MOBILE BIG DATA FOR URBAN ANALYTICS


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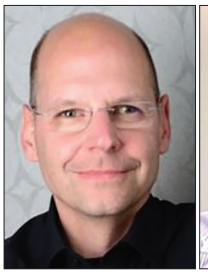
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The rapid progress of urbanization not only enables higher populations living in modern cities, but also engenders many "urban diseases," such as air pollution, traffic congestion, and increased energy consumption. Mobile big data, with advanced communication and information technologies, can be collected through a variety of data sources, including cellular networks, the Internet of Things (IoT), social networks, and so on. This allows detailed analysis on the moving patterns of citizens and behaviors of devices deployed in urban areas, which helps grasp the outlines and the inner flows of cities. Based on those observations, prediction of events and their involved crowds and departments in cities can lead the city to become more intelligent and greener.

Chen *et al.* propose an unban healthcare big data system based on urban air quality data. The proposed system can provide health guidance for urban residents in aspects of respiratory diseases, outdoor travel, sleep quality, and so on to lead healthier lives. Gong *et al.* implement a malicious account detection system for location-based social networks (LBSNs). This article provides large-scale and reliable LBSN datasets to investigate behavior patterns of massive urban users. Based on this research, malicious accounts in different LBSNs can be identified more accurately. Xie *et al.* investigate travelers' preferences based on check-in data to provide better suggestions for travelers. This study shows that travelers adapt their preferences to the characteristics of their destinations, which can provide guidelines for LBSA service providers and city governments. Fortes *et al.* present a framework for the automatic acquisition and processing of social data applied to the management of cellular networks. The results show that the presented approach is a powerful tool to support varied operations, administration, and maintenance, allowing a better fit between the network services and the changing demands of users. Hossain *et al.* propose a communication framework for urban mobile big data integrating an urban environment classification system to classify environmental noises while having a conversation through smartphones. The proposed system achieves more than 95 percent accuracy in all the environment cases. In the future, the system will be improved to adapt to the scenario when a user is moving. Zhou *et al.* review literature aiming at solving urbanization issues, such as traffic management, urban planning, epidemic control, and communication network improvement, and provide a city-wide case study leveraging WiFi-based localization to study the mobility patterns of students.

This *IEEE Communications Magazine* Feature Topic provides a comprehensive overview of the state-of-the-art developments in technology, application, and theory for mobile big data for urban analytics.

BIOGRAPHIES

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