Preface
SYNASC 2014

This volume contains papers selected from those presented at the 16th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC) held in Timișoara, Romania from 22 to 25 September 2014. SYNASC is a series of annual events that aim to stimulate the interaction between the two scientific communities of symbolic and numeric computing and to present interesting applications of the algorithms developed in the areas both in theory and in practice. The choice of the symposium topic was motivated by the belief of the organizers that the dialogue between the two communities is very necessary for accelerating the progress in making the computer a truly intelligent aid for mathematicians and engineers.

Started in 1999 as a workshop, SYNASC has established itself as an international forum for researchers and practitioners interested in symbolic and numeric computing. It has been organized by the Department of Computer Science at West University of Timișoara in cooperation with the Research Institute for Symbolic Computation at Johannes Kepler University of Linz, Austria and with the Research Institute e-Austria from Timișoara. Having its unique venue in Timișoara, a historical and multicultural city, SYNASC has become a fixed meeting point where researchers from Romania and the rest of the world get together to present, to discuss, and to exchange their research results, new findings, and work in progress. It has helped promote scientific research and development in Romania and enhance the contacts between foreign and Romanian researchers, in addition to its significant contributions to international scientific exchange in computer science.

SYNASC 2014 has been structured with six tracks (Symbolic Computation, Logic and Programming, Artificial Intelligence, Numerical Computing, Distributed Computing and Advances in the Theory of Computation). Each track had its own program subcommittee chaired by at least two experts who coordinated the paper reviewing process. In addition to these six tracks, seven related workshops have been organized: Workshop on Agents for Complex Systems, Workshop on HPC Research Services, Workshop on Management of Resources and Services in Cloud and Sky Computing, Workshop on Iterative Approximations of Fixed Points, Workshop on Natural Computing and Applications, Workshop on Computational Topology in Image Context and Workshop on GIS and Hydrologic Modeling.

A total of 146 papers have been submitted (83 submissions for the six tracks and 63 for the workshops) and 364 referee reports were provided by the reviewers. Based on these reports, 99 papers have been accepted for presentation at the symposium. From the presented papers, 72 have been selected for publication in the present volume.

The organizers of SYNASC have always tried to attract representative researchers in fields related to the main topics of the symposium. In 2014 the invitation has been honored by six well-known scientists who gave remarkable plenary talks: Tetsuo Ida, William Langdon, Gheorghe Paun, Viorica Sofronie-Stokkermans, Stefan Takacs and Stephen M. Watt.

The symposium program included also three highly appreciated tutorials given by Adrian Jackson (HPC tutorial), Carsten Schneider (Symbolic Summation in Difference Rings – With Applications in Combinatorics, Numerics, and Physics), and Marcos Almeida, Danilo Ardagna, Nicolas Ferry, Juan Fernando Perez (Model-Driven Design of Cloud Applications with QoS Guarantees: The MODAClouds approach).
We thank all the people who have contributed to SYNASC 2014 and to the publication of these proceedings, as authors, reviewers, speakers, organizers, or attendees, either on their own initiative or by invitation. It is their contributions that made the symposium a remarkable success and this volume a valuable reference.

Franz Winkler  
SