

ABSTRACT

Forecasting Traffic on a Junction using GRU

by

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Traffic congestion has become a huge problem in cities all around the world, and traditional linear models are often unable to manage the intricate, non-linear patterns of daily traffic. In an effort to overcome this issue, this study proposes the use of deep learning based on the Gated Recurrent Unit (GRU) architecture for traffic volume prediction in a specific area where monitoring is done. The Metro Interstate Traffic Volume dataset, from 2012 to 2018 with a data collection gap between 2014 to 2015, was used. Data preprocessing and correlation-based feature selection, and tested different configurations with one, three, and five layers of GRUs were done. Our findings indicate that the best-performing configuration was the three-layer GRU with the most informative features, reaching an RMSE of 0.0525 and MAPE of 17.03%. The research implies that GRU networks are capable of effectively detecting the seasonal patterns and have a low-footprint issue (complexity to speed) in comparison to other types of recurrent networks.