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Viktor K. Prasanna
Sitharama Iyengar
Paul Spirakis
Matt Welsh (Eds.)

Distributed Computing in Sensor Systems

First IEEE International Conference, DCOSS 2005
Marina del Rey, CA, USA, June/July, 2005
Proceedings

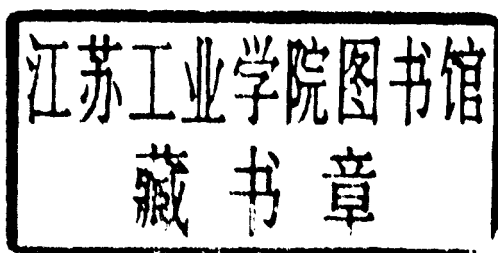


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Distributed Computing in Sensor Systems

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Message from the Program Chair

This volume contains the papers presented at the 1st *IEEE International Conference on Distributed Computing in Sensor Systems* (DCOSS 2005), which took place in Marina del Rey, California, from June 30 to July 1, 2005. DCOSS focuses on distributed computing issues in large-scale networked sensor systems, including systematic design techniques and tools, algorithms, and applications.

The volume contains 26 contributed papers, selected by the Program Committee from 85 submissions received in response to the call for papers. In addition, it also contains the abstracts of the invited poster on session entitled “distributed sensor systems in the real world” and abstracts from the poster session based on the response to call for posters.

I would like to thank all of the authors who submitted papers, our invited speakers, the panelists, the external referees we consulted and the members of the Program Committee. I am indebted to the Program Vice Chairs Sitharama Iyengar, Pavlos Spirakis, and Matt Welsh for their efforts in handling the review process and for their recommendations.

I would like to thank Mani Chandy for organizing a panel entitled “From Sensor Networks to Intelligence.”

Several volunteers assisted us in putting together the meeting. I would like to thank Bhaskar Krishnamachari for his inputs in deciding the meeting focus and format, Loren Schwiebert for handling the student scholarships, Wendi Heinzelman for publicizing the event, Amol Bakshi for many helpful suggestions on the meeting focus and publicity, and Pierre Leone for his assistance in putting together these proceedings.

It was a pleasure working with José Rolim, General Chair, and Sotiris Nikolettseas, Vice General Chair. Their invaluable input in putting together the meeting program and in shaping the meeting series is gratefully acknowledged.

I would like to acknowledge support from the US National Science Foundation, Microsoft Research, and from the Centre Universitaire d’Informatique of the University of Geneva.

Finally, I would like to thank my student Yang Yu for his assistance in administering the manuscript management system.

The field of networked sensor systems is rapidly evolving. It is my hope that this meeting series serves as a forum for researchers from various aspects of this interdisciplinary field; particularly I hope it offers opportunities for those working in the algorithmic, theoretical and high-level aspects to interact with those addressing challenging issues in complementary areas such as wireless networks, signal processing, communications, and systems composed of these underlying technologies.

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Algorithmic Problems in Ad Hoc Networks^{*}

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The ad hoc networks research agenda aligns well with the methodology and point of view of theoretical computer science, for a variety of reasons: The resource frugality that permeates the theory of algorithms and complexity is a perfect match for the regime of resource scarcity that is prevalent in ad hoc networks, imposed by small, power-limited processors. The potentially large scale makes principled approaches more attractive, and necessitates analysis – occasionally even asymptotic analysis. Also, the interplay of geometry, graph theory, and randomness that is a characteristic of problems arising in ad hoc networks creates many challenging problems amenable to mathematical treatment. And the field's young age and lack of established paradigms further foment and reward theoretical exploration. This talk will review recent work by the author and collaborators on geographic routing and clock synchronization.

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