

TIME SERIES FOR THE NUMBER OF ACCIDENTS





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Our Team

DATA

Selected a Dataset from **Kaggle**.

Dataset Name:

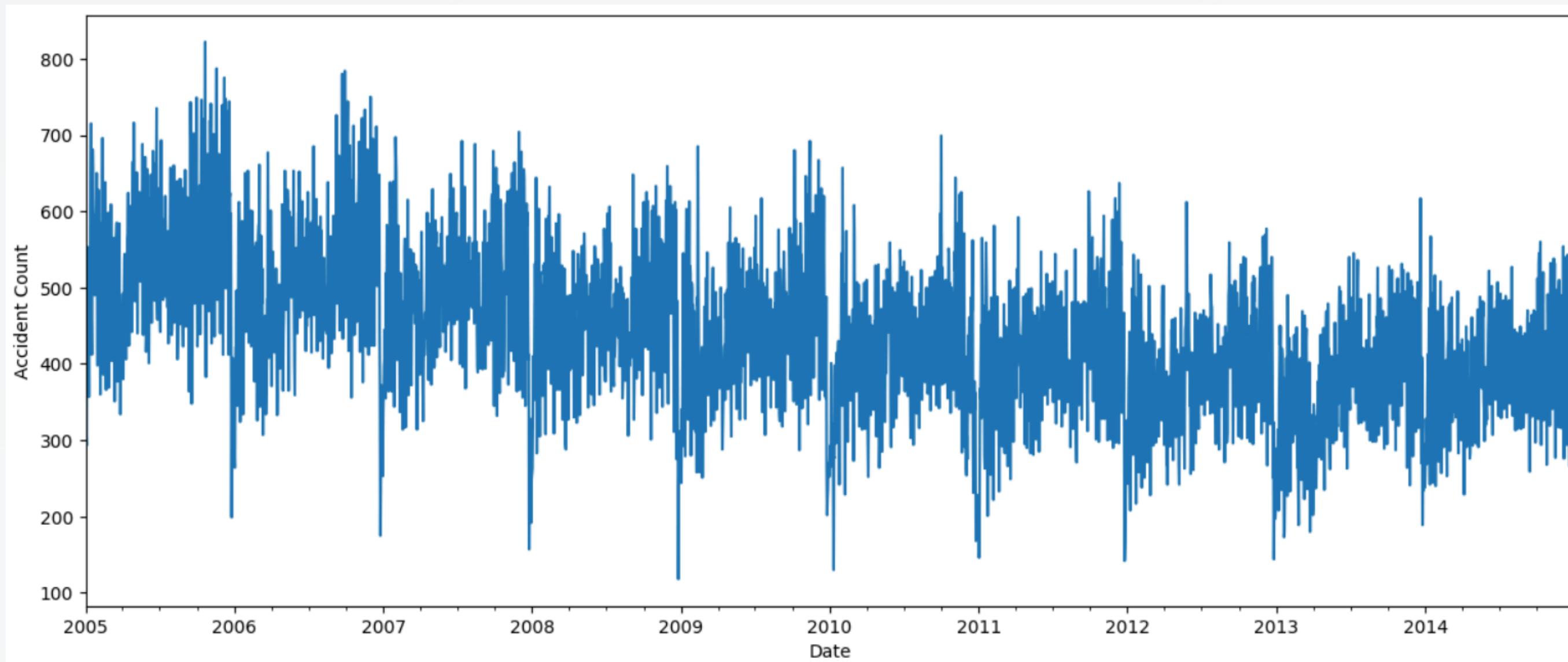
UK Accidents 10 years history with many variables.

GOALS

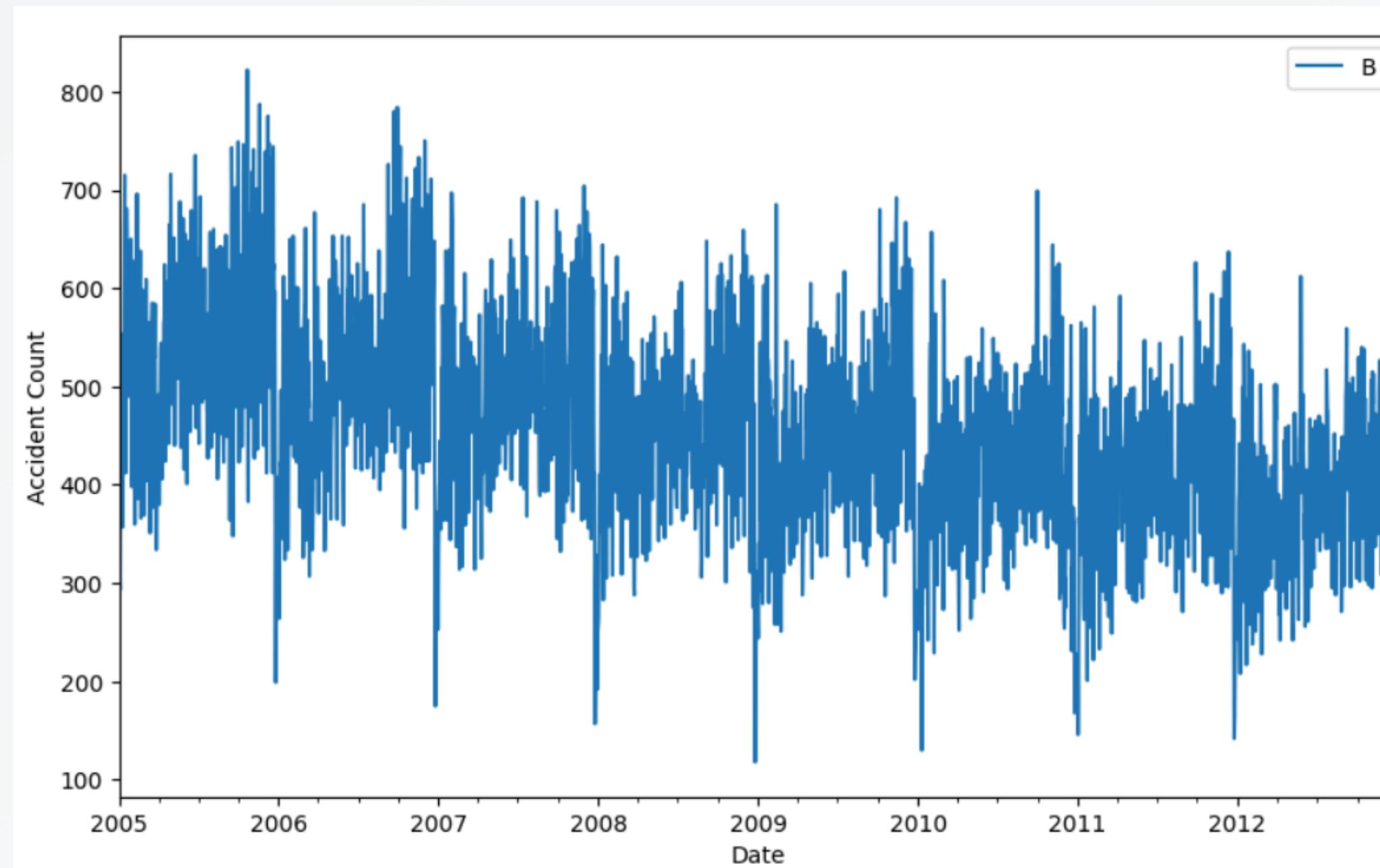
- 01** Forecasting the number of accidents for the upcoming year.

- 02** Detecting abnormal spikes or dips in accident number of accidents underlying causes and implement preventive measures.

