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Algorithms for Sensor Systems

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for Sensor Systems, Wireless Ad Hoc Networks
and Autonomous Mobile Entities, ALGOSENSORS 2011
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Revised Selected Papers

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Preface

Wireless ad hoc sensor networks have recently become a very active research subject due to their great potential of providing diverse services to numerous important applications, including remote monitoring and tracking in environmental applications and low-maintenance ambient intelligence in everyday life. The effective and efficient realization of such large-scale, complex ad hoc networking environments requires intensive, coordinated technical research and development efforts, especially in power-aware, scalable, robust wireless distributed protocols, due to the unusual application requirements and the severe resource constraints of the sensor devices. On the other hand, a solid foundational background seems necessary for sensor networks to achieve their full potential. It is a challenge for abstract modeling, algorithmic design and analysis to achieve provably efficient, scalable and fault-tolerant realizations of such huge, highly dynamic, complex, unconventional networks. Features including the extremely large number of sensor devices in the network, the severe power, computing and memory limitations, their dense, random deployment and frequent failures pose new interesting abstract modeling, algorithmic design, analysis and implementation challenges of great practical impact. ALGOSENSORS aims to bring together research contributions related to diverse algorithmic and complexity theoretic aspects of wireless sensor networks.

Starting from 2011, ALGOSENSORS has broadened its thematic scope, keeping its focus on sensor networks but also including other related types of ad hoc wireless networks such as mobile networks, radio networks and distributed systems of robots. Papers were solicited into two tracks, one on Sensor Networks (Track A) and one on Ad Hoc Wireless and Mobile Systems (Track B). Furthermore, the status of the event was upgraded to "Symposium" and its length extended to two days. ALGOSENSORS 2011, the 7th International Symposium on Algorithms for Sensor Systems, Wireless Ad Hoc Networks and Autonomous Mobile Entities, was held in Saarbrücken, Germany, during September 8–9, 2011.

This year the event received a total of 31 submissions. After a careful selection procedure (involving at least two reviews for each paper and at least three reviews for the vast majority of papers, and fruitful discussions by the Program Committees), 16 papers were selected. This volume contains these papers as well as invited contributions for the two keynote talks.

The ten papers in Track A (Sensor Networks) present original research on topics such as localization, lifetime maximization, interference control, neighbor discovery, self-organization, detection, and aggregation. The topics covered by the six papers in Track B (Ad Hoc Wireless and Mobile Systems) include routing, scheduling and capacity optimization in the SINR model, continuous monitoring, and broadcasting.

We would like to warmly thank the ALGO/ESA 2011 organizers (and especially Kurt Mehlhorn) for kindly accepting the proposal of the Steering Committee to colocate ALGOSENSORS with these leading events on algorithms in Europe. Also, we thank the keynote speakers Shlomi Dolev and Friedhelm Meyer auf der Heide for accepting our invitation. Many thanks go to the Program Committee members for their dedicated contribution toward a strong program.

October 2011

Thomas Erlebach
Sotiris Nikoletseas
Pekka Orponen

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Asaf Cohen	Max Pagel	Markus Völker
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Henning Hasemann	Rik Sarkar	

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