Guest Editorial: Urban Computing

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URBAN computing is a process of acquisition, integration, and analysis of big and heterogeneous data generated by a diversity of sources in urban spaces, such as sensors, devices, vehicles, buildings, and human, to tackle the major issues that cities face, e.g., air pollution, increased energy consumption and traffic congestion. Urban computing connects unobtrusive and ubiquitous sensing technologies, advanced data management and analytics models, and novel visualization methods, to create win-win-win solutions that improve urban *environment*, *human* life quality, and *city* operation systems. Urban computing also helps us understand the nature of urban phenomena and even predict the future of cities. Urban computing is an interdisciplinary field fusing the computing science with traditional fields, like transportation, civil engineering, economy, ecology, and sociology, in the context of urban spaces.

This special issue is comprised of nine interesting papers concering three aspects of cities:

- The first three papers, consisting of "Detecting and Analyzing Urban Regions with High Impact of Weather Change on Transport", "Significant Linear Hotspot Discovery", and "Optimal Pick up Point Selection for Effective Ride Sharing", study the locations and the structure between locations in a city, using a diversity of data. The understanding of urban structure helps better planning a city's infrastructures, such as road networks and public transporation systems.
- The next three papers in this special issue: "Discovering Congestion Propagation Patterns in Spatio-Temporal Traffic Data", "Effective Urban Structure Inference from Traffic Flow Dynamics", and "Local Gaussian Processes for Efficient Fine-Grained Traffic Flow Prediction", understand urban traffic patterns, based on different machine learning models. The understanding of urban traffic helps predicting future traffic conditions and diagnoise traffic congestion.
- The last three papers: "Activity-Based Human Mobility Patterns Inferred from Mobile Phone Data: A Case Study of Singapore", "Modeling Urban Activity by Mining Geotagged Social Data", and "Visual Analysis of Multiple Route Choices based on GPS trajectories", explore human mobility patterns in cities, based on mobile phone data or GPS trajectories. The understanding of human mobility can enable many valuable applications for end users and can also improve urban planning.

Those nine papers cover important and interesting topics in urban computing, using data management, machine learning, and visualization techniques to tackle urban challenges. All of them worth reading and will inspire more interesting ideas and research topics.

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Guest Editors

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