# Book review:
Visualizing the Data City: Social Media as a Source of Knowledge for Urban Planning and Management

Cicuccarelli, P., Lupi, G. & Simeone, L. (2014)
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76 pp.

Social media have increasingly become a part of many people's lives. With the recent technological development of the Internet and mobile devices, people can share their personal spatial experiences of city spaces—for example, places they visit, foods they eat, or what they see—on social networks such as Facebook, Instagram, Twitter, Foursquare, Flick, Panoramio, and so on. Never before, has this unprecedented amount of information on location-based social media revealed dynamics of a city from its urban inhabitants. These social media generate "big data" of the city. In addition to a top-down approach from institutional knowledge, urban planners and designers can learn from local knowledge of "city users" through a bottom-up approach. This large amount of data can represent how people experience a contemporary city and make it possible to investigate urban issues in a way that traditional research methods cannot accomplish. Using these data does not limit by time and cost like in traditional urban studies.

That is why the book *Visualizing the Data City: Social Media as a Source of Knowledge for Urban Planning and Management,* written by Paolo Cicuccarelli, Giorgia Lupi, and Luca Simeone, is so intriguing. This book is one of the pioneers that explores analytical approaches to understand and utilize spatio-temporal-based social media data at the urban scale. It investigates possibilities of using the information from geo-located social media as a source of knowledge for urban planning, design, and management. The potentialities of social media
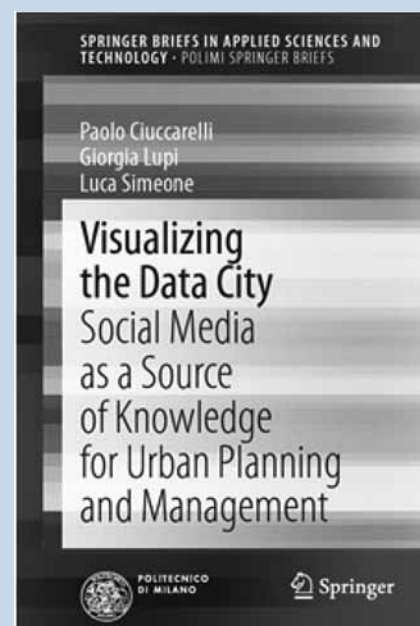
data and applications of *Data City* on urban issues are discussed through examples of existing works and research. *Data City* is defined as the overlaying of multiple, fragmented, and temporary data and information of urban experiences generated by "human-place interactions". The book also recommends strategies to visualize geo-located social media data and a framework for interpreting such data. Their principle of "research-through-design" is present throughout the book.

The authors present the research examples from two of their main research projects: Telltale and Urban Sensing, which are the research collaborations among academia, industry, and government. Both projects have similar research directions and orientation. Telltale is conducted in an exploratory approach. Its goal is to clarify, test, and refine "research questions and interpretation algorithms" of urban issues. On the other hand, Urban Sensing focuses more on the application of the uses of geo-located social media data. The goal of Urban Sensing is to investigate the potential of location-based social media in order to understand urban dynamics. For more information about Urban Sensing, please visit its website, http://urban-sensing.eu/. The technological architectures of the two projects are similar. They collect data from multiple data streams of social media (such as Twitter, Foursquare, Instagram, and Flickr) and then integrate, query, filters, and aggregate the data using an acquisition engine, text-mining engine, data clustering layer, and the matrix of topics of urban interest.

Two research examples from Telltale— (1) Comparing Social Media and (2) Urban Stories—are highlighted in the book. The first study created three maps and graphs comparing the difference of social media services in the city of Milan from Instagram, Foursquare, and Twitter for three weeks in 2012. The maps represent the quantity of pictures from Instagram, check-ins from Foursquare, and tweets from Twitter for each district and time period in Milan. The research found that the spatio-temporal-based data from social media confirm existing urban dynamics in the city. The second research example, Urban Stories, examined spatial patterns of individual Twitter users in Milan during February to March 2013. The study collected geo-located social media data and examined the movement of individual users through the city. The study also aimed to create awareness about the issue on publicly available personal information on social media services.

Three research projects from Urban Sensing— (1) Maps of Babel, (2) Geographies of Time in Milan, and (3) Geographies of Time in New York—are selected as examples in the book. In Maps of Babels, the geo-localized data in Milan mainly from Twitter were collected. The text-mining engine then detected a language used in each tweet. Not only the quantity of languages in the social media data, the result also showed concentrations of social media contribution in each area and the spatial changes during specific time of day. The second example, Geographies of Time in Milan, studies spatial aggregations or "spontaneous geographies" of spatial patterns of social media uses in Milan during

weekdays, weekend, and a special week with an event such as the Milan Design Week. The research procedure of Geographies of Time was repeated from the study area in New York City. The number of tweets in New York City was significantly higher than in Milan. So the tolerance level or weighted analysis was introduced to the procedure. The result found that the weighted views were useful for examining similar behaviors in the city scale while the non-weight views were useful to analyze behavior s and phenomena in a hot spot areas at a specific times and places. In addition to three examples from Urban Sensing, the authors discuss briefly about Urban Sketching Tool, a prototype application of Urban Sensing for end users.

The strength and weakness of geo-referenced social media data analysis and visualization are discussed in the last chapter of the book. The potentialities of geo-referenced data can provide information to identify urban dynamics and complement traditional research methods on a spatial-temporal analysis. The social media data can be integrated with institutional knowledge to "complete, compare, and cross-validate" the results of analyses. On the other hand, there are two major shortcomings of social media data analysis: (1) distribution of mobile devices connecting to the Internet and (2) privacy. However, some cities are now using a platform of social media for a city administration. For example, Boston has created the Customer Relation Management System that integrates social media to its system. People can notify the city administration about urban problems, for example, potholes and graffiti through Twitter. It is now easier for citizen to communicate with city's decision makers and administrators.

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