Analysing Vehicular Mobility Structure Under a Temporal Perspective

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Abstract

In recent years, Vehicular Networks have received much attention because they can contribute to solving several problems of urban scenarios. An interesting perspective to characterize these urban problems is to study vehicles' mobility records to increase our knowledge about them. Thus, an alternative is to model these records as graphs enabling us to apply algorithms and graph theory to design new solutions for vehicular networks. This work explores three different strategies to model vehicular networks and analyzes two real well-known traces from Rome and San Francisco. We perform a study on the network aspect, measuring metrics that portray some network characteristics and proprieties. We highlight the advantages and limitations of each approach evaluated. Also, we present some applications and future directions for the knowledge extracted with this analysis.

Full-text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the manuscript can be downloaded and accessed as a PDF.

Figures

Figure 1

Graph Models analyzed.

(a) San Francisco

(b) Rome

Figure 2

Number of vehicles in traffic throughout the day.

Figure 3

Metrics results for the San Francisco city.

Figure 4

Metrics results for the Rome city.

(a) San Francisco

(b) Rome

Figure 5

Temporal Edge Correlation during the day.

(a) San Francisco

(b) Rome

Figure 6

Duration vs. Frequency of edges.

(a) San Francisco

(b) Rome

Figure 7

please see the manuscript file for the full caption

Figure 8

Variation of Aggregate Time Interval for the San Francisco city.

Figure 9

Variation of Aggregate Time Interval for the Rome city.