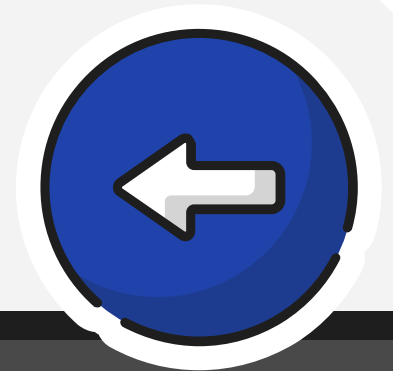


Time Series Forecasting



Project Overview:

The project aims to predict traffic volume at a specific junction based on the time period (morning and evening) for the upcoming days.



Dataset Description:

The dataset, called "Traffic," was chosen from a weekly exercise. It contains columns for DateTime, Junction, and Vehicles. The data starts from 2015-11-01.

	DateTime	Junction	Vehicles	ID
0	2015-11-01 00:00:00	1	15	20151101001
1	2015-11-01 01:00:00	1	13	20151101011
2	2015-11-01 02:00:00	1	10	20151101021
3	2015-11-01 03:00:00	1	7	20151101031
4	2015-11-01 04:00:00	1	9	20151101041

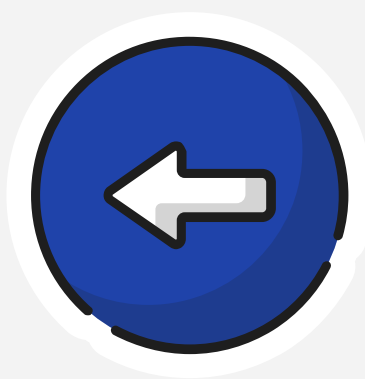


Data Collection Process:

The data was obtained from an open-source and preprocessed, including feature engineering to extract periods.

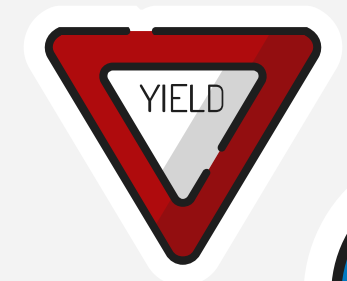
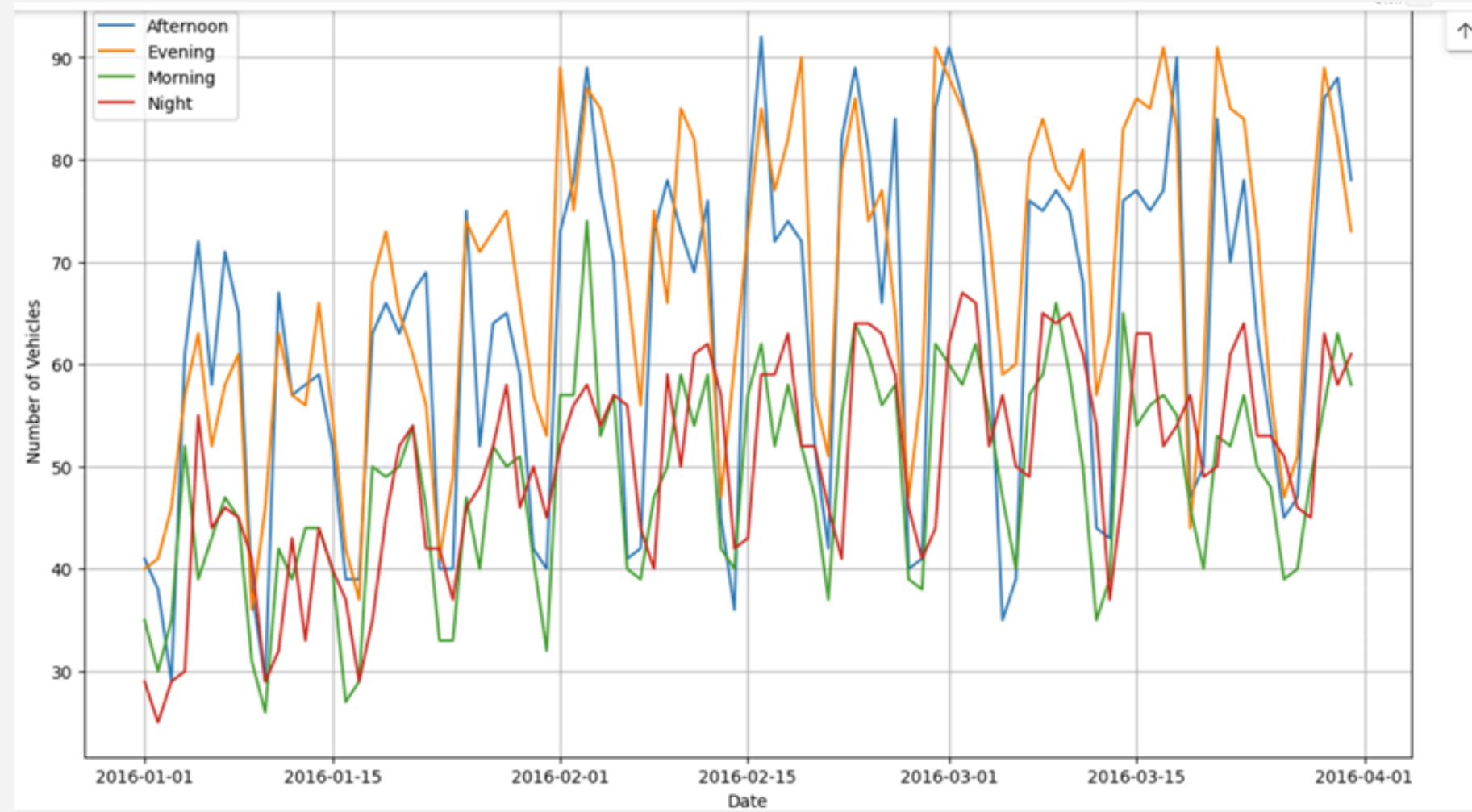
	DateTime	Junction	Vehicles	ID	Period
0	2015-11-01 00:00:00	1	15	20151101001	Night
1	2015-11-01 01:00:00	1	13	20151101011	Night
2	2015-11-01 02:00:00	1	10	20151101021	Night
3	2015-11-01 03:00:00	1	7	20151101031	Night
4	2015-11-01 04:00:00	1	9	20151101041	Night