DATAFRAME: ACCIDENT COUNT

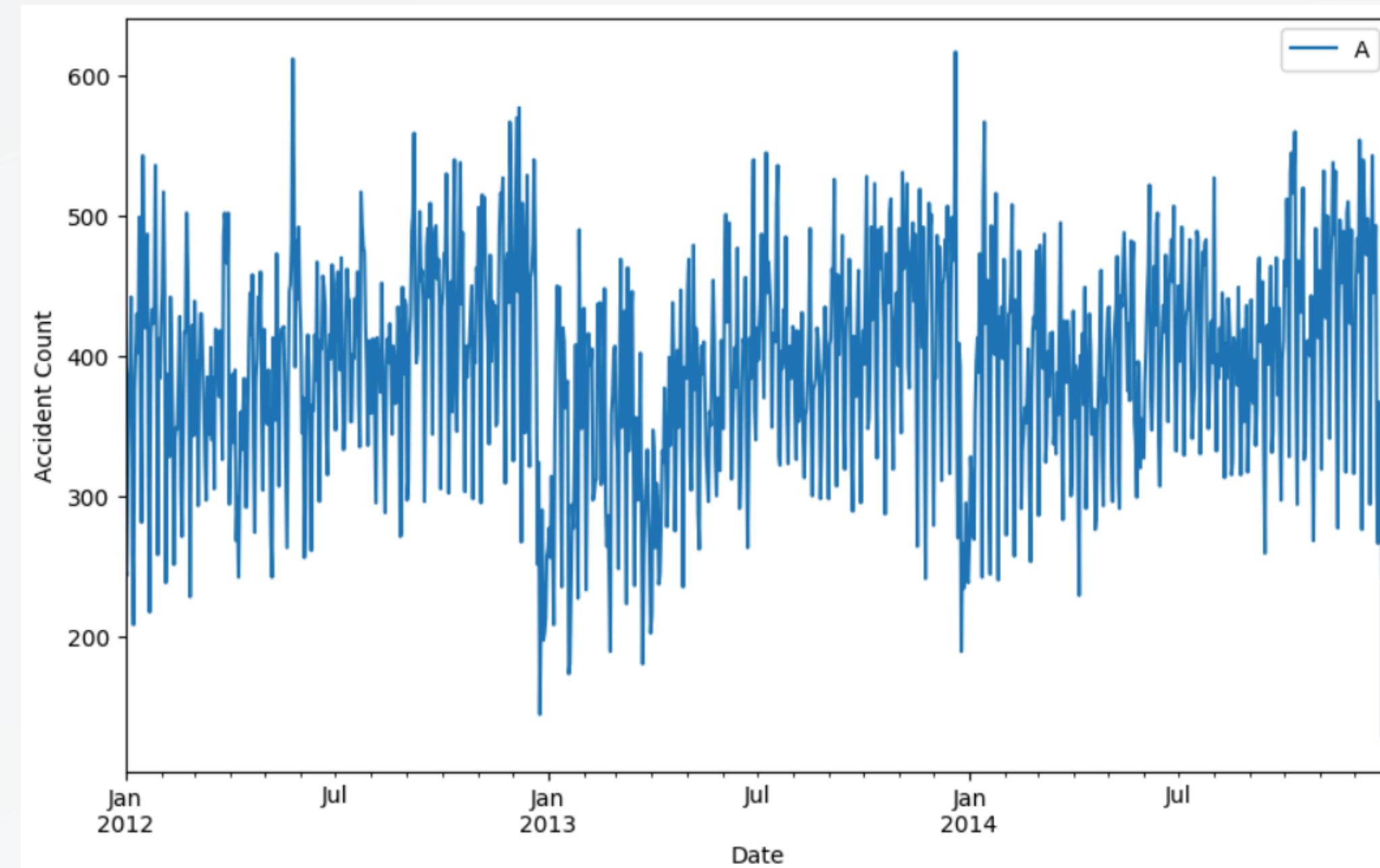


ACCIDENT COUNT



Before 2012

ACCIDENT COUNT



After 2012

SPLITTING THE DATFRAME

Training set consisting of data **from 2005 to 2012**.

Testing set containing data from **2012 onwards**.

Shape of the training set	Shape of the testing set
(2922, 1)	(1096, 1)

MODELS

Building and training the **GRU**, **LSTM**, and **ARIMA** models.

