Introduction to this Special Issue: Indoor Spatial Awareness (Part 1)

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People spend large part of their time indoors, such as school buildings, office buildings, shopping malls, and public transportation centers. As indoor space is different from outdoor space, it is difficult to just employ location-based technologies and services designed for outdoor space to indoor space. Thus, it is necessary for scientists and researchers to develop new spatial and spatio-temporal data management and geographic information systems (GIS) theories, technologies and applications for indoor space. The mission of this special issue "Indoor Spatial Awareness (Part 1)" is to bring together scientists and researchers who work on different topics of indoor spatial awareness and to provide a venue for inspiring new research directions in all relevant aspects.

The first two contributions are related to indoor Radio Frequency Identification (RFID) tracking data. Guoqiong Liao et al. is about how to use probabilistic cleaning strategies to remove cross detection events (i.e., false positives) and interpolate missing detection events (i.e., false negatives) from the trajectories of mobile RFID objects. Asif Iqbal Baba et al. develop a probabilistic graph model based approach to represent indoor topology and cleansing algorithms to reduce false positives and recover false negatives.

The next two newsletter articles are about indoor positing and navigation. The third one written by Stephan Winter et al. present concepts of indoor localization and navigation that are independent of sensors-based technologies in the environment. For the fourth article contributed by Henrik Blunck et al., it describes the concepts of deviation maps for indoor positioning with future research directions.

Last but not least, Florence Sdes and Franck Jeveme Panta introduce a heterogenous trajectory-based querying framework that integrates geometric and symbolic trajectories and indoor and outdoor coordinate systems and supports spatial and spatio-temporal queries.

I hope the readers will enjoy reading this issue and find it useful in their research work.