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Enriching Traffic Information with a Spatiotemporal Model based on Social Media

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Bruno P. Santos ; Paulo H. L. Rettore ; Heitor S. Ramos ; Luiz F. M. Vieira ; Antonio A. ... All Authors



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Abstract:

In this work, we argue that Location-Based Social Media (LBSM) feeds may offer a new layer to improve traffic and transit comprehension. Initially, we showed the significant correlation between Twitter's feed and traditional traffic sensors. Then, we presented the Twitter MAPS (T-MAPS) a low-cost spatiotemporal model to improve the description of traffic conditions through tweets. T-MAPS enhance traditional traffic sensors by carrying the human lens into the transportation system. We conducted a case study by running T-MAPS and Google Maps route recommendation, in which, we showed T-MAPS viability, as an additional traffic descriptor. As a result, we noticed the median of route similarity reached 62%, and for a quarter of the evaluated trajectories, the similarity achieved between 75% and 100%. Also, we presented three route description services, based on natural language analyzes, Route Sentiment (RS), Route Information (RI), and Area' Tags (AT) aiming to enhance the route information.

Published in: 2018 IEEE Symposium on Computers and Communications (ISCC)

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Contents

I. Introduction

The transport infrastructure might be able to promote people's movement efficiently, but it also implies in the constant need for planning and management of the transportation system. In this sense, understanding urban mobility (traffic and transit) has been the focus of governments, researchers, and industries [1] . Usually, traffic and transit specialists use traditional raw data sources (e.g., data from inductive loops, cameras, and origin-destination matrix) to perform their analyzes. Unfortunately, the access to these data sources is, in general, limited to those who are connected to governmental entities or large corporations, it covers a limited scope and has a high financial cost to access and use it. This becomes a barrier to understand better urban mobility that asks for other solutions.

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