Exploratory Data Analysis (EDA):

We zoomed in on the data for the first quarter of 2016 for Junction 2 to better understand the graphs.





Model Selection:

We experimented with RNN, LSTM, and GRU models to compare performance.

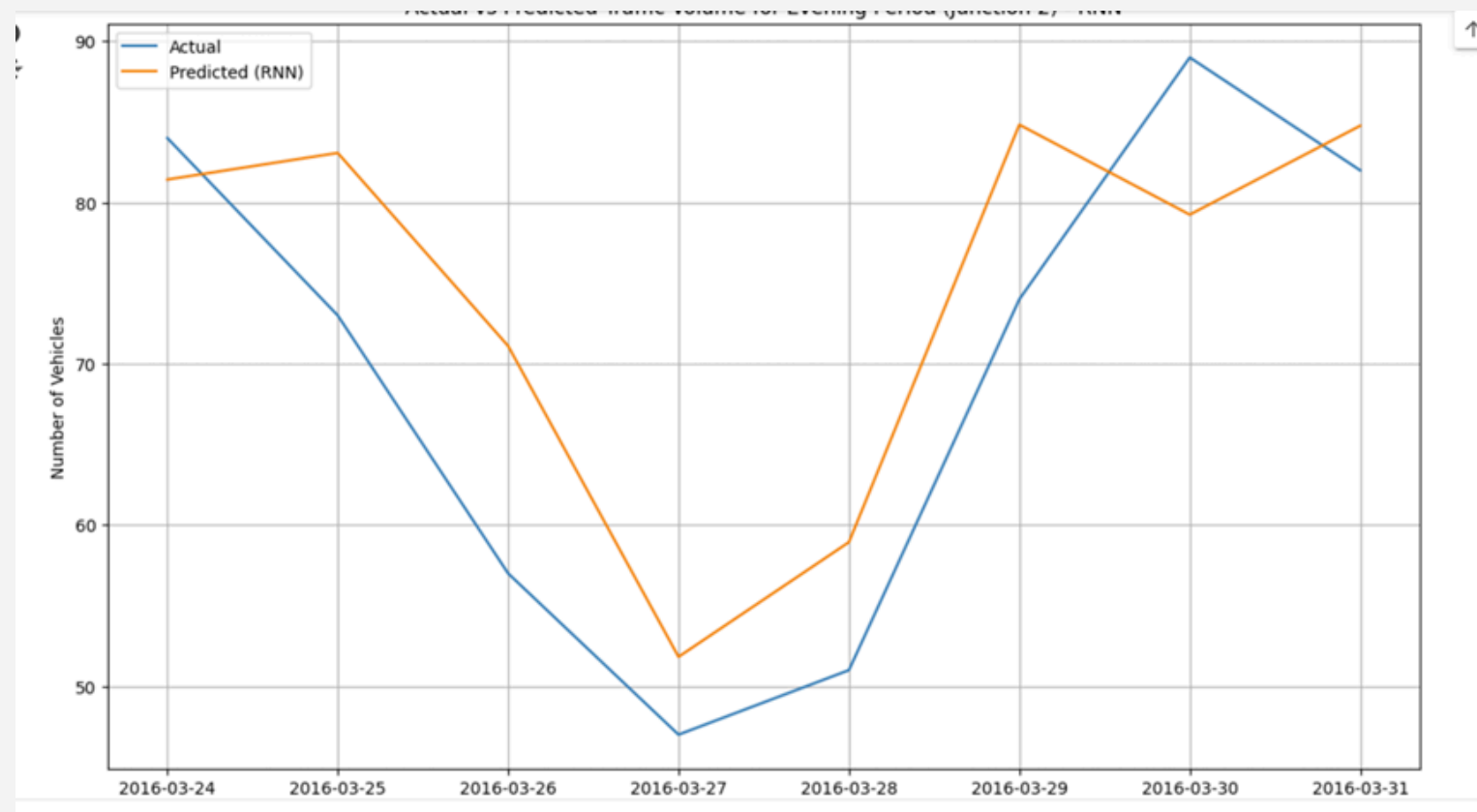
Model Training Process:

Normalization and data splitting were done the same way for all three models, with the same complexity for each model.

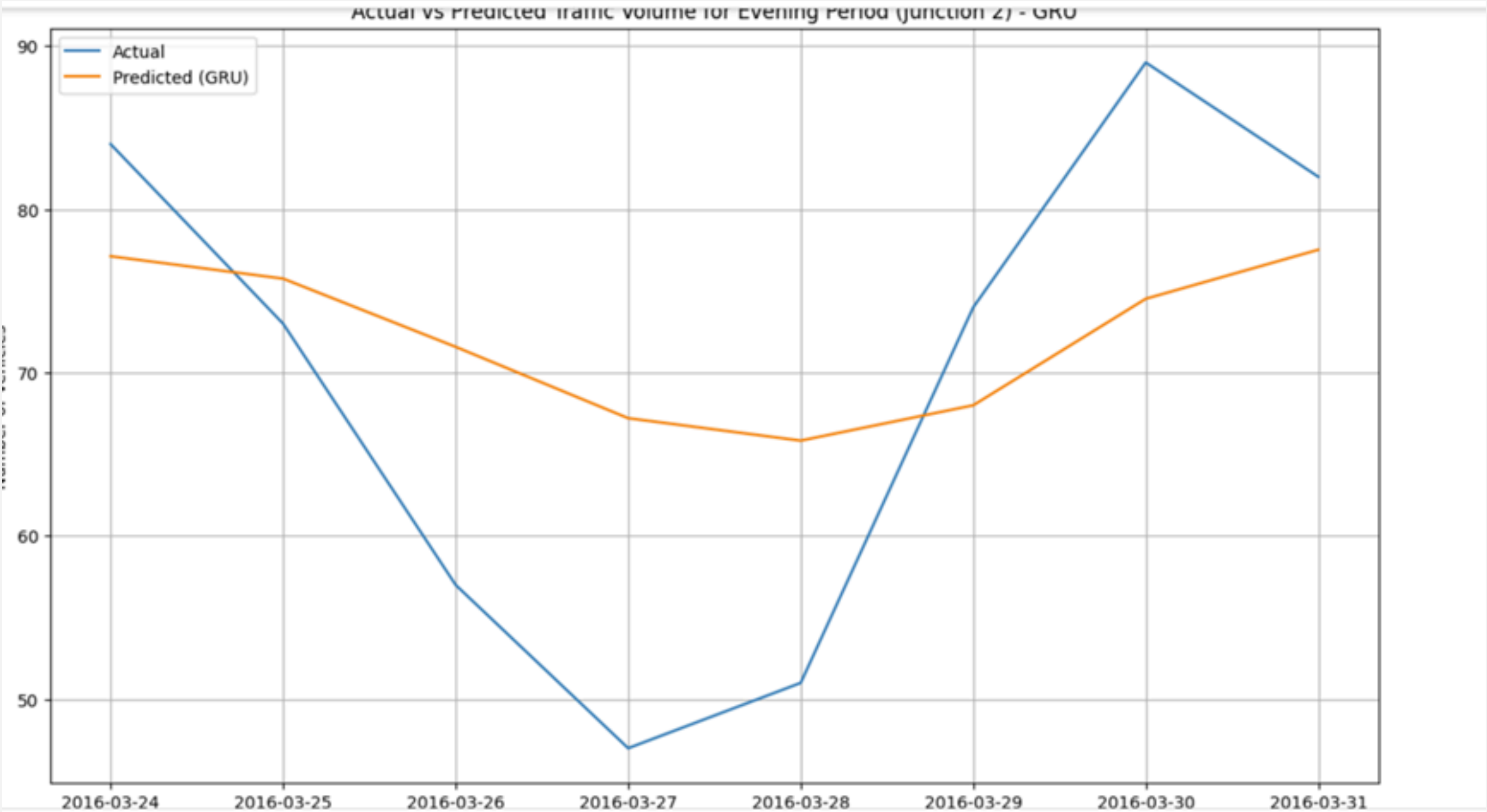


Model Evaluation:

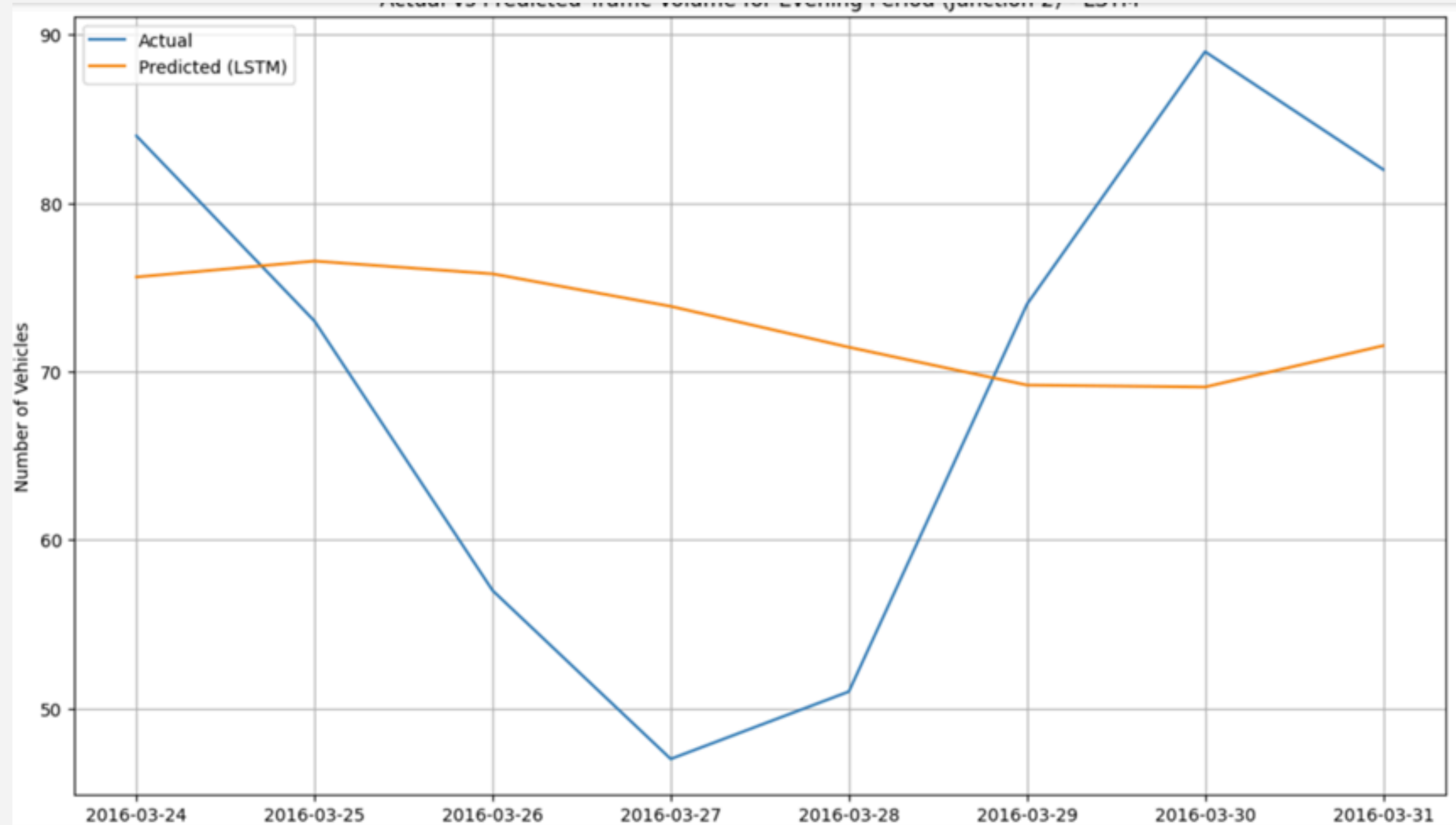
RNN showed the best performance in predictions, being closest to the actual values.



GRU



LSTM





Future Work and Improvements:

Consider increasing the number of layers and experimenting with different parameters to ensure better outcomes.





Conclusion:

LSTM may not always be the best choice for sequential data, as performance can vary depending on the dataset



Thank You

