output_loss:
0.8865 - val_y1_output_root_mean_squared_error: 0.6242 -
val_y2_output_root_mean_squared_error: 0.9346
Epoch 379/500
614/614 [=====] - 0s 120us/sample - loss: 0.5374 -
y1_output_loss: 0.1234 - y2_output_loss: 0.4096 -
y1_output_root_mean_squared_error: 0.3525 - y2_output_root_mean_squared_error:
0.6427 - val_loss: 1.2606 - val_y1_output_loss: 0.3771 - val_y2_output_loss:
0.9051 - val_y1_output_root_mean_squared_error: 0.6135 -
val_y2_output_root_mean_squared_error: 0.9403
Epoch 380/500

```

```

614/614 [=====] - 0s 119us/sample - loss: 0.4434 -
y1_output_loss: 0.1041 - y2_output_loss: 0.3376 -
y1_output_root_mean_squared_error: 0.3218 - y2_output_root_mean_squared_error:
0.5830 - val_loss: 1.4189 - val_y1_output_loss: 0.3506 - val_y2_output_loss:
1.0721 - val_y1_output_root_mean_squared_error: 0.5895 -
val_y2_output_root_mean_squared_error: 1.0351
Epoch 381/500
614/614 [=====] - 0s 120us/sample - loss: 0.4926 -
y1_output_loss: 0.1245 - y2_output_loss: 0.3699 -
y1_output_root_mean_squared_error: 0.3498 - y2_output_root_mean_squared_error:
0.6085 - val_loss: 1.9679 - val_y1_output_loss: 0.5441 - val_y2_output_loss:
1.4679 - val_y1_output_root_mean_squared_error: 0.7384 -
val_y2_output_root_mean_squared_error: 1.1927
Epoch 382/500
614/614 [=====] - 0s 118us/sample - loss: 0.6141 -
y1_output_loss: 0.1269 - y2_output_loss: 0.4824 -
y1_output_root_mean_squared_error: 0.3567 - y2_output_root_mean_squared_error:
0.6977 - val_loss: 1.1226 - val_y1_output_loss: 0.2876 - val_y2_output_loss:
0.8258 - val_y1_output_root_mean_squared_error: 0.5399 -
val_y2_output_root_mean_squared_error: 0.9116
Epoch 383/500
614/614 [=====] - 0s 123us/sample - loss: 0.4119 -
y1_output_loss: 0.1045 - y2_output_loss: 0.3056 -
y1_output_root_mean_squared_error: 0.3235 - y2_output_root_mean_squared_error:
0.5543 - val_loss: 1.2192 - val_y1_output_loss: 0.3114 - val_y2_output_loss:
0.9252 - val_y1_output_root_mean_squared_error: 0.5643 -
val_y2_output_root_mean_squared_error: 0.9491
Epoch 384/500
614/614 [=====] - 0s 124us/sample - loss: 1.1383 -
y1_output_loss: 0.2647 - y2_output_loss: 0.8639 -
y1_output_root_mean_squared_error: 0.5167 - y2_output_root_mean_squared_error:
0.9334 - val_loss: 1.3601 - val_y1_output_loss: 0.2510 - val_y2_output_loss:
1.1370 - val_y1_output_root_mean_squared_error: 0.5088 -
val_y2_output_root_mean_squared_error: 1.0494
Epoch 385/500
614/614 [=====] - 0s 132us/sample - loss: 0.5322 -
y1_output_loss: 0.1258 - y2_output_loss: 0.4061 -
y1_output_root_mean_squared_error: 0.3549 - y2_output_root_mean_squared_error:
0.6374 - val_loss: 1.1141 - val_y1_output_loss: 0.2958 - val_y2_output_loss:
0.8078 - val_y1_output_root_mean_squared_error: 0.5462 -
val_y2_output_root_mean_squared_error: 0.9032
Epoch 386/500
614/614 [=====] - 0s 126us/sample - loss: 0.4556 -
y1_output_loss: 0.1226 - y2_output_loss: 0.3348 -
y1_output_root_mean_squared_error: 0.3508 - y2_output_root_mean_squared_error:
0.5767 - val_loss: 2.3878 - val_y1_output_loss: 0.3233 - val_y2_output_loss:
2.0995 - val_y1_output_root_mean_squared_error: 0.5782 -
val_y2_output_root_mean_squared_error: 1.4330

```

Epoch 387/500

614/614 [=====] - 0s 126us/sample - loss: 0.6419 -  
y1\_output\_loss: 0.1534 - y2\_output\_loss: 0.5056 -  
y1\_output\_root\_mean\_squared\_error: 0.3932 - y2\_output\_root\_mean\_squared\_error:  
0.6980 - val\_loss: 3.0235 - val\_y1\_output\_loss: 0.4487 - val\_y2\_output\_loss:  
2.6664 - val\_y1\_output\_root\_mean\_squared\_error: 0.6781 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6012

Epoch 388/500

614/614 [=====] - 0s 131us/sample - loss: 0.6025 -  
y1\_output\_loss: 0.1387 - y2\_output\_loss: 0.4592 -  
y1\_output\_root\_mean\_squared\_error: 0.3731 - y2\_output\_root\_mean\_squared\_error:  
0.6807 - val\_loss: 1.0943 - val\_y1\_output\_loss: 0.2610 - val\_y2\_output\_loss:  
0.8413 - val\_y1\_output\_root\_mean\_squared\_error: 0.5169 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9095

Epoch 389/500

614/614 [=====] - 0s 132us/sample - loss: 0.4328 -  
y1\_output\_loss: 0.1107 - y2\_output\_loss: 0.3209 -  
y1\_output\_root\_mean\_squared\_error: 0.3328 - y2\_output\_root\_mean\_squared\_error:  
0.5675 - val\_loss: 1.1269 - val\_y1\_output\_loss: 0.2857 - val\_y2\_output\_loss:  
0.8387 - val\_y1\_output\_root\_mean\_squared\_error: 0.5355 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9166

Epoch 390/500

614/614 [=====] - 0s 132us/sample - loss: 0.5523 -  
y1\_output\_loss: 0.1425 - y2\_output\_loss: 0.4100 -  
y1\_output\_root\_mean\_squared\_error: 0.3769 - y2\_output\_root\_mean\_squared\_error:  
0.6405 - val\_loss: 1.6125 - val\_y1\_output\_loss: 0.3206 - val\_y2\_output\_loss:  
1.2663 - val\_y1\_output\_root\_mean\_squared\_error: 0.5669 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1363

Epoch 391/500

614/614 [=====] - 0s 129us/sample - loss: 0.4824 -  
y1\_output\_loss: 0.1177 - y2\_output\_loss: 0.3651 -  
y1\_output\_root\_mean\_squared\_error: 0.3435 - y2\_output\_root\_mean\_squared\_error:  
0.6037 - val\_loss: 2.0056 - val\_y1\_output\_loss: 0.2771 - val\_y2\_output\_loss:  
1.6733 - val\_y1\_output\_root\_mean\_squared\_error: 0.5324 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3123

Epoch 392/500

614/614 [=====] - 0s 131us/sample - loss: 0.4999 -  
y1\_output\_loss: 0.1173 - y2\_output\_loss: 0.3790 -  
y1\_output\_root\_mean\_squared\_error: 0.3435 - y2\_output\_root\_mean\_squared\_error:  
0.6180 - val\_loss: 1.4244 - val\_y1\_output\_loss: 0.2531 - val\_y2\_output\_loss:  
1.2183 - val\_y1\_output\_root\_mean\_squared\_error: 0.5116 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0783

Epoch 393/500

614/614 [=====] - 0s 129us/sample - loss: 0.5143 -  
y1\_output\_loss: 0.1143 - y2\_output\_loss: 0.3961 -  
y1\_output\_root\_mean\_squared\_error: 0.3389 - y2\_output\_root\_mean\_squared\_error:  
0.6320 - val\_loss: 1.2364 - val\_y1\_output\_loss: 0.2518 - val\_y2\_output\_loss:  
1.0184 - val\_y1\_output\_root\_mean\_squared\_error: 0.5101 -

