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# Special issue on spatial and temporal database management

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It is commonplace to say nowadays that there is more data being made available than ever before. Much of this new data is created by mobile devices, such as car sensors and smartphones, which are practically ubiquitous. This type of data has two important characteristics, it has a spacestamp as well as a timestamp. In other words it makes available not only what was measured, but also when and where it was measured. We are no longer satisfied by knowing that "this is it." We want to know where "it" has been, what "it" has encountered, what is/was/will be close to "it", where "it" is expected to be in the future, and so on and so forth. These spatio-temporal characteristics of the data not only augment the amount of data to be explored, but also have particularities that bring with them a degree of complexity which requires specialized treatment in order to allow the efficient query processing of novel queries.

The papers in this special issue are representative of the state-of-the-art in the domain of spatio-temporal data management. They cover a wide range of problems and approaches. Reverse k-Nearest Neighbor queries are well known and have been discussed in many papers, but the "joining" version of those queries, where many such queries are to be processed at (nearly) the same time has not. The paper by Emrich et al. ("On Reverse-k-Nearest-Neighbor Joins") tackles this very problem and show solutions that are applicable to generic metric spaces. The paper by Gotsman et al. ("A Dilution-Matching-Encoding Compaction of Trajectories over Road Networks") addresses the problem of compacting GPS traces, a common type of spatio-temporal data, in order to alleviate storage and transmission requirements. In "Best Upgrade Plans for Single and Multiple Source-Destination Pairs" Lin et al. propose a generic solution to a practical problem that can be simply put as how to use a given budget in order to minimize travel cost in a road network. Finally, the paper by Moussali et al. ("High Performance FPGA and GPU Complex Pattern Matching Over Spatio-Temporal Streams")

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discusses how to deal with finding complex spatio-temporal patterns using non-traditional computing means, i.e., FPGA and GPU, instead of single-threaded CPUs.

We hope that the combination of theoretical development and application orientation these papers present will foster further research in this fruitful domain of spatio-temporal data management.