A special issue on **Big Data, Spatial Optimization and Planning** with *Environment and Planning B: Urban Analytics and City Science*

Spatial optimization is a powerful spatial analysis technique that can be used to identify and exploit optimal solution(s) and generate a large number of alternatives. The formulation of such problems involves maximizing or minimizing one or more objectives while satisfying a number of constraints. Solution techniques often rely on exact models, such as linear programming and integer programming, or heuristic algorithms, such as Tabu Search, Simulated Annealing, and Genetic Algorithms. Spatial optimization techniques have been utilized in numerous planning applications, such as location-allocation modeling/site selection, land use planning, regionalization, routing and urban design. These methods can be seamlessly integrated into the planning process and generate many optimal/near-optimal planning scenarios or solutions, in order to more quantitatively and scientifically support the planning process. However, as most of such problems are NP-hard in nature, even a small dataset will generate a very complex solution space and therefore tend to be very computational intensive. In addition, the quantification and modeling of different (spatial) objectives and relevant constraints also remain to be challenges, which require further attention and efforts from the community.

In the past decade, emerging big data has started to play a more and more important role in city management and planning, and is changing our perceptions about cities. With no doubt, we are at the start of the big data revolution as society begins to incorporate information technologies into every facet of our existence (Mayer-Schonberger and Cukie, 2013), and the big data revolution is and will be significantly changing the way of how spatial optimization techniques are utilized in various planning tasks. Traditional approaches, such as linear programming, need to be recast when solving complex problems involving big data while addressing problems such as land use planning, urban economic modeling, and optimal resource allocation. The goal of such work is to better understand, predict and plan the future of cities.

In order to capture the latest advancement and encourage more studies in integrating big data, spatial optimization and planning, this special issue with *Environment and Planning B: Urban Analytics and City Science* aims to be one of the first efforts to develop a viable research agenda in this area of research and application domain. We are seeking original unpublished papers on the following topics including, but not limited to:

- Big data acquisition and analytics techniques for spatial optimization and planning
- Integration of high performance computing, cloud computing, GPU-based parallel computing in spatial optimization and planning
- Design of scalable algorithms to solve computationally intensive spatial optimization and planning problems, e.g. location-allocation modeling, land use planning, regionalization, routing and urban design problems.
- Spatiotemporal optimization for planning
- Spatial planning support systems
- Visions of big data spatial optimization for planning

Important dates:

- Apr. 15, 2018, abstract submission
- Jul. 15, 2018, full paper submission invited

- Oct. 15, 2018, full paper submission to the online submission system
- Feb. 28, 2019, paper acceptance notification
- Apr. 15, 2019, paper in final form
- Jul. 15, 2019, special issue published

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