

# Introduction to this Special Issue: Spatial Query Processing and Traffic Simulation

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The goal of this special issue is to disseminate new research directions, challenges, and visions of broad interest to the SIGSPATIAL community. Two topics are covered in this special issue. The first topic of Spatial Query Processing features two articles describing novel and useful spatial query types and surveying new directions for existing queries. The second topic of Traffic Simulation spotlights one article that puts recent advances in traffic simulation in the context of data generation for the broad community. More specifically,

1. in the first article, Li et al. propose a new research direction of matching spatial patterns. The proposed query allows return spatial objects that satisfy a patterns such as “a house within 10-minute walk from a school, which is at least 2km away from a hospital”. In addition to defining the Spatial Pattern Matching query, this article describes applications and a plethora of future research directions inspired from this work;
2. in the second article, Bouros and Mamoulis describe future directions for Spatial Joins. This article surveys the state-of-the-art of spatial join evaluation and identifies new research directions enabled by modern hardware and parallel processing. I expect that this article will revitalize research and applications on spatial join processing;
3. in the third article, we hit the road: Xie et al. describe applications of their recently proposed Scalable Microscopic Adaptive Road Traffic Simulator (SMARTS) used for traffic data generation. In addition to an overview of SMARTS, this article describe applications in routing algorithm evaluation, vehicle prioritization, simulation-based navigation and traffic optimization. Traffic simulation is of particular interest for the ACM SIGSPATIAL CUP 2019, for which the problem is defined in the context of simulating crowdsourced taxicabs searching for customers to pick up;

I hope the readers will enjoy this issue and find it useful in their research work. I'd also like to call upon readers to send me suggestions for news that they would like to appear in the next issues of this newsletter. If you have exciting news that you would benefit the SIGSPATIAL community and that you would like to disseminate, let me know! Finally, I want to cordially thank the authors for their excellent contributions to this issue.