

Guest Editorial

Self-Stabilizing Systems, Part 2

In the Fall of 2002, Joffroy Beauquier and Colette Johnen (at the Université Paris-Sud) organized an International Seminar on Self-Stabilization at Luminy, France. The seminar, which was sponsored by the Centre International de Rencontres Mathématiques, was a great success uncovering new research directions concerning the self-stabilization of network protocols and distributed systems. As it happened, the seminar did not issue a proceedings, and the presented papers in the seminar have so far remained unpublished.

To remedy this unfortunate situation, Deepinder Sidhu, the Editor-in-Chief of the *Journal of High Speed Networks*, asked Colette Johnen and me to act as Guest Editors for a special issue of JHSN based on the presented papers in the Luminy seminar. Colette oversaw the reviewing process of these papers and selected only nine papers to be published in JHSN. Five of the accepted papers appeared in the previous issue of the journal, and the remaining four papers appear in the current issue.

The first paper in the current issue is co-authored by Anish Arora and Marvin Theimer. In this paper, the authors propose an architecture where a distributed system is augmented with detectors and correctors that can detect and correct errors caused by misbehaving system components. Unique to their architecture, the authors assume that the augmented detectors and correctors are executed intermittently (rather than continually).

The second paper in the current issue is co-authored by Shlomi Dolev and Ronen I. Kat. In this paper, the authors discuss their design and implementation of a self-stabilizing distributed file system. The system maintains a self-stabilizing spanning tree for each file volume. The maintained tree for a file volume consists of all the servers that have replicas of the file volume. The system also has a self-stabilizing synchronizer that keeps the different replicas of the same file volume consistent.

The third paper is co-authored by Sandeep S. Kulkarni and Ravikant. In this paper, the authors present a family of self-stabilizing timestamp systems. Each timestamp system in this family can be employed to provide both causal and uniform total order in a semi-synchronous publish-subscribe system.

The fourth paper in the current issue is co-authored by Alain Cournier, Ajoy K. Datta, Franck Petit and Vincent Villan. In this paper, the authors introduce the concept of snap-stabilization. A snap-stabilizing system is a self-stabilizing where each state is a legitimate state. Thus, starting from any state, a snap-stabilizing system is guaranteed to reach its legitimate states in a zero number of steps. In the paper, the authors also present two optimal snap-stabilizing systems that perform propagation of information and feedback.

The Guest Editors of this issue hope that readers will find this collection of papers interesting, instructive, and worthy of their while.

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