Preface

The 2nd International Workshop on Mobility in Wireless Sensor Networks (MobiSensor'2011) was held on June 29, 2011 in Barcelona, Spain in conjunction with the 7th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS '11).

Mobility is an important new feature in the functionality of Wireless Sensor Networks (WSNs). It solves important shortcomings of WSNs such as the rapid energy exhaustion of nodes near a static sink. It can also serve as a method for solving connectivity problems in sparse networks or enables the employment of active elements in the deployment area which can handle on-going events in real time. On the other hand, in some application scenarios such as vehicular networks or underwater networks, sensor nodes are inherently mobile and thus new interesting issues arise with regard to the network connectivity or the timely delivery of sensory data to the sink node. Clearly, mobility opens up a whole new level of research opportunities and challenges in WSNs, and significantly expands the types of applications for which WSNs can be used.

This workshop aims to highlight the benefits and challenges from such a step and outline the state of the art in this particularly promising research area. Examples of the topics of the workshop are: sink mobility in WSNs, mobile sensor-actuator networks, code mobility in WSNs, mobile agent-based data aggregation in WSNs, localization techniques in wireless sensor and actuator networks, connectivity maintenance in WSNs with mobile elements, routing protocols for handling mobility, data fusion techniques in WSNs with mobile elements, applications and deployment experiences.

In this second workshop, after a rigorous review procedure, seven papers were selected for publication in the proceedings and presentation in the workshop. The first paper discusses a delay tolerant solution for low-power wireless personal area networks. As this sort of networks is characterized by intermitted connectivity and relatively low reliability, the authors propose a delay tolerant technique implemented on Contiki operated sensor nodes for solving these issues.

The second paper proposes a technique borrowing the notions of fields and forces from physics for navigation of software elements through the network area. By applying attractive or repulsive forces to a software element, this can be moved towards a certain regions avoiding some others. The proposed approach has been tested in a fire escape scenario.

The third paper proposes a wireless body sensor network for remote monitoring of soccer team players. In the proposed protocol, the information gathered from body sensors can be sent through nodes of the same team as well as nodes of the other team. At any case, the information can be decrypted only by players or the coach of the same team.

The fourth paper presents a method for soft handover for mobile WSNs based on 6LoWPAN. Specifically, the authors present efficient handover methods for connecting mobile sensor nodes to different mobile gateways that connect the WSN with other networks.

The fifth paper studies the feasibility of a key pre-distribution technique on a topology control protocol and determines the constraints of this method. The main conclusion in this work is that depending on the probability of any two nodes sharing at least one common key, the key pre-distribution technique may positively or negatively affect the performance of the topology control protocol.

The sixth paper proposes a key distribution mechanism for mobile WSNs where sensor nodes and the sink node are mobile. Specifically, in the proposed protocol, the sink node acts as a mobile key distribution center distributing pairwise keys to sensor nodes in a single hop. The protocol achieves increased network connectivity and also exhibits perfect resilience against node capture.

Last, the seventh paper presents a mobile sensing system implemented on Android-based smart phones for real time detection of potholes in roads. The proposed technique is based on measurements of acceleration in a 3-D coordinate system and enables real-time pothole detection by employing advanced heuristic techniques with relatively low requirements in hardware resources.

We would like to thank the DCOSS Workshops Chair, Prof. Sotirios Nikolitseas, for kindly inviting us to organize this workshop as well as for his cooperation in the workshop preparation. We are also grateful to the Technical Program Committee members for their help in the reviewing process. Their expertise in the subject area of the workshop ensured the selection of high-quality papers for presentation at the workshop.

Finally, we would like to thank all the authors for submitting their work and their interest in our workshop. Hopefully, the participants will find the technical program of the workshop interesting and the presenters will receive useful feedback to their work.

MobiSensor Chairs

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