Special issue on PODC 2008

Boaz Patt-Shamir

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This issue contains a selection of six of the papers presented in PODC 2008. These papers are fine examples of the high-quality research work presented at the PODC conference. They also give a certain glimpse to the scope of issues and techniques that are deemed interesting to members in the PODC community. The papers were selected by the PODC 2008 Program Committee, and underwent the usual process of peer review before journal publication. Three of the papers fall under the general category of asynchrony and fault tolerance, and the three other papers are concerned with network algorithms.

The first paper, *New Combinatorial Topology Bounds for Renaming: The Lower Bound*, is the first installment of the award-winning work by Castañeda and Rajsbaum, where the evasive problem of renaming is studied once again. In this issue, the authors give a combinatorial proof of the lower bound on the number of names required to solve renaming. We hope to see the second part, where upper bounds are proved, published in a refereed form soon.

The second paper, *Timeliness-Based Wait-Freedom: A Gracefully-Degrading Progress Condition*, by Aguilera and Toueg, is a massive work that considers the boundary between asynchronous and synchronous executions, by studying the case of a process whose speed does not continue to slow down indefinitely, and showing how such a minimal condition allows it to be implemented in a wait-free manner.

The third paper, *Anti-Omega: The Weakest Failure Detector for Set Agreement*, by Zielinski, closes a long-standing open question of the weakest failure detector for set agreement.

The first network algorithm paper in this issue, by Schneider and Wattenhofer, is *An Optimal Maximal Independent Set Algorithm for Bounded-Independence*. This paper gives a new deterministic technique for computing a maximal independent set (MIS) very rapidly under the condition that the set does not grow too quickly, a condition that is naturally met in many important cases.

Another technique for MIS computation, relying on a different parameter of the graph (arboricity, which is roughly the average node degree), is presented in *Sublogarithmic Distributed MIS Algorithm for Sparse Graphs using Nash-Williams Decomposition*, authored by Barenboim and Elkin. Their technique is also useful for node coloring.

Finally, Mavronicolas and Sauerwald, in their paper *The Impact of Randomization in Smoothing Networks*, give new elegant constructions for the by-now classical concept of smoothing networks.

Boaz Patt-Shamir
Program Committee Chair—PODC 2008
Guest Editor

B. Patt-Shamir (✉)
Tel-Aviv, Israel
e-mail: boaz@eng.tau.ac.il