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Graph Based Traffic Analysis and Delay Prediction Using a Custom Built Dataset

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Abstract : There on a constant rise in the availability of high volumes of data gathered from multiple sources, resulting in an abundance of unprocessed information that can be used to monitor patterns and trends in user behaviour. Similarly, year after year, Malta is also constantly experiencing ongoing population growth and an increase in mobilization demand. This research takes advantage of data which is continuously being sourced and converting it into useful information related to the traffic problem on the Maltese roads. The scope of this paper is to provide a methodology to create a custom dataset (MalTra - Malta Traffic) compiled from multiple participants from various locations across the island to identify the most common routes taken to expose the main areas of activity. This use of big data is seen being used in various technologies and is referred to as ITSs (Intelligent Transportation Systems), which has been concluded that there is significant potential in utilising such sources of data on a nationwide scale. Furthermore, a series of traffic prediction graph neural network models are conducted to compare MalTra to large-scale traffic datasets.

Keywords : graph neural networks, traffic management, big data, mobile data patterns
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