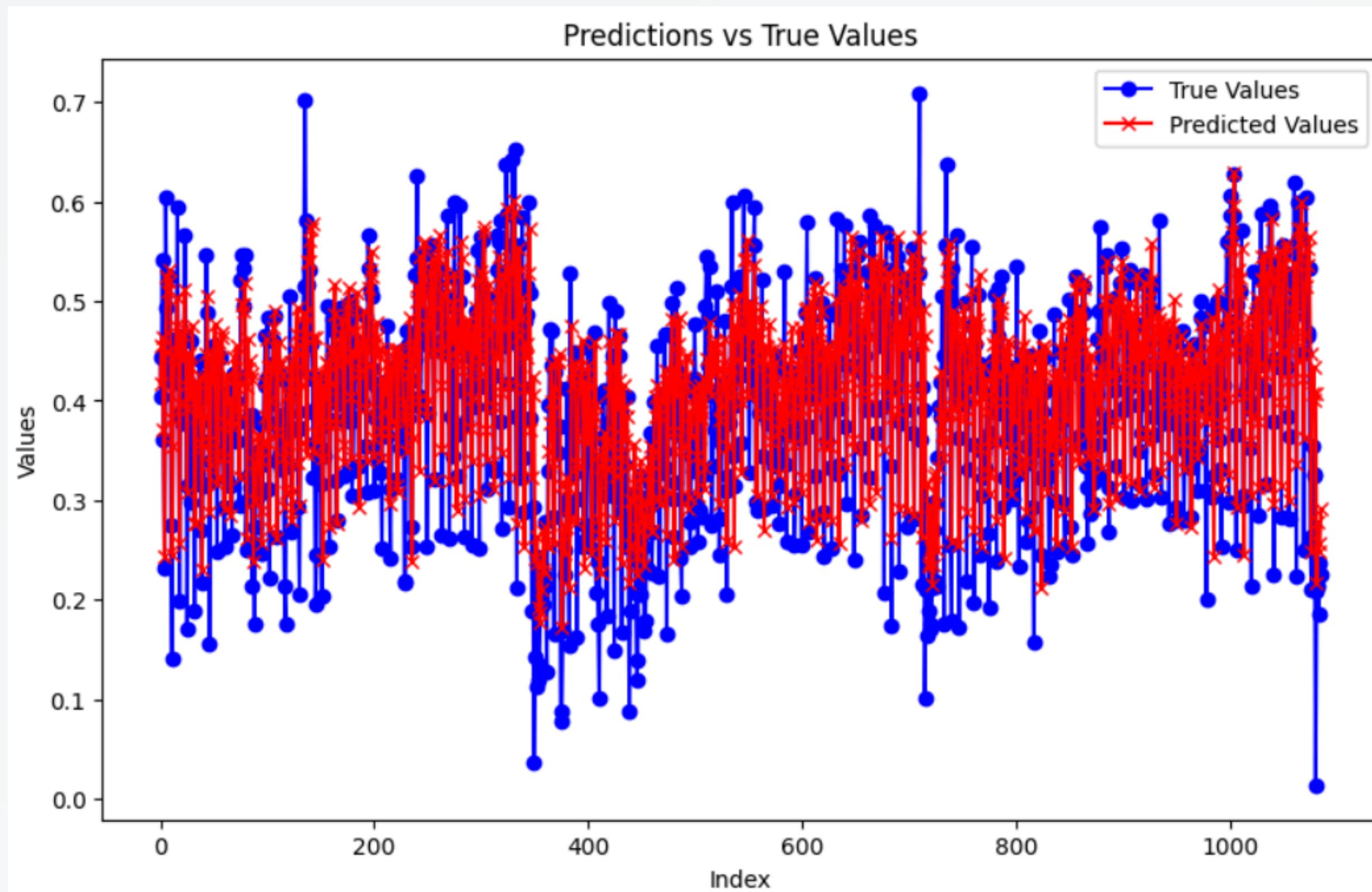
GRU MODEL

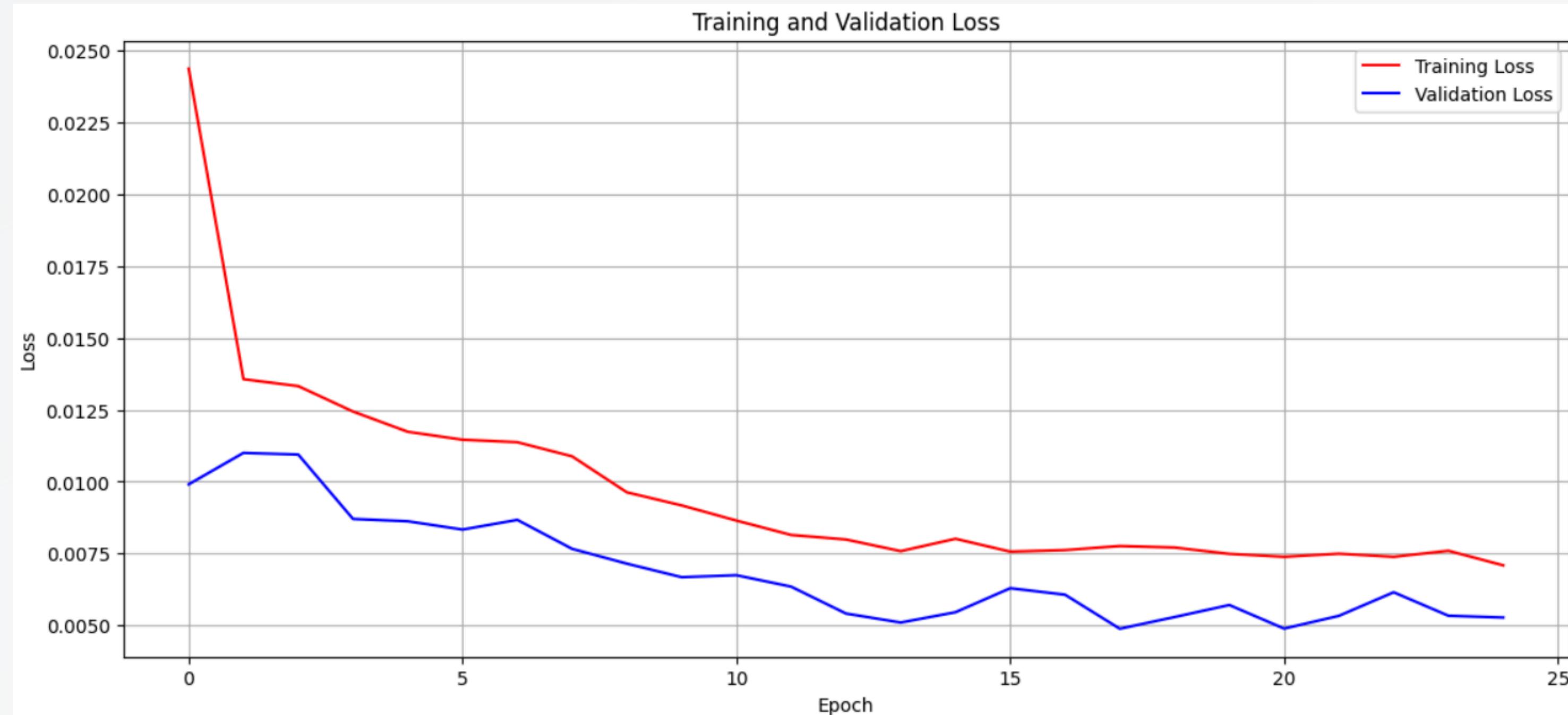
Layer (type)	Output Shape	Param #
gru_12 (GRU)	(None, 10, 200)	121,800
gru_13 (GRU)	(None, 64)	51,072
dense_8 (Dense)	(None, 1)	65