```

val_y2_output_root_mean_squared_error: 0.9880
Epoch 394/500
614/614 [=====] - 0s 130us/sample - loss: 0.5745 -
y1_output_loss: 0.1303 - y2_output_loss: 0.4400 -
y1_output_root_mean_squared_error: 0.3627 - y2_output_root_mean_squared_error:
0.6656 - val_loss: 1.2088 - val_y1_output_loss: 0.3229 - val_y2_output_loss:
0.8675 - val_y1_output_root_mean_squared_error: 0.5706 -
val_y2_output_root_mean_squared_error: 0.9398
Epoch 395/500
614/614 [=====] - 0s 124us/sample - loss: 0.4941 -
y1_output_loss: 0.1069 - y2_output_loss: 0.3850 -
y1_output_root_mean_squared_error: 0.3281 - y2_output_root_mean_squared_error:
0.6217 - val_loss: 1.6720 - val_y1_output_loss: 0.3056 - val_y2_output_loss:
1.4231 - val_y1_output_root_mean_squared_error: 0.5543 -
val_y2_output_root_mean_squared_error: 1.1682
Epoch 396/500
614/614 [=====] - 0s 124us/sample - loss: 0.4480 -
y1_output_loss: 0.1202 - y2_output_loss: 0.3256 -
y1_output_root_mean_squared_error: 0.3465 - y2_output_root_mean_squared_error:
0.5727 - val_loss: 1.6495 - val_y1_output_loss: 0.5013 - val_y2_output_loss:
1.1701 - val_y1_output_root_mean_squared_error: 0.7126 -
val_y2_output_root_mean_squared_error: 1.0685
Epoch 397/500
614/614 [=====] - 0s 122us/sample - loss: 0.4331 -
y1_output_loss: 0.1101 - y2_output_loss: 0.3195 -
y1_output_root_mean_squared_error: 0.3331 - y2_output_root_mean_squared_error:
0.5676 - val_loss: 1.0901 - val_y1_output_loss: 0.2469 - val_y2_output_loss:
0.8508 - val_y1_output_root_mean_squared_error: 0.5025 -
val_y2_output_root_mean_squared_error: 0.9152
Epoch 398/500
614/614 [=====] - 0s 129us/sample - loss: 0.4279 -
y1_output_loss: 0.0992 - y2_output_loss: 0.3288 -
y1_output_root_mean_squared_error: 0.3149 - y2_output_root_mean_squared_error:
0.5733 - val_loss: 1.2377 - val_y1_output_loss: 0.3021 - val_y2_output_loss:
0.9583 - val_y1_output_root_mean_squared_error: 0.5561 -
val_y2_output_root_mean_squared_error: 0.9636
Epoch 399/500
614/614 [=====] - 0s 131us/sample - loss: 0.4115 -
y1_output_loss: 0.1004 - y2_output_loss: 0.3098 -
y1_output_root_mean_squared_error: 0.3181 - y2_output_root_mean_squared_error:
0.5571 - val_loss: 1.1603 - val_y1_output_loss: 0.2469 - val_y2_output_loss:
0.9500 - val_y1_output_root_mean_squared_error: 0.5044 -
val_y2_output_root_mean_squared_error: 0.9518
Epoch 400/500
614/614 [=====] - 0s 136us/sample - loss: 0.4395 -
y1_output_loss: 0.1365 - y2_output_loss: 0.3001 -
y1_output_root_mean_squared_error: 0.3695 - y2_output_root_mean_squared_error:
0.5504 - val_loss: 1.1728 - val_y1_output_loss: 0.2662 - val_y2_output_loss:

```

0.9375 - val\_y1\_output\_root\_mean\_squared\_error: 0.5254 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9470  
Epoch 401/500  
614/614 [=====] - 0s 126us/sample - loss: 0.4301 -  
y1\_output\_loss: 0.1111 - y2\_output\_loss: 0.3158 -  
y1\_output\_root\_mean\_squared\_error: 0.3348 - y2\_output\_root\_mean\_squared\_error:  
0.5639 - val\_loss: 1.1244 - val\_y1\_output\_loss: 0.2547 - val\_y2\_output\_loss:  
0.8772 - val\_y1\_output\_root\_mean\_squared\_error: 0.5118 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9287  
Epoch 402/500  
614/614 [=====] - 0s 133us/sample - loss: 0.7224 -  
y1\_output\_loss: 0.1649 - y2\_output\_loss: 0.5723 -  
y1\_output\_root\_mean\_squared\_error: 0.3936 - y2\_output\_root\_mean\_squared\_error:  
0.7533 - val\_loss: 3.6561 - val\_y1\_output\_loss: 1.2905 - val\_y2\_output\_loss:  
2.4447 - val\_y1\_output\_root\_mean\_squared\_error: 1.1276 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5442  
Epoch 403/500  
614/614 [=====] - 0s 129us/sample - loss: 0.5816 -  
y1\_output\_loss: 0.1586 - y2\_output\_loss: 0.4182 -  
y1\_output\_root\_mean\_squared\_error: 0.3997 - y2\_output\_root\_mean\_squared\_error:  
0.6495 - val\_loss: 1.8487 - val\_y1\_output\_loss: 0.3390 - val\_y2\_output\_loss:  
1.5505 - val\_y1\_output\_root\_mean\_squared\_error: 0.5787 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2304  
Epoch 404/500  
614/614 [=====] - 0s 125us/sample - loss: 0.6267 -  
y1\_output\_loss: 0.1381 - y2\_output\_loss: 0.4889 -  
y1\_output\_root\_mean\_squared\_error: 0.3671 - y2\_output\_root\_mean\_squared\_error:  
0.7014 - val\_loss: 1.7599 - val\_y1\_output\_loss: 0.7799 - val\_y2\_output\_loss:  
1.0165 - val\_y1\_output\_root\_mean\_squared\_error: 0.8737 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9983  
Epoch 405/500  
614/614 [=====] - 0s 125us/sample - loss: 0.5523 -  
y1\_output\_loss: 0.1312 - y2\_output\_loss: 0.4260 -  
y1\_output\_root\_mean\_squared\_error: 0.3612 - y2\_output\_root\_mean\_squared\_error:  
0.6495 - val\_loss: 1.5790 - val\_y1\_output\_loss: 0.3849 - val\_y2\_output\_loss:  
1.2398 - val\_y1\_output\_root\_mean\_squared\_error: 0.6290 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0878  
Epoch 406/500  
614/614 [=====] - 0s 126us/sample - loss: 0.7606 -  
y1\_output\_loss: 0.1674 - y2\_output\_loss: 0.5895 -  
y1\_output\_root\_mean\_squared\_error: 0.4079 - y2\_output\_root\_mean\_squared\_error:  
0.7709 - val\_loss: 1.1574 - val\_y1\_output\_loss: 0.3418 - val\_y2\_output\_loss:  
0.8017 - val\_y1\_output\_root\_mean\_squared\_error: 0.5912 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8988  
Epoch 407/500  
614/614 [=====] - 0s 133us/sample - loss: 0.6360 -  
y1\_output\_loss: 0.1336 - y2\_output\_loss: 0.5119 -  
y1\_output\_root\_mean\_squared\_error: 0.3647 - y2\_output\_root\_mean\_squared\_error:

0.7092 - val\_loss: 1.7373 - val\_y1\_output\_loss: 0.3721 - val\_y2\_output\_loss:  
 1.3388 - val\_y1\_output\_root\_mean\_squared\_error: 0.6054 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1708  
 Epoch 408/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.4914 -  
 y1\_output\_loss: 0.1220 - y2\_output\_loss: 0.3657 -  
 y1\_output\_root\_mean\_squared\_error: 0.3504 - y2\_output\_root\_mean\_squared\_error:  
 0.6071 - val\_loss: 1.0522 - val\_y1\_output\_loss: 0.2513 - val\_y2\_output\_loss:  
 0.8197 - val\_y1\_output\_root\_mean\_squared\_error: 0.5069 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8918  
 Epoch 409/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.5400 -  
 y1\_output\_loss: 0.1187 - y2\_output\_loss: 0.4192 -  
 y1\_output\_root\_mean\_squared\_error: 0.3451 - y2\_output\_root\_mean\_squared\_error:  
 0.6488 - val\_loss: 1.0528 - val\_y1\_output\_loss: 0.2781 - val\_y2\_output\_loss:  
 0.7671 - val\_y1\_output\_root\_mean\_squared\_error: 0.5313 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8778  
 Epoch 410/500  
 614/614 [=====] - 0s 121us/sample - loss: 0.4909 -  
 y1\_output\_loss: 0.1124 - y2\_output\_loss: 0.3781 -  
 y1\_output\_root\_mean\_squared\_error: 0.3361 - y2\_output\_root\_mean\_squared\_error:  
 0.6147 - val\_loss: 2.1369 - val\_y1\_output\_loss: 0.5423 - val\_y2\_output\_loss:  
 1.5771 - val\_y1\_output\_root\_mean\_squared\_error: 0.7322 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2652  
 Epoch 411/500  
 614/614 [=====] - 0s 127us/sample - loss: 0.7514 -  
 y1\_output\_loss: 0.2137 - y2\_output\_loss: 0.5424 -  
 y1\_output\_root\_mean\_squared\_error: 0.4639 - y2\_output\_root\_mean\_squared\_error:  
 0.7323 - val\_loss: 2.0846 - val\_y1\_output\_loss: 0.2574 - val\_y2\_output\_loss:  
 1.8558 - val\_y1\_output\_root\_mean\_squared\_error: 0.5152 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3488  
 Epoch 412/500  
 614/614 [=====] - 0s 126us/sample - loss: 0.4138 -  
 y1\_output\_loss: 0.1037 - y2\_output\_loss: 0.3078 -  
 y1\_output\_root\_mean\_squared\_error: 0.3229 - y2\_output\_root\_mean\_squared\_error:  
 0.5564 - val\_loss: 1.4424 - val\_y1\_output\_loss: 0.3052 - val\_y2\_output\_loss:  
 1.1891 - val\_y1\_output\_root\_mean\_squared\_error: 0.5594 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0628  
 Epoch 413/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.4102 -  
 y1\_output\_loss: 0.1086 - y2\_output\_loss: 0.3044 -  
 y1\_output\_root\_mean\_squared\_error: 0.3286 - y2\_output\_root\_mean\_squared\_error:  
 0.5497 - val\_loss: 1.1772 - val\_y1\_output\_loss: 0.2561 - val\_y2\_output\_loss:  
 0.9095 - val\_y1\_output\_root\_mean\_squared\_error: 0.5119 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9567  
 Epoch 414/500  
 614/614 [=====] - 0s 121us/sample - loss: 0.4983 -  
 y1\_output\_loss: 0.1094 - y2\_output\_loss: 0.3867 -



y1\_output\_root\_mean\_squared\_error: 0.3310 - y2\_output\_root\_mean\_squared\_error:  
 0.6235 - val\_loss: 1.1901 - val\_y1\_output\_loss: 0.3430 - val\_y2\_output\_loss:  
 0.8647 - val\_y1\_output\_root\_mean\_squared\_error: 0.5847 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9210  
 Epoch 415/500  
 614/614 [=====] - 0s 126us/sample - loss: 0.4497 -  
 y1\_output\_loss: 0.1207 - y2\_output\_loss: 0.3282 -  
 y1\_output\_root\_mean\_squared\_error: 0.3468 - y2\_output\_root\_mean\_squared\_error:  
 0.5739 - val\_loss: 1.1520 - val\_y1\_output\_loss: 0.2560 - val\_y2\_output\_loss:  
 0.8882 - val\_y1\_output\_root\_mean\_squared\_error: 0.5122 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9432  
 Epoch 416/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.5024 -  
 y1\_output\_loss: 0.1396 - y2\_output\_loss: 0.3646 -  
 y1\_output\_root\_mean\_squared\_error: 0.3677 - y2\_output\_root\_mean\_squared\_error:  
 0.6060 - val\_loss: 1.0866 - val\_y1\_output\_loss: 0.3155 - val\_y2\_output\_loss:  
 0.7782 - val\_y1\_output\_root\_mean\_squared\_error: 0.5598 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8793  
 Epoch 417/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.3890 -  
 y1\_output\_loss: 0.0946 - y2\_output\_loss: 0.3020 -  
 y1\_output\_root\_mean\_squared\_error: 0.3087 - y2\_output\_root\_mean\_squared\_error:  
 0.5420 - val\_loss: 1.7359 - val\_y1\_output\_loss: 0.2750 - val\_y2\_output\_loss:  
 1.5013 - val\_y1\_output\_root\_mean\_squared\_error: 0.5318 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2054  
 Epoch 418/500  
 614/614 [=====] - 0s 125us/sample - loss: 0.4820 -  
 y1\_output\_loss: 0.1247 - y2\_output\_loss: 0.3567 -  
 y1\_output\_root\_mean\_squared\_error: 0.3538 - y2\_output\_root\_mean\_squared\_error:  
 0.5973 - val\_loss: 1.0869 - val\_y1\_output\_loss: 0.2762 - val\_y2\_output\_loss:  
 0.8225 - val\_y1\_output\_root\_mean\_squared\_error: 0.5306 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8974  
 Epoch 419/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.4515 -  
 y1\_output\_loss: 0.1072 - y2\_output\_loss: 0.3431 -  
 y1\_output\_root\_mean\_squared\_error: 0.3283 - y2\_output\_root\_mean\_squared\_error:  
 0.5863 - val\_loss: 1.1410 - val\_y1\_output\_loss: 0.2836 - val\_y2\_output\_loss:  
 0.8361 - val\_y1\_output\_root\_mean\_squared\_error: 0.5385 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9225  
 Epoch 420/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.4091 -  
 y1\_output\_loss: 0.1033 - y2\_output\_loss: 0.3097 -  
 y1\_output\_root\_mean\_squared\_error: 0.3193 - y2\_output\_root\_mean\_squared\_error:  
 0.5542 - val\_loss: 2.4398 - val\_y1\_output\_loss: 0.3771 - val\_y2\_output\_loss:  
 2.1620 - val\_y1\_output\_root\_mean\_squared\_error: 0.6222 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4327  
 Epoch 421/500  
 614/614 [=====] - 0s 134us/sample - loss: 0.6796 -

```

y1_output_loss: 0.1495 - y2_output_loss: 0.5308 -
y1_output_root_mean_squared_error: 0.3871 - y2_output_root_mean_squared_error:
0.7279 - val_loss: 2.3527 - val_y1_output_loss: 0.4115 - val_y2_output_loss:
1.9118 - val_y1_output_root_mean_squared_error: 0.6399 -
val_y2_output_root_mean_squared_error: 1.3940
Epoch 422/500
614/614 [=====] - 0s 128us/sample - loss: 0.6287 -
y1_output_loss: 0.1419 - y2_output_loss: 0.4829 -
y1_output_root_mean_squared_error: 0.3776 - y2_output_root_mean_squared_error:
0.6972 - val_loss: 1.5793 - val_y1_output_loss: 0.3022 - val_y2_output_loss:
1.3076 - val_y1_output_root_mean_squared_error: 0.5475 -
val_y2_output_root_mean_squared_error: 1.1311
Epoch 423/500
614/614 [=====] - 0s 139us/sample - loss: 0.3960 -
y1_output_loss: 0.1001 - y2_output_loss: 0.2930 -
y1_output_root_mean_squared_error: 0.3174 - y2_output_root_mean_squared_error:
0.5433 - val_loss: 1.0729 - val_y1_output_loss: 0.3031 - val_y2_output_loss:
0.7750 - val_y1_output_root_mean_squared_error: 0.5516 -
val_y2_output_root_mean_squared_error: 0.8768
Epoch 424/500
614/614 [=====] - 0s 131us/sample - loss: 0.5663 -
y1_output_loss: 0.1249 - y2_output_loss: 0.4425 -
y1_output_root_mean_squared_error: 0.3534 - y2_output_root_mean_squared_error:
0.6644 - val_loss: 1.7315 - val_y1_output_loss: 0.4052 - val_y2_output_loss:
1.3665 - val_y1_output_root_mean_squared_error: 0.6308 -
val_y2_output_root_mean_squared_error: 1.1548
Epoch 425/500
614/614 [=====] - 0s 131us/sample - loss: 0.4232 -
y1_output_loss: 0.1014 - y2_output_loss: 0.3201 -
y1_output_root_mean_squared_error: 0.3188 - y2_output_root_mean_squared_error:
0.5670 - val_loss: 1.0040 - val_y1_output_loss: 0.2314 - val_y2_output_loss:
0.7867 - val_y1_output_root_mean_squared_error: 0.4876 -
val_y2_output_root_mean_squared_error: 0.8753
Epoch 426/500
614/614 [=====] - 0s 139us/sample - loss: 0.3652 -
y1_output_loss: 0.0990 - y2_output_loss: 0.2655 -
y1_output_root_mean_squared_error: 0.3139 - y2_output_root_mean_squared_error:
0.5164 - val_loss: 1.1570 - val_y1_output_loss: 0.3050 - val_y2_output_loss:
0.8728 - val_y1_output_root_mean_squared_error: 0.5556 -
val_y2_output_root_mean_squared_error: 0.9210
Epoch 427/500
614/614 [=====] - 0s 135us/sample - loss: 0.5230 -
y1_output_loss: 0.1441 - y2_output_loss: 0.3843 -
y1_output_root_mean_squared_error: 0.3811 - y2_output_root_mean_squared_error:
0.6146 - val_loss: 2.1423 - val_y1_output_loss: 0.3965 - val_y2_output_loss:
1.7270 - val_y1_output_root_mean_squared_error: 0.6316 -
val_y2_output_root_mean_squared_error: 1.3203
Epoch 428/500

```

