Editorial

Journal of Computer and System Science: 50 years of celebration. In memory of Professor Edward Blum

The passing 2017 year was special for our journal. Journal of Computer and System Sciences (JCSS) celebrated 50 years since its first volume was published. This special issue contains papers from the prominent researchers in the field of Theoretical Computer Science that contribute in various topics such as databases, parallel and distributed computing, automata and formal languages, optimization, complexity theory, computational learning theory, algorithms, automated reasoning.

The paper by Michael Fellows and Frances Rosamond presented a fascinating and breathtaking story about the JCSS history and his founding Managing Editor, Prof. Ed Blum. The paper included a number of memories shared by different colleagues of Ed and his family as well as personal memories of the authors. Georg Gottlob, Gianluigi Greco and Francesco Scarcello exploited a fixed-parameter polynomial-time algorithm that either disproves the existence of tree projections of constraint satisfaction problem or computes an optimal solution, with the parameter being the size of the expression of the objective function to be optimized over all possible solutions. William Lam, Kalev Kask, Javier Larrosa and Rina Dechter considered AND/OR best-first search, guided by the Mini-Bucket Elimination heuristic, when solving graphical models. The authors show that a new concept of bucket errors can advise in providing effective subproblem orderings in AND/OR search for both exact and anytime solutions. A less powerful nondeterminism-resolution mechanism consisting of tasks and local schedulers in context of Probabilistic I/O Automata is proposed by Dilsun Kaynar, Ran Canetti, Ling Cheung, Moses Liskov, Nancy Lynch, Olivier Pereira and Roberto Segala. Foto Afrati, Shantanu Sharma, Jonathan Ullman and Jeffrey Ullman dealt with the problem of computing data-cube marginals by a single round of MapReduce, focusing on the relationship between the reducer size and the replication rate and gave a number of solutions. The paper by Pankaj Agarwal, Nirman Kumar, Stavros Sintos, and Subhash Suri studied the problem of range-max query on uncertain data, which asks for statistics on the maximum value of the data inside a query range. Joachim Buhmann, Alexey Gronskiy, Matúš Mihalák, Rastislav Šrámek, Tobias Pröger and Peter Widmayer proposed a novel approach for optimization under uncertainty. The suggested method is designed on the premise that problem instances in optimization most often share a strong common signal and are perturbed by random fluctuations that differ from instance to instance. Paul Goldberg and Christos Papadimitriou considered the class TFNP. TFNP is the set of total function problems that belong to NP; that is, every input to such a nondeterministic function has at least one output, and outputs are easy to check for validity — but it may be hard to find an output. TFNP appears not to have complete problems and this led the authors to develop a more unified complexity theory of TFNP problems. Andrzej Pelc investigated initial information, unbounded memory and randomization in gathering mobile agents on a grid.

I would like to thank all those who contributed to this special issue as well to the reviewers for their time and for their reliable and helpful remarks.

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