

Information Processing in Sensor Networks (IPSN'04)

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The 3rd international symposium on Information Processing in Sensor Networks (IPSN) was held at Berkeley, CA April 26-27 2004. The objective of the meeting was to bring together researchers from academia, industry, and government to present and discuss recent work in this emerging field. This symposium was the third of a series started at the Palo Alto Research Center (PARC) (2001 and 2003). Kannan Ramchandran and Janos Sztipanovits were the symposium co-chairs while Jennifer Hou and Thrasyvoulos Pappas were the technical program co-chairs. The symposium was co-sponsored by ACM SIGBED and the IEEE Signal Processing Society.

Driven by advances in MEMS micro-sensors, wireless networking, and embedded processing, ad-hoc networks of sensors are becoming increasingly available for commercial and military applications such as environmental monitoring (e.g., traffic, habitat, security), industrial sensing and diagnostics (e.g., factory, appliances), critical infrastructure protection (e.g., power grids, water distribution, waste disposal), and situational awareness for battlefield applications.

Information processing in sensor networks draws upon many disciplines including signal processing/detection/estimation, networking and protocols, embedded systems, data bases and information management, as well as distributed algorithms. It opens up new research venues, which include sensor tasking and control, tracking and localization, probabilistic reasoning, sensor data fusion, distributed data bases, communication protocols and theory that address network coverage,

connectivity, and capacity, as well as system/software architecture and design methodologies. Moreover, all these issues have to consider many cross-cutting requirements such as efficiency/cost tradeoff, robustness, self-organization, fault-tolerance, timeliness, scalability, and network longevity.

This Symposium takes a systemic approach to address issues from physical device design, to signal processing and from networking to coordination protocols and places special attention to revolutionary new applications that are enabled by sensor network technology.

The Program

A total of 145 papers were submitted, of which 25 were accepted for oral presentation and 25 for poster presentation. Each paper was reviewed by at least three reviewers and on the average by four reviewers. The reviewing process was handled electronically, using the Editor's Assistant (EDAS) software. The final paper selection was made at the technical program committee (TPC) meeting that was held in Chicago with 23 members present. The decisions on oral/poster presentation were based on the topic of the paper, not on technical merit so as to have diverse sessions and stimulate discussions. The papers covered complementary areas in sensor networks such as networking, digital signal processing, detection and estimation, information theory, security, and embedded system and simulation tools. The program of IPSN'04 consisted of six oral presentation sessions and two poster presentation sessions. In addition, a demo session was organized with six demonstrations of

software tools and sensor network applications.

Two stimulating keynote lectures were presented. Dr. Jean Paul Jacob from IBM Research gave a lecture with title “Is there SECS (Self-Repairing Entertaining Customized Systems) in your future?” Dr. Pravin Varaiya from UC Berkeley presented a lecture entitled “PEDAMACS: Sensor Networks for Measuring Traffic”.

There was also a panel discussion titled “Where are we in sensor networks today? A retrospective evaluation and an assessment of future challenges and prospects.” The panel was moderated by P.R. Kumar and included David Culler, Sri Kumar, Kris Pister, and Gary Shaw.

The technical program included three best student paper awards. The awards were given to the best papers with a student as the first author based on the evaluation by the reviewers. The students who received the awards were Michael Rabbat for the paper “Distributed Optimization in Sensor Networks”, Sundeep Pattem for the paper “The Impact of Spatial Correlation on Routing with Compression in Wireless Sensor Networks”, and Alexander Ihler for the paper “Nonparametric Belief Propagation for Self-Calibration in Sensor Networks”. Each of these students received a monetary award of \$500. The best student paper awards were made possible by the generous support from the U.S. National Science Foundation (NSF).

In addition to the technical sessions, other special events included the opening receptions held at the Doubletree Hotel & Executive Meeting Center – Berkeley Marina and a dining cruise held aboard the Hornblower with breathtaking views of the San Francisco skyline and the Golden Gate Bridge.

Statistics

There were 200 total registrants, approximately 88 of them were students. The majority of the registrants were from the United States but there were participants

from Australia, Austria, Canada, Gambia, Germany, Japan, Singapore, South Korea, Sweden, and Switzerland. The large attendance allowed us to exceed our Doubletree room block guarantee. Through the generous support from the U.S. National Science Foundation (NSF) and the Defense Advanced Research Projects Agency (DARPA), 50 students were awarded travel grant for attending the symposium.

Thanks and Well Done

The success of IPSN’04 was a tribute to the many volunteers who worked hard over the past year and gave of their own time to organize and run it. The generous financial support by NSF and DARPA through Drs. John Cozzens, Mari Maeda, Venu Veeravalli, Sri Kumar and Vijay Raghavan is gratefully acknowledged, especially because it made possible to attract a large number of students to the symposium.

Special thanks go to Dana Dee Little and Lorene Morgan, the administrative staff from UC Berkeley and Vanderbilt University for going beyond their duties for supporting the organization of the symposium. Finally, the most significant measure of success of IPSN’04 was its technical program. The program co-chairs and the TPC members did an excellent job in assembling the outstanding technical program. The high-quality program reflects the fact that sensor networks is a vibrant area that offers a rich source of problems both from the engineering and computing point of view.

IPSN’05

The Fourth International Symposium on Information Processing in Sensor Networks will be held in Los Angeles, CA in April 2005, exact dates to be announced. The conference general chairs are Prof. Kung Yao and Prof. Martin Vetterli, and technical program chairs are Prof. Mani Srivastava and Prof. Rob Nowak.

More information about IPSN’04 can be found at <http://ipsn04.cs.uiuc.edu/>