```

614/614 [=====] - 0s 134us/sample - loss: 0.4963 -
y1_output_loss: 0.1274 - y2_output_loss: 0.3694 -
y1_output_root_mean_squared_error: 0.3568 - y2_output_root_mean_squared_error:
0.6074 - val_loss: 1.5567 - val_y1_output_loss: 0.4549 - val_y2_output_loss:
1.0738 - val_y1_output_root_mean_squared_error: 0.6767 -
val_y2_output_root_mean_squared_error: 1.0482
Epoch 429/500
614/614 [=====] - 0s 125us/sample - loss: 0.5557 -
y1_output_loss: 0.1330 - y2_output_loss: 0.4235 -
y1_output_root_mean_squared_error: 0.3653 - y2_output_root_mean_squared_error:
0.6498 - val_loss: 1.1821 - val_y1_output_loss: 0.2718 - val_y2_output_loss:
0.9025 - val_y1_output_root_mean_squared_error: 0.5278 -
val_y2_output_root_mean_squared_error: 0.9506
Epoch 430/500
614/614 [=====] - 0s 132us/sample - loss: 0.6453 -
y1_output_loss: 0.1643 - y2_output_loss: 0.4778 -
y1_output_root_mean_squared_error: 0.4068 - y2_output_root_mean_squared_error:
0.6927 - val_loss: 0.9719 - val_y1_output_loss: 0.2650 - val_y2_output_loss:
0.7065 - val_y1_output_root_mean_squared_error: 0.5177 -
val_y2_output_root_mean_squared_error: 0.8390
Epoch 431/500
614/614 [=====] - 0s 132us/sample - loss: 0.4215 -
y1_output_loss: 0.1178 - y2_output_loss: 0.3005 -
y1_output_root_mean_squared_error: 0.3445 - y2_output_root_mean_squared_error:
0.5503 - val_loss: 1.0050 - val_y1_output_loss: 0.2501 - val_y2_output_loss:
0.7415 - val_y1_output_root_mean_squared_error: 0.5050 -
val_y2_output_root_mean_squared_error: 0.8661
Epoch 432/500
614/614 [=====] - 0s 131us/sample - loss: 0.4783 -
y1_output_loss: 0.1066 - y2_output_loss: 0.3675 -
y1_output_root_mean_squared_error: 0.3278 - y2_output_root_mean_squared_error:
0.6089 - val_loss: 1.0619 - val_y1_output_loss: 0.2954 - val_y2_output_loss:
0.7715 - val_y1_output_root_mean_squared_error: 0.5503 -
val_y2_output_root_mean_squared_error: 0.8712
Epoch 433/500
614/614 [=====] - 0s 126us/sample - loss: 0.3067 -
y1_output_loss: 0.0927 - y2_output_loss: 0.2133 -
y1_output_root_mean_squared_error: 0.3055 - y2_output_root_mean_squared_error:
0.4619 - val_loss: 1.0419 - val_y1_output_loss: 0.2537 - val_y2_output_loss:
0.7783 - val_y1_output_root_mean_squared_error: 0.5110 -
val_y2_output_root_mean_squared_error: 0.8836
Epoch 434/500
614/614 [=====] - 0s 124us/sample - loss: 0.3755 -
y1_output_loss: 0.1034 - y2_output_loss: 0.2779 -
y1_output_root_mean_squared_error: 0.3186 - y2_output_root_mean_squared_error:
0.5235 - val_loss: 2.0105 - val_y1_output_loss: 0.5544 - val_y2_output_loss:
1.5248 - val_y1_output_root_mean_squared_error: 0.7375 -
val_y2_output_root_mean_squared_error: 1.2110

```

Epoch 435/500  
614/614 [=====] - 0s 119us/sample - loss: 0.4442 -  
y1\_output\_loss: 0.1121 - y2\_output\_loss: 0.3327 -  
y1\_output\_root\_mean\_squared\_error: 0.3323 - y2\_output\_root\_mean\_squared\_error:  
0.5778 - val\_loss: 1.3537 - val\_y1\_output\_loss: 0.3879 - val\_y2\_output\_loss:  
0.9628 - val\_y1\_output\_root\_mean\_squared\_error: 0.6273 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9799  
Epoch 436/500  
614/614 [=====] - 0s 118us/sample - loss: 0.4381 -  
y1\_output\_loss: 0.1052 - y2\_output\_loss: 0.3366 -  
y1\_output\_root\_mean\_squared\_error: 0.3251 - y2\_output\_root\_mean\_squared\_error:  
0.5765 - val\_loss: 1.6096 - val\_y1\_output\_loss: 0.3036 - val\_y2\_output\_loss:  
1.2691 - val\_y1\_output\_root\_mean\_squared\_error: 0.5566 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1401  
Epoch 437/500  
614/614 [=====] - 0s 123us/sample - loss: 0.4741 -  
y1\_output\_loss: 0.1232 - y2\_output\_loss: 0.3521 -  
y1\_output\_root\_mean\_squared\_error: 0.3507 - y2\_output\_root\_mean\_squared\_error:  
0.5925 - val\_loss: 1.3221 - val\_y1\_output\_loss: 0.2485 - val\_y2\_output\_loss:  
1.0532 - val\_y1\_output\_root\_mean\_squared\_error: 0.5065 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0323  
Epoch 438/500  
614/614 [=====] - 0s 118us/sample - loss: 0.4163 -  
y1\_output\_loss: 0.1162 - y2\_output\_loss: 0.3089 -  
y1\_output\_root\_mean\_squared\_error: 0.3360 - y2\_output\_root\_mean\_squared\_error:  
0.5508 - val\_loss: 5.0588 - val\_y1\_output\_loss: 1.7565 - val\_y2\_output\_loss:  
3.4736 - val\_y1\_output\_root\_mean\_squared\_error: 1.2958 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.8384  
Epoch 439/500  
614/614 [=====] - 0s 130us/sample - loss: 0.4082 -  
y1\_output\_loss: 0.1258 - y2\_output\_loss: 0.2871 -  
y1\_output\_root\_mean\_squared\_error: 0.3556 - y2\_output\_root\_mean\_squared\_error:  
0.5308 - val\_loss: 1.2506 - val\_y1\_output\_loss: 0.2952 - val\_y2\_output\_loss:  
0.9600 - val\_y1\_output\_root\_mean\_squared\_error: 0.5449 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9766  
Epoch 440/500  
614/614 [=====] - 0s 129us/sample - loss: 0.3642 -  
y1\_output\_loss: 0.1235 - y2\_output\_loss: 0.2420 -  
y1\_output\_root\_mean\_squared\_error: 0.3517 - y2\_output\_root\_mean\_squared\_error:  
0.4905 - val\_loss: 1.1893 - val\_y1\_output\_loss: 0.2983 - val\_y2\_output\_loss:  
0.8822 - val\_y1\_output\_root\_mean\_squared\_error: 0.5515 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9408  
Epoch 441/500  
614/614 [=====] - 0s 129us/sample - loss: 0.4183 -  
y1\_output\_loss: 0.1090 - y2\_output\_loss: 0.3068 -  
y1\_output\_root\_mean\_squared\_error: 0.3311 - y2\_output\_root\_mean\_squared\_error:  
0.5556 - val\_loss: 1.0195 - val\_y1\_output\_loss: 0.2596 - val\_y2\_output\_loss:  
0.7823 - val\_y1\_output\_root\_mean\_squared\_error: 0.5127 -

