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Editorial

Sensing with Mobile Wireless Sensor Networks

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Mobile wireless sensor networks (MWSNs) can be defined as a wireless sensor network (WSN) with some nodes of mobility. MWSNs are an emerging field of research in contrast to their well-established predecessor. MWSNs are much more versatile than static sensor networks as they can be deployed in any scenario and cope with rapid topology changes.

The special issue intends to give an overview of the state-of-the-art issues and solution guidelines for MWSNs. It also includes some recommended submissions on topics of MWSNs from the 7th China Conference on Wireless Sensor Networks (CWSN 2013). The special issue accepted nine high quality papers from 31 submissions. It includes the topics of network architecture, routing algorithm, localization and tracking, and data collection and query in MWSNs among the application domains of terrestrial, offshore, vehicular sensor networks and delay tolerant networks.

Four papers discuss the fundamental issues on node localization and tracking, wormhole detection, and cluster routing in MWSN. "*Mobile tracking based on support vector regressors ensemble and game theory*" written by F. Zeng et al. presents a two-step tracking strategy to mitigate the adverse effect of non-line-of-sight (NLOS) propagation for mobile node tracking. It exploits support vector regressors ensemble (SVRM) to establish the mapping of node position to radio parameters by supervising learning and models the noise as the adversary of position estimator and then estimates the mobile node position smoothing by game theory. "*An efficient localization method based on adaptive optimal sensor placement*" written by J.-H. Lee et al. proposes to track user location by means of trilateration, using the distance between fixed nodes deployed at predetermined locations and a mobile base station with the optimal placement of the fixed nodes.

"*Mobile beacon based wormhole attackers detection and positioning in wireless sensor networks*" written by H. Chen et al. proposes to detect wormhole through the communication between the mobile beacon and each of the static beacons and located the wormhole by determining the intersection point of the chord perpendicular bisector. "*A flow-partitioned unequal clustering routing algorithm for wireless sensor networks*" written by J. Peng et al. proposes to choose cluster heads with more residual energy and larger overlapping degree and related routing procedure to achieve energy efficiency and balance.

Two papers focus on neighbor discovering and routing under neighbor social relationship. Q. Niu et al. proposes "*An improved group-based neighbor discovery algorithm for mobile sensor networks,*" including the network model and the algorithm which dynamically adjusts node active time based on spatial property to reduce discovery delay of mobile sensor networks. "*Dynamic groups based adaptive DTN routing algorithms in social networks*" written by J. Xu et al. proposes an adaptive routing algorithm, taking full use of gregariousness characteristics of moving nodes. It improves the routing efficiency by dynamically dividing nodes into different social groups according to social relationship and proposes flooding and redundancy control model to select fewer but better relay nodes to reduce message redundancy.

Two papers concern the architecture and query issues for vehicular ad hoc and sensor networks. "*Cognitive radio-based vehicular ad hoc and sensor networks*" written by M. J. Piran et al. proposes the networking paradigm for vehicular communication by utilizing wireless sensor nodes based on cognitive radio technology. "*Continuous probabilistic skyline queries for uncertain moving objects in road network*" written by S. Pan et al. studies and presents the continuous probabilistic skyline query algorithm for uncertain moving objects in road network.

The article "*DCEP: data collection strategy with the estimated paths in ocean delay tolerant network*" written by C. Liu et al. provides the network architecture of hybrid networks for offshore surveillance, exploiting underwater acoustic sensor networks to sample the offshore environment and delay tolerant networks of ships to collect sensor data. It also includes the optimized data distribution and routing strategy to improve the data collection rate.

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