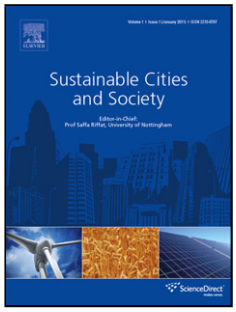

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SMART TSS: Defining Transportation System Behavior using Big Data Analytics in Smart Cities

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Highlights

- A smart city improves the quality of its citizens by providing access to ubiquitous services. Intelligent Transportation Systems (ITS) have a fundamental role in transforming a metropolitan area into a smart city.
- In the past two decades, many applications of ITS, e.g. city-wide traffic management and monitoring, smart parking, public transportation information services (bus, train, taxi, plane, etc.), logistics, real-time traffic, road speed limit monitoring and management etc., are deployed in smart cities.
- The sensors or mobile objects in ITS constantly generate mobility data and the scale at which this data is generated is witnessing an exponential increase in volumes. To store and subsequently analyze such massive data generated by sensors, new architectures are needed which are primarily designed for working with big data.
- We propose a big data analytics architecture for ITS. The proposed architecture has a built-in storage and analysis capability to work with ITS data and is composed of four modules, namely (1) Big Data Acquisition and Preprocessing Unit (2) Big Data Processing Unit (3) Big Data Analytics Unit and (4) Data Visualization Unit.
- A detailed analysis of ITS big data for monitoring the average speed of a vehicle at w.r.t. the time attribute is provided. The proposed architecture is evaluated using Hadoop thus validating the proof of concept. The empirical results are encouraging and open directions for future research.