```

val_y2_output_root_mean_squared_error: 0.8698
Epoch 442/500
614/614 [=====] - 0s 129us/sample - loss: 0.5192 -
y1_output_loss: 0.1498 - y2_output_loss: 0.3764 -
y1_output_root_mean_squared_error: 0.3829 - y2_output_root_mean_squared_error:
0.6104 - val_loss: 4.4269 - val_y1_output_loss: 1.3828 - val_y2_output_loss:
3.1170 - val_y1_output_root_mean_squared_error: 1.1602 -
val_y2_output_root_mean_squared_error: 1.7552
Epoch 443/500
614/614 [=====] - 0s 119us/sample - loss: 0.5089 -
y1_output_loss: 0.1370 - y2_output_loss: 0.3692 -
y1_output_root_mean_squared_error: 0.3703 - y2_output_root_mean_squared_error:
0.6097 - val_loss: 0.9701 - val_y1_output_loss: 0.2528 - val_y2_output_loss:
0.7242 - val_y1_output_root_mean_squared_error: 0.5068 -
val_y2_output_root_mean_squared_error: 0.8445
Epoch 444/500
614/614 [=====] - 0s 128us/sample - loss: 0.4156 -
y1_output_loss: 0.0998 - y2_output_loss: 0.3137 -
y1_output_root_mean_squared_error: 0.3153 - y2_output_root_mean_squared_error:
0.5623 - val_loss: 1.0905 - val_y1_output_loss: 0.2675 - val_y2_output_loss:
0.8186 - val_y1_output_root_mean_squared_error: 0.5216 -
val_y2_output_root_mean_squared_error: 0.9047
Epoch 445/500
614/614 [=====] - 0s 128us/sample - loss: 0.3529 -
y1_output_loss: 0.0948 - y2_output_loss: 0.2553 -
y1_output_root_mean_squared_error: 0.3092 - y2_output_root_mean_squared_error:
0.5072 - val_loss: 1.0211 - val_y1_output_loss: 0.2637 - val_y2_output_loss:
0.7816 - val_y1_output_root_mean_squared_error: 0.5203 -
val_y2_output_root_mean_squared_error: 0.8663
Epoch 446/500
614/614 [=====] - 0s 125us/sample - loss: 0.4277 -
y1_output_loss: 0.1148 - y2_output_loss: 0.3119 -
y1_output_root_mean_squared_error: 0.3400 - y2_output_root_mean_squared_error:
0.5586 - val_loss: 1.1942 - val_y1_output_loss: 0.2801 - val_y2_output_loss:
0.8971 - val_y1_output_root_mean_squared_error: 0.5305 -
val_y2_output_root_mean_squared_error: 0.9554
Epoch 447/500
614/614 [=====] - 0s 122us/sample - loss: 0.3275 -
y1_output_loss: 0.0962 - y2_output_loss: 0.2295 -
y1_output_root_mean_squared_error: 0.3105 - y2_output_root_mean_squared_error:
0.4807 - val_loss: 1.1698 - val_y1_output_loss: 0.2861 - val_y2_output_loss:
0.9045 - val_y1_output_root_mean_squared_error: 0.5378 -
val_y2_output_root_mean_squared_error: 0.9384
Epoch 448/500
614/614 [=====] - 0s 118us/sample - loss: 0.5651 -
y1_output_loss: 0.1375 - y2_output_loss: 0.4226 -
y1_output_root_mean_squared_error: 0.3723 - y2_output_root_mean_squared_error:
0.6530 - val_loss: 1.0077 - val_y1_output_loss: 0.2456 - val_y2_output_loss:

```

0.7786 - val\_y1\_output\_root\_mean\_squared\_error: 0.5015 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8696  
Epoch 449/500  
614/614 [=====] - 0s 120us/sample - loss: 0.4216 -  
y1\_output\_loss: 0.1025 - y2\_output\_loss: 0.3171 -  
y1\_output\_root\_mean\_squared\_error: 0.3205 - y2\_output\_root\_mean\_squared\_error:  
0.5647 - val\_loss: 1.0488 - val\_y1\_output\_loss: 0.2774 - val\_y2\_output\_loss:  
0.7627 - val\_y1\_output\_root\_mean\_squared\_error: 0.5305 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8760  
Epoch 450/500  
614/614 [=====] - 0s 119us/sample - loss: 0.3688 -  
y1\_output\_loss: 0.1046 - y2\_output\_loss: 0.2652 -  
y1\_output\_root\_mean\_squared\_error: 0.3209 - y2\_output\_root\_mean\_squared\_error:  
0.5156 - val\_loss: 1.4668 - val\_y1\_output\_loss: 0.4849 - val\_y2\_output\_loss:  
0.9969 - val\_y1\_output\_root\_mean\_squared\_error: 0.6862 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9980  
Epoch 451/500  
614/614 [=====] - 0s 119us/sample - loss: 0.3272 -  
y1\_output\_loss: 0.0883 - y2\_output\_loss: 0.2375 -  
y1\_output\_root\_mean\_squared\_error: 0.2972 - y2\_output\_root\_mean\_squared\_error:  
0.4888 - val\_loss: 1.0394 - val\_y1\_output\_loss: 0.2610 - val\_y2\_output\_loss:  
0.7735 - val\_y1\_output\_root\_mean\_squared\_error: 0.5162 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8792  
Epoch 452/500  
614/614 [=====] - 0s 129us/sample - loss: 0.4152 -  
y1\_output\_loss: 0.1098 - y2\_output\_loss: 0.3025 -  
y1\_output\_root\_mean\_squared\_error: 0.3314 - y2\_output\_root\_mean\_squared\_error:  
0.5527 - val\_loss: 1.0307 - val\_y1\_output\_loss: 0.3084 - val\_y2\_output\_loss:  
0.7340 - val\_y1\_output\_root\_mean\_squared\_error: 0.5579 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8482  
Epoch 453/500  
614/614 [=====] - 0s 129us/sample - loss: 0.3963 -  
y1\_output\_loss: 0.1064 - y2\_output\_loss: 0.2909 -  
y1\_output\_root\_mean\_squared\_error: 0.3265 - y2\_output\_root\_mean\_squared\_error:  
0.5383 - val\_loss: 1.2992 - val\_y1\_output\_loss: 0.3011 - val\_y2\_output\_loss:  
0.9888 - val\_y1\_output\_root\_mean\_squared\_error: 0.5486 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9991  
Epoch 454/500  
614/614 [=====] - 0s 128us/sample - loss: 0.4149 -  
y1\_output\_loss: 0.1013 - y2\_output\_loss: 0.3129 -  
y1\_output\_root\_mean\_squared\_error: 0.3195 - y2\_output\_root\_mean\_squared\_error:  
0.5593 - val\_loss: 1.0093 - val\_y1\_output\_loss: 0.2603 - val\_y2\_output\_loss:  
0.7413 - val\_y1\_output\_root\_mean\_squared\_error: 0.5133 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8636  
Epoch 455/500  
614/614 [=====] - 0s 126us/sample - loss: 0.4781 -  
y1\_output\_loss: 0.1041 - y2\_output\_loss: 0.3964 -  
y1\_output\_root\_mean\_squared\_error: 0.3229 - y2\_output\_root\_mean\_squared\_error:

0.6114 - val\_loss: 1.9252 - val\_y1\_output\_loss: 0.5569 - val\_y2\_output\_loss:  
 1.4548 - val\_y1\_output\_root\_mean\_squared\_error: 0.7364 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1759  
 Epoch 456/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.3119 -  
 y1\_output\_loss: 0.0976 - y2\_output\_loss: 0.2136 -  
 y1\_output\_root\_mean\_squared\_error: 0.3132 - y2\_output\_root\_mean\_squared\_error:  
 0.4624 - val\_loss: 1.0403 - val\_y1\_output\_loss: 0.2666 - val\_y2\_output\_loss:  
 0.7876 - val\_y1\_output\_root\_mean\_squared\_error: 0.5213 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8767  
 Epoch 457/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.3783 -  
 y1\_output\_loss: 0.0940 - y2\_output\_loss: 0.2901 -  
 y1\_output\_root\_mean\_squared\_error: 0.3057 - y2\_output\_root\_mean\_squared\_error:  
 0.5337 - val\_loss: 2.2479 - val\_y1\_output\_loss: 0.3388 - val\_y2\_output\_loss:  
 1.9928 - val\_y1\_output\_root\_mean\_squared\_error: 0.5785 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3832  
 Epoch 458/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.4853 -  
 y1\_output\_loss: 0.1229 - y2\_output\_loss: 0.3587 -  
 y1\_output\_root\_mean\_squared\_error: 0.3521 - y2\_output\_root\_mean\_squared\_error:  
 0.6012 - val\_loss: 1.1464 - val\_y1\_output\_loss: 0.3280 - val\_y2\_output\_loss:  
 0.8379 - val\_y1\_output\_root\_mean\_squared\_error: 0.5770 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9019  
 Epoch 459/500  
 614/614 [=====] - 0s 131us/sample - loss: 0.4696 -  
 y1\_output\_loss: 0.1234 - y2\_output\_loss: 0.3485 -  
 y1\_output\_root\_mean\_squared\_error: 0.3517 - y2\_output\_root\_mean\_squared\_error:  
 0.5882 - val\_loss: 1.5569 - val\_y1\_output\_loss: 0.2750 - val\_y2\_output\_loss:  
 1.3125 - val\_y1\_output\_root\_mean\_squared\_error: 0.5288 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1302  
 Epoch 460/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.4106 -  
 y1\_output\_loss: 0.1086 - y2\_output\_loss: 0.3024 -  
 y1\_output\_root\_mean\_squared\_error: 0.3274 - y2\_output\_root\_mean\_squared\_error:  
 0.5508 - val\_loss: 1.2974 - val\_y1\_output\_loss: 0.4042 - val\_y2\_output\_loss:  
 0.9061 - val\_y1\_output\_root\_mean\_squared\_error: 0.6302 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9488  
 Epoch 461/500  
 614/614 [=====] - 0s 129us/sample - loss: 0.4056 -  
 y1\_output\_loss: 0.1165 - y2\_output\_loss: 0.2890 -  
 y1\_output\_root\_mean\_squared\_error: 0.3427 - y2\_output\_root\_mean\_squared\_error:  
 0.5368 - val\_loss: 1.1977 - val\_y1\_output\_loss: 0.2725 - val\_y2\_output\_loss:  
 0.9455 - val\_y1\_output\_root\_mean\_squared\_error: 0.5311 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9569  
 Epoch 462/500  
 614/614 [=====] - 0s 124us/sample - loss: 0.3174 -  
 y1\_output\_loss: 0.0935 - y2\_output\_loss: 0.2234 -

y1\_output\_root\_mean\_squared\_error: 0.3044 - y2\_output\_root\_mean\_squared\_error:  
0.4740 - val\_loss: 1.4344 - val\_y1\_output\_loss: 0.2702 - val\_y2\_output\_loss:  
1.2102 - val\_y1\_output\_root\_mean\_squared\_error: 0.5254 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0763  
Epoch 463/500  
614/614 [=====] - 0s 130us/sample - loss: 0.4205 -  
y1\_output\_loss: 0.1116 - y2\_output\_loss: 0.3261 -  
y1\_output\_root\_mean\_squared\_error: 0.3340 - y2\_output\_root\_mean\_squared\_error:  
0.5558 - val\_loss: 3.2945 - val\_y1\_output\_loss: 0.4864 - val\_y2\_output\_loss:  
2.7542 - val\_y1\_output\_root\_mean\_squared\_error: 0.6996 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6749  
Epoch 464/500  
614/614 [=====] - 0s 132us/sample - loss: 0.9064 -  
y1\_output\_loss: 0.1751 - y2\_output\_loss: 0.7337 -  
y1\_output\_root\_mean\_squared\_error: 0.4189 - y2\_output\_root\_mean\_squared\_error:  
0.8549 - val\_loss: 4.2421 - val\_y1\_output\_loss: 0.6298 - val\_y2\_output\_loss:  
3.6610 - val\_y1\_output\_root\_mean\_squared\_error: 0.7827 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.9051  
Epoch 465/500  
614/614 [=====] - 0s 126us/sample - loss: 1.2161 -  
y1\_output\_loss: 0.2203 - y2\_output\_loss: 0.9892 -  
y1\_output\_root\_mean\_squared\_error: 0.4702 - y2\_output\_root\_mean\_squared\_error:  
0.9975 - val\_loss: 1.4225 - val\_y1\_output\_loss: 0.4706 - val\_y2\_output\_loss:  
0.9794 - val\_y1\_output\_root\_mean\_squared\_error: 0.6766 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9822  
Epoch 466/500  
614/614 [=====] - 0s 125us/sample - loss: 0.3722 -  
y1\_output\_loss: 0.0903 - y2\_output\_loss: 0.2892 -  
y1\_output\_root\_mean\_squared\_error: 0.2973 - y2\_output\_root\_mean\_squared\_error:  
0.5328 - val\_loss: 1.7773 - val\_y1\_output\_loss: 0.4541 - val\_y2\_output\_loss:  
1.3583 - val\_y1\_output\_root\_mean\_squared\_error: 0.6796 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1469  
Epoch 467/500  
614/614 [=====] - 0s 126us/sample - loss: 0.3655 -  
y1\_output\_loss: 0.0989 - y2\_output\_loss: 0.2665 -  
y1\_output\_root\_mean\_squared\_error: 0.3139 - y2\_output\_root\_mean\_squared\_error:  
0.5168 - val\_loss: 1.3276 - val\_y1\_output\_loss: 0.4301 - val\_y2\_output\_loss:  
0.9188 - val\_y1\_output\_root\_mean\_squared\_error: 0.6646 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9412  
Epoch 468/500  
614/614 [=====] - 0s 132us/sample - loss: 0.3286 -  
y1\_output\_loss: 0.0913 - y2\_output\_loss: 0.2380 -  
y1\_output\_root\_mean\_squared\_error: 0.3015 - y2\_output\_root\_mean\_squared\_error:  
0.4876 - val\_loss: 1.2377 - val\_y1\_output\_loss: 0.2977 - val\_y2\_output\_loss:  
0.9763 - val\_y1\_output\_root\_mean\_squared\_error: 0.5533 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9652  
Epoch 469/500  
614/614 [=====] - 0s 130us/sample - loss: 0.6755 -