Total params: 172,937 (675.54 KB)

Trainable params: 172,937 (675.54 KB)

Non-trainable params: 0 (0.00 B)





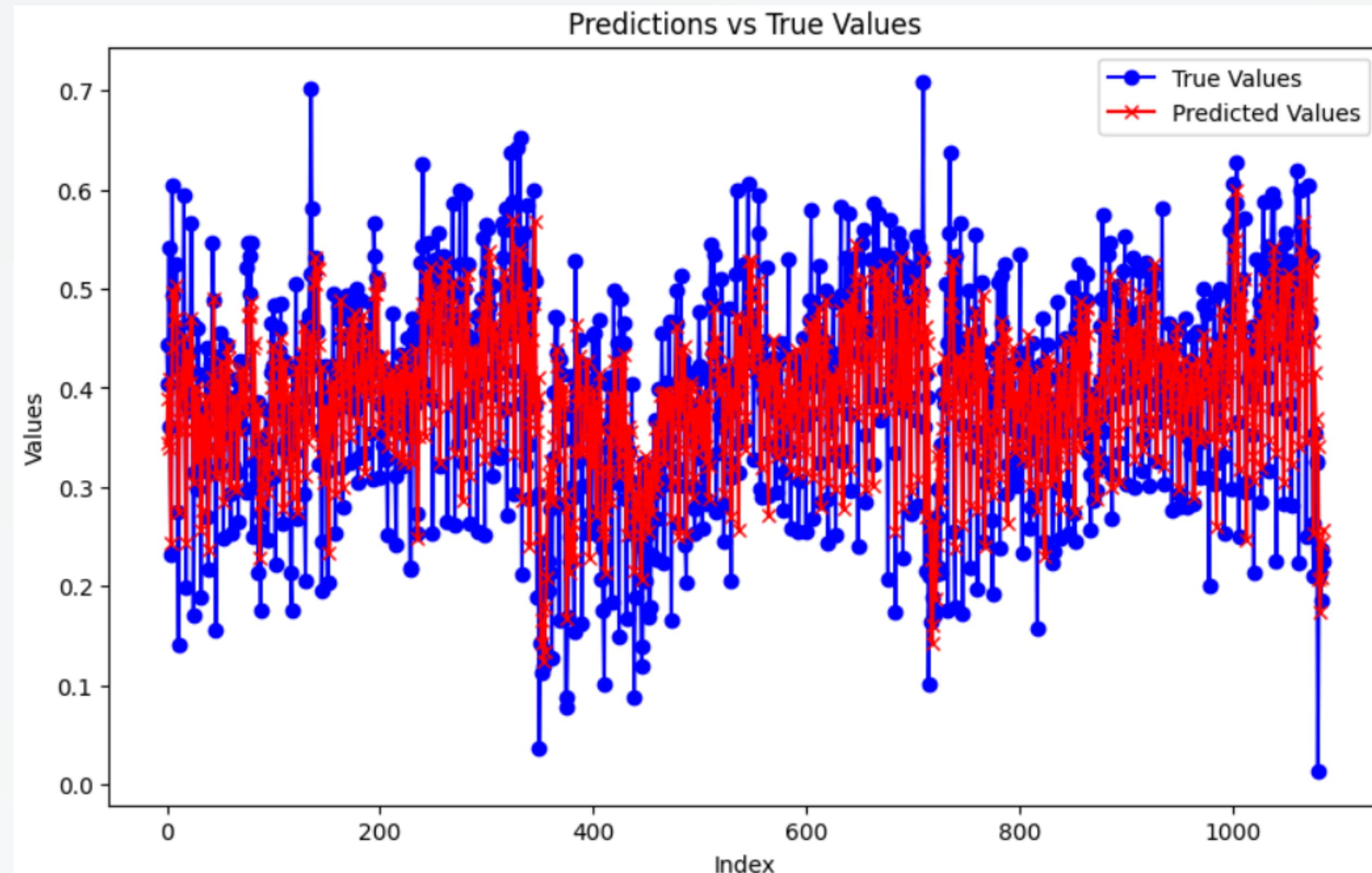
LSTM MODEL

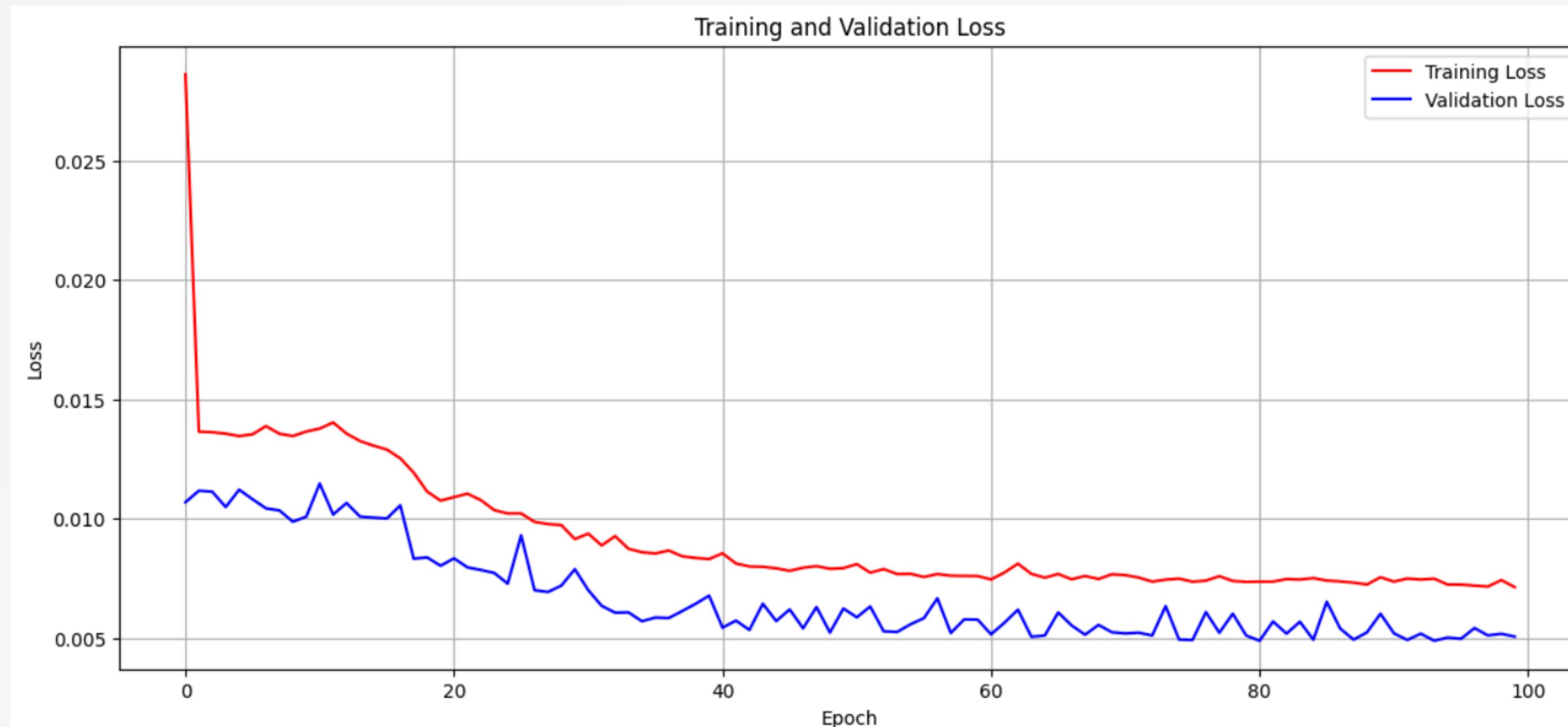
Layer (type)	Output Shape	Param #
lstm_2 (LSTM)	(None, 10, 128)	66,560
lstm_3 (LSTM)	(None, 64)	49,408
dense_3 (Dense)	(None, 1)	65

Total params: 116,033 (453.25 KB)

Trainable params: 116,033 (453.25 KB)

Non-trainable params: 0 (0.00 B)



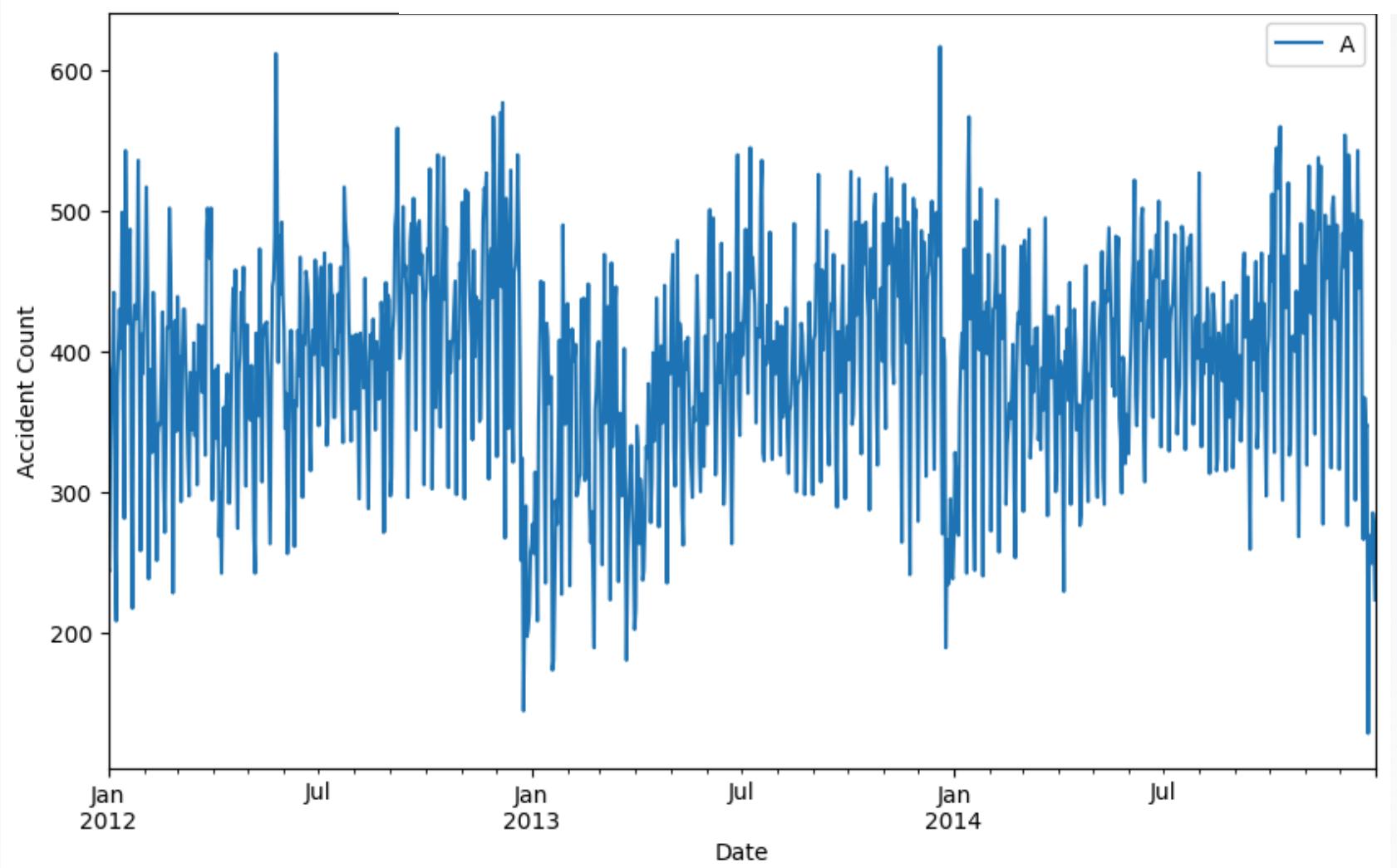
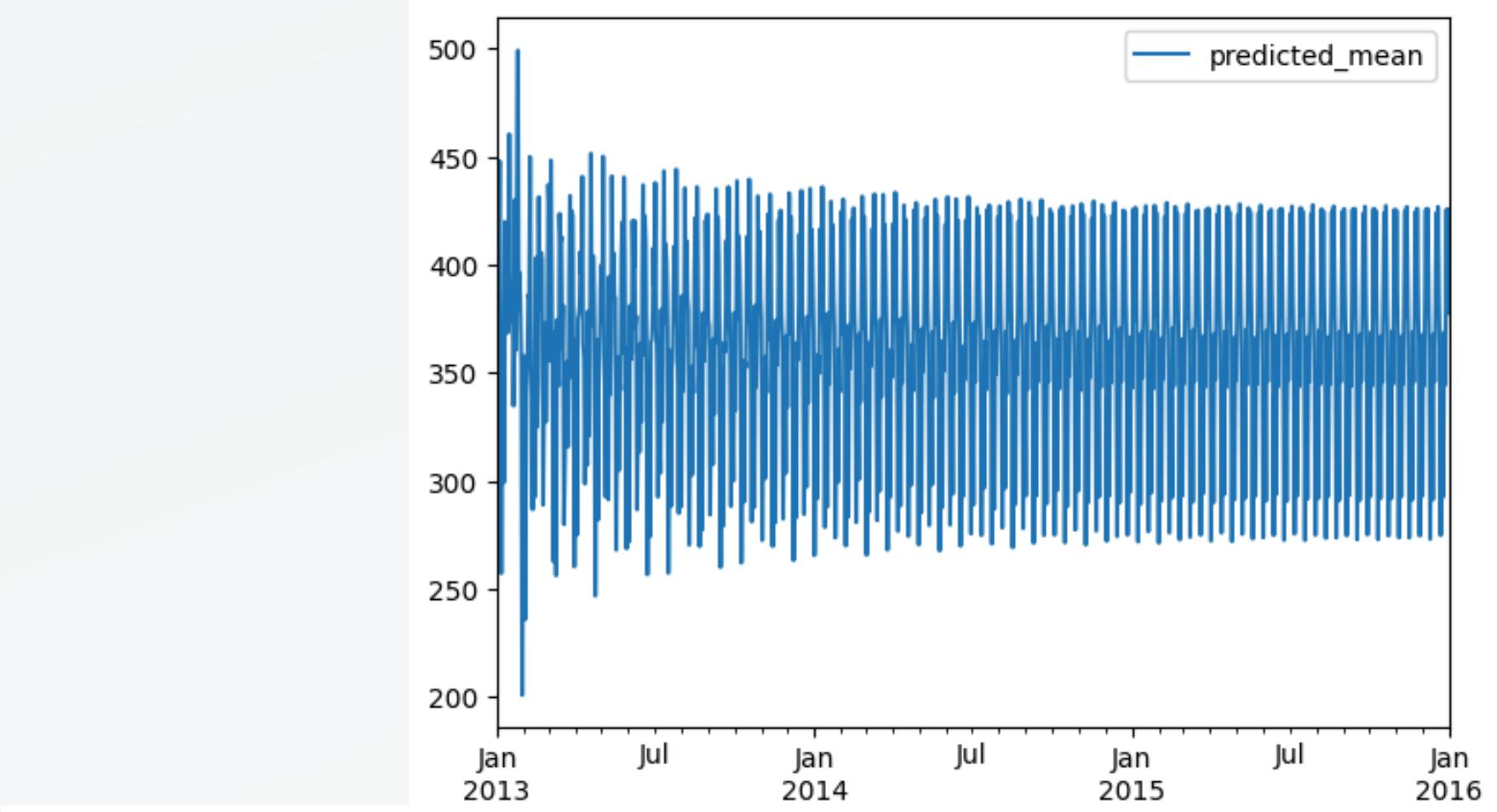


ARIMA MODEL

ARIMA MODEL

- first we used Auto ARIMA function
- SARIMAX
- high accuracy at first
- overwhelming seasonality recognition

ARIMA MODEL



FUTURE WORK

- Applying the model on real data in Riyadh in several ways.
- Applying the model to weekly real-time data.

OUR TEAM

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Suliman Alotaibi

Ziyad Bin Tuwaim



**THANK YOU FOR
LISTENING!**