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Special issue with selected papers from PODC 2011

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This issue contains four papers selected by the Program Committee among the thirty-four papers presented at the 30th Annual ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC), held on June 6–8, 2011, in San Jose, California, USA. Due to time constraints, one additional paper invited to the special issue could not appear in this volume. This paper will appear in a future volume of this journal, if accepted. The five papers were selected based on their quality and representation of the range of topics addressed in the Symposium. In addition to being reviewed, in preliminary form, by the Program Committee of PODC 2011, the papers selected for this special issue were subsequently refereed according to the standard practices of Distributed Computing. These papers appear here in revised and expanded form.

The paper *Distributed deterministic edge-coloring using bounded neighborhood independence* by L. Barenboim and M. Elkin won the Best Student Paper Award. It studies the vertex- and edge-coloring problems on graphs. It improves the state of the art for edge-coloring in general graphs, and for vertex-coloring in graphs with bounded neighborhood independence.

The paper *Toward more localized local algorithms: removing assumptions concerning global knowledge* by A. Korman, J.-S. Sereni, and L. Viennot tackles the issue of *a priori* knowledge, e.g., the number of nodes, given to the nodes performing local computations in a network. The paper demonstrates that, for a wide class of algorithms, there are no needs of providing nodes with such information. In other words, the paper proves that many non-uniform local algorithms can be transformed into uniform local algorithms.

The paper *Compact policy routing* by G. Rétvári, A. Gulyás, Z. Heszberger, M. Csernai, and J. Bró is aiming at generalizing the traditional compact routing theory to arbitrary routing policies. Indeed, the former theory is essentially focussing on the tradeoff between the size of the distributed data-structure available at each node for routing, and the length of the routes. The algebra corresponding to the length of the routes is essentially the addition over the reals. The paper considers other algebras, in relation to practical networking parameters such as bandwidth, reliability, priority, etc., and generalizes compact routing to these algebras.

Finally, the last of these four papers, *Byzantine agreement with homonyms* by C. Delporte-Gallet, H. Fauconnier, R. Guerraoui, A.-M. Kermarrec, E. Ruppert, and H. Tran-The, studies Byzantine Agreement in partially synchronous distributed systems in which IDs may not be unique. It establishes relations between the total number of nodes, the number of distinct IDs, and the numbers of Byzantine nodes, and proves surprising results by exhibiting significant differences with the classical model (in which the number of distinct IDs is equal to the number of nodes).

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