```

y1_output_loss: 0.1273 - y2_output_loss: 0.5439 -
y1_output_root_mean_squared_error: 0.3576 - y2_output_root_mean_squared_error:
0.7400 - val_loss: 1.0185 - val_y1_output_loss: 0.2660 - val_y2_output_loss:
0.7841 - val_y1_output_root_mean_squared_error: 0.5207 -
val_y2_output_root_mean_squared_error: 0.8645
Epoch 470/500
614/614 [=====] - 0s 125us/sample - loss: 0.3029 -
y1_output_loss: 0.0895 - y2_output_loss: 0.2110 -
y1_output_root_mean_squared_error: 0.3004 - y2_output_root_mean_squared_error:
0.4611 - val_loss: 0.9856 - val_y1_output_loss: 0.2562 - val_y2_output_loss:
0.7496 - val_y1_output_root_mean_squared_error: 0.5128 -
val_y2_output_root_mean_squared_error: 0.8501
Epoch 471/500
614/614 [=====] - 0s 132us/sample - loss: 0.3335 -
y1_output_loss: 0.1016 - y2_output_loss: 0.2302 -
y1_output_root_mean_squared_error: 0.3191 - y2_output_root_mean_squared_error:
0.4814 - val_loss: 1.0713 - val_y1_output_loss: 0.2878 - val_y2_output_loss:
0.8119 - val_y1_output_root_mean_squared_error: 0.5365 -
val_y2_output_root_mean_squared_error: 0.8852
Epoch 472/500
614/614 [=====] - 0s 122us/sample - loss: 0.3608 -
y1_output_loss: 0.0990 - y2_output_loss: 0.2642 -
y1_output_root_mean_squared_error: 0.3125 - y2_output_root_mean_squared_error:
0.5130 - val_loss: 1.6911 - val_y1_output_loss: 0.3411 - val_y2_output_loss:
1.3945 - val_y1_output_root_mean_squared_error: 0.5895 -
val_y2_output_root_mean_squared_error: 1.1591
Epoch 473/500
614/614 [=====] - 0s 132us/sample - loss: 0.3693 -
y1_output_loss: 0.1017 - y2_output_loss: 0.2685 -
y1_output_root_mean_squared_error: 0.3178 - y2_output_root_mean_squared_error:
0.5180 - val_loss: 1.2747 - val_y1_output_loss: 0.2818 - val_y2_output_loss:
0.9993 - val_y1_output_root_mean_squared_error: 0.5335 -
val_y2_output_root_mean_squared_error: 0.9950
Epoch 474/500
614/614 [=====] - 0s 131us/sample - loss: 0.4217 -
y1_output_loss: 0.1031 - y2_output_loss: 0.3159 -
y1_output_root_mean_squared_error: 0.3222 - y2_output_root_mean_squared_error:
0.5638 - val_loss: 1.0020 - val_y1_output_loss: 0.2640 - val_y2_output_loss:
0.7209 - val_y1_output_root_mean_squared_error: 0.5195 -
val_y2_output_root_mean_squared_error: 0.8556
Epoch 475/500
614/614 [=====] - 0s 133us/sample - loss: 0.4508 -
y1_output_loss: 0.1088 - y2_output_loss: 0.3381 -
y1_output_root_mean_squared_error: 0.3313 - y2_output_root_mean_squared_error:
0.5840 - val_loss: 0.9157 - val_y1_output_loss: 0.2391 - val_y2_output_loss:
0.6737 - val_y1_output_root_mean_squared_error: 0.4958 -
val_y2_output_root_mean_squared_error: 0.8185
Epoch 476/500

```

614/614 [=====] - 0s 119us/sample - loss: 0.3654 -  
y1\_output\_loss: 0.1001 - y2\_output\_loss: 0.2637 -  
y1\_output\_root\_mean\_squared\_error: 0.3176 - y2\_output\_root\_mean\_squared\_error:  
0.5143 - val\_loss: 0.9705 - val\_y1\_output\_loss: 0.2483 - val\_y2\_output\_loss:  
0.7311 - val\_y1\_output\_root\_mean\_squared\_error: 0.5061 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8451  
Epoch 477/500  
614/614 [=====] - 0s 125us/sample - loss: 0.3313 -  
y1\_output\_loss: 0.1027 - y2\_output\_loss: 0.2329 -  
y1\_output\_root\_mean\_squared\_error: 0.3209 - y2\_output\_root\_mean\_squared\_error:  
0.4779 - val\_loss: 1.3700 - val\_y1\_output\_loss: 0.2516 - val\_y2\_output\_loss:  
1.1226 - val\_y1\_output\_root\_mean\_squared\_error: 0.5060 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0554  
Epoch 478/500  
614/614 [=====] - 0s 132us/sample - loss: 0.3217 -  
y1\_output\_loss: 0.0887 - y2\_output\_loss: 0.2312 -  
y1\_output\_root\_mean\_squared\_error: 0.2991 - y2\_output\_root\_mean\_squared\_error:  
0.4819 - val\_loss: 1.0548 - val\_y1\_output\_loss: 0.3030 - val\_y2\_output\_loss:  
0.7620 - val\_y1\_output\_root\_mean\_squared\_error: 0.5519 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8661  
Epoch 479/500  
614/614 [=====] - 0s 132us/sample - loss: 0.3556 -  
y1\_output\_loss: 0.1088 - y2\_output\_loss: 0.2447 -  
y1\_output\_root\_mean\_squared\_error: 0.3298 - y2\_output\_root\_mean\_squared\_error:  
0.4968 - val\_loss: 1.0684 - val\_y1\_output\_loss: 0.3833 - val\_y2\_output\_loss:  
0.7101 - val\_y1\_output\_root\_mean\_squared\_error: 0.6124 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8327  
Epoch 480/500  
614/614 [=====] - 0s 127us/sample - loss: 0.3650 -  
y1\_output\_loss: 0.0977 - y2\_output\_loss: 0.2641 -  
y1\_output\_root\_mean\_squared\_error: 0.3140 - y2\_output\_root\_mean\_squared\_error:  
0.5161 - val\_loss: 1.0500 - val\_y1\_output\_loss: 0.2589 - val\_y2\_output\_loss:  
0.8142 - val\_y1\_output\_root\_mean\_squared\_error: 0.5167 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8849  
Epoch 481/500  
614/614 [=====] - 0s 131us/sample - loss: 0.3808 -  
y1\_output\_loss: 0.0943 - y2\_output\_loss: 0.2860 -  
y1\_output\_root\_mean\_squared\_error: 0.3054 - y2\_output\_root\_mean\_squared\_error:  
0.5362 - val\_loss: 1.0631 - val\_y1\_output\_loss: 0.2628 - val\_y2\_output\_loss:  
0.8167 - val\_y1\_output\_root\_mean\_squared\_error: 0.5174 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8919  
Epoch 482/500  
614/614 [=====] - 0s 127us/sample - loss: 0.3719 -  
y1\_output\_loss: 0.1007 - y2\_output\_loss: 0.2697 -  
y1\_output\_root\_mean\_squared\_error: 0.3180 - y2\_output\_root\_mean\_squared\_error:  
0.5204 - val\_loss: 1.0623 - val\_y1\_output\_loss: 0.2839 - val\_y2\_output\_loss:  
0.7618 - val\_y1\_output\_root\_mean\_squared\_error: 0.5333 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8820

Epoch 483/500

614/614 [=====] - 0s 132us/sample - loss: 0.4172 -  
y1\_output\_loss: 0.1022 - y2\_output\_loss: 0.3116 -  
y1\_output\_root\_mean\_squared\_error: 0.3209 - y2\_output\_root\_mean\_squared\_error:  
0.5605 - val\_loss: 0.9294 - val\_y1\_output\_loss: 0.2548 - val\_y2\_output\_loss:  
0.6787 - val\_y1\_output\_root\_mean\_squared\_error: 0.5110 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8175

Epoch 484/500

614/614 [=====] - 0s 125us/sample - loss: 0.6022 -  
y1\_output\_loss: 0.1535 - y2\_output\_loss: 0.4467 -  
y1\_output\_root\_mean\_squared\_error: 0.3934 - y2\_output\_root\_mean\_squared\_error:  
0.6689 - val\_loss: 1.1121 - val\_y1\_output\_loss: 0.2789 - val\_y2\_output\_loss:  
0.8872 - val\_y1\_output\_root\_mean\_squared\_error: 0.5332 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9098

Epoch 485/500

614/614 [=====] - 0s 119us/sample - loss: 0.3106 -  
y1\_output\_loss: 0.0946 - y2\_output\_loss: 0.2180 -  
y1\_output\_root\_mean\_squared\_error: 0.3090 - y2\_output\_root\_mean\_squared\_error:  
0.4637 - val\_loss: 1.0068 - val\_y1\_output\_loss: 0.2371 - val\_y2\_output\_loss:  
0.7621 - val\_y1\_output\_root\_mean\_squared\_error: 0.4919 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8746

Epoch 486/500

614/614 [=====] - 0s 120us/sample - loss: 0.4463 -  
y1\_output\_loss: 0.1096 - y2\_output\_loss: 0.3344 -  
y1\_output\_root\_mean\_squared\_error: 0.3323 - y2\_output\_root\_mean\_squared\_error:  
0.5796 - val\_loss: 1.0450 - val\_y1\_output\_loss: 0.2563 - val\_y2\_output\_loss:  
0.8123 - val\_y1\_output\_root\_mean\_squared\_error: 0.5093 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8864

Epoch 487/500

614/614 [=====] - 0s 129us/sample - loss: 0.4045 -  
y1\_output\_loss: 0.1082 - y2\_output\_loss: 0.2942 -  
y1\_output\_root\_mean\_squared\_error: 0.3296 - y2\_output\_root\_mean\_squared\_error:  
0.5440 - val\_loss: 1.0245 - val\_y1\_output\_loss: 0.2860 - val\_y2\_output\_loss:  
0.7611 - val\_y1\_output\_root\_mean\_squared\_error: 0.5377 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8575

Epoch 488/500

614/614 [=====] - 0s 123us/sample - loss: 0.4231 -  
y1\_output\_loss: 0.1020 - y2\_output\_loss: 0.3171 -  
y1\_output\_root\_mean\_squared\_error: 0.3209 - y2\_output\_root\_mean\_squared\_error:  
0.5658 - val\_loss: 1.2272 - val\_y1\_output\_loss: 0.2777 - val\_y2\_output\_loss:  
0.9903 - val\_y1\_output\_root\_mean\_squared\_error: 0.5305 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9725

Epoch 489/500

614/614 [=====] - 0s 131us/sample - loss: 0.3545 -  
y1\_output\_loss: 0.1011 - y2\_output\_loss: 0.2527 -  
y1\_output\_root\_mean\_squared\_error: 0.3176 - y2\_output\_root\_mean\_squared\_error:  
0.5036 - val\_loss: 0.9901 - val\_y1\_output\_loss: 0.2784 - val\_y2\_output\_loss:  
0.7068 - val\_y1\_output\_root\_mean\_squared\_error: 0.5332 -

```

val_y2_output_root_mean_squared_error: 0.8401
Epoch 490/500
614/614 [=====] - 0s 136us/sample - loss: 0.4081 -
y1_output_loss: 0.0911 - y2_output_loss: 0.3202 -
y1_output_root_mean_squared_error: 0.3017 - y2_output_root_mean_squared_error:
0.5631 - val_loss: 2.1182 - val_y1_output_loss: 0.2924 - val_y2_output_loss:
1.8784 - val_y1_output_root_mean_squared_error: 0.5489 -
val_y2_output_root_mean_squared_error: 1.3479
Epoch 491/500
614/614 [=====] - 0s 133us/sample - loss: 0.4073 -
y1_output_loss: 0.0981 - y2_output_loss: 0.3062 -
y1_output_root_mean_squared_error: 0.3142 - y2_output_root_mean_squared_error:
0.5555 - val_loss: 1.0401 - val_y1_output_loss: 0.3195 - val_y2_output_loss:
0.7161 - val_y1_output_root_mean_squared_error: 0.5680 -
val_y2_output_root_mean_squared_error: 0.8470
Epoch 492/500
614/614 [=====] - 0s 123us/sample - loss: 0.2918 -
y1_output_loss: 0.0856 - y2_output_loss: 0.2070 -
y1_output_root_mean_squared_error: 0.2911 - y2_output_root_mean_squared_error:
0.4550 - val_loss: 0.9938 - val_y1_output_loss: 0.2771 - val_y2_output_loss:
0.7144 - val_y1_output_root_mean_squared_error: 0.5355 -
val_y2_output_root_mean_squared_error: 0.8408
Epoch 493/500
614/614 [=====] - 0s 122us/sample - loss: 0.3294 -
y1_output_loss: 0.0899 - y2_output_loss: 0.2369 -
y1_output_root_mean_squared_error: 0.3011 - y2_output_root_mean_squared_error:
0.4886 - val_loss: 0.9481 - val_y1_output_loss: 0.2428 - val_y2_output_loss:
0.7283 - val_y1_output_root_mean_squared_error: 0.4954 -
val_y2_output_root_mean_squared_error: 0.8383
Epoch 494/500
614/614 [=====] - 0s 135us/sample - loss: 0.5982 -
y1_output_loss: 0.1069 - y2_output_loss: 0.4882 -
y1_output_root_mean_squared_error: 0.3254 - y2_output_root_mean_squared_error:
0.7017 - val_loss: 1.6933 - val_y1_output_loss: 0.3357 - val_y2_output_loss:
1.4018 - val_y1_output_root_mean_squared_error: 0.5869 -
val_y2_output_root_mean_squared_error: 1.1614
Epoch 495/500
614/614 [=====] - 0s 132us/sample - loss: 0.5042 -
y1_output_loss: 0.1465 - y2_output_loss: 0.3563 -
y1_output_root_mean_squared_error: 0.3841 - y2_output_root_mean_squared_error:
0.5972 - val_loss: 0.9830 - val_y1_output_loss: 0.2684 - val_y2_output_loss:
0.7022 - val_y1_output_root_mean_squared_error: 0.5195 -
val_y2_output_root_mean_squared_error: 0.8445
Epoch 496/500
614/614 [=====] - 0s 129us/sample - loss: 0.3444 -
y1_output_loss: 0.1028 - y2_output_loss: 0.2412 -
y1_output_root_mean_squared_error: 0.3217 - y2_output_root_mean_squared_error:
0.4908 - val_loss: 1.0540 - val_y1_output_loss: 0.2479 - val_y2_output_loss:

```

```

0.7942 - val_y1_output_root_mean_squared_error: 0.5041 -
val_y2_output_root_mean_squared_error: 0.8944
Epoch 497/500
614/614 [=====] - 0s 123us/sample - loss: 0.2871 -
y1_output_loss: 0.0867 - y2_output_loss: 0.1998 -
y1_output_root_mean_squared_error: 0.2947 - y2_output_root_mean_squared_error:
0.4475 - val_loss: 1.1637 - val_y1_output_loss: 0.2323 - val_y2_output_loss:
0.9569 - val_y1_output_root_mean_squared_error: 0.4872 -
val_y2_output_root_mean_squared_error: 0.9624
Epoch 498/500
614/614 [=====] - 0s 122us/sample - loss: 0.3353 -
y1_output_loss: 0.0922 - y2_output_loss: 0.2413 -
y1_output_root_mean_squared_error: 0.3049 - y2_output_root_mean_squared_error:
0.4923 - val_loss: 0.9590 - val_y1_output_loss: 0.2391 - val_y2_output_loss:
0.7492 - val_y1_output_root_mean_squared_error: 0.4933 -
val_y2_output_root_mean_squared_error: 0.8460
Epoch 499/500
614/614 [=====] - 0s 123us/sample - loss: 0.3552 -
y1_output_loss: 0.1084 - y2_output_loss: 0.2531 -
y1_output_root_mean_squared_error: 0.3219 - y2_output_root_mean_squared_error:
0.5015 - val_loss: 3.8270 - val_y1_output_loss: 1.5412 - val_y2_output_loss:
2.4268 - val_y1_output_root_mean_squared_error: 1.2114 -
val_y2_output_root_mean_squared_error: 1.5361
Epoch 500/500
614/614 [=====] - 0s 124us/sample - loss: 0.3869 -
y1_output_loss: 0.1343 - y2_output_loss: 0.2504 -
y1_output_root_mean_squared_error: 0.3674 - y2_output_root_mean_squared_error:
0.5019 - val_loss: 0.9105 - val_y1_output_loss: 0.2592 - val_y2_output_loss:
0.6496 - val_y1_output_root_mean_squared_error: 0.5153 -
val_y2_output_root_mean_squared_error: 0.8031

```

## 1.7 Evaluate the Model and Plot Metrics

```

[7]: # Test the model and print loss and mse for both outputs
loss, Y1_loss, Y2_loss, Y1_rmse, Y2_rmse = model.evaluate(x=norm_test_X,
    ↪y=test_Y)
print("Loss = {}, Y1_loss = {}, Y1_mse = {}, Y2_loss = {}, Y2_mse = {}".
    ↪format(loss, Y1_loss, Y1_rmse, Y2_loss, Y2_rmse))

```

```

154/154 [=====] - 0s 35us/sample - loss: 0.9105 -
y1_output_loss: 0.2651 - y2_output_loss: 0.6355 -
y1_output_root_mean_squared_error: 0.5153 - y2_output_root_mean_squared_error:
0.8031
Loss = 0.9104717102917758, Y1_loss = 0.2650565207004547, Y1_mse =
0.5153244733810425, Y2_loss = 0.6355450749397278, Y2_mse = 0.8030643463134766

```

```
[8]: # Plot the loss and mse
Y_pred = model.predict(norm_test_X)
plot_diff(test_Y[0], Y_pred[0], title='Y1')
plot_diff(test_Y[1], Y_pred[1], title='Y2')
plot_metrics(metric_name='y1_output_root_mean_squared_error', title='Y1 RMSE',
             ylim=6)
plot_metrics(metric_name='y2_output_root_mean_squared_error', title='Y2 RMSE',
             ylim=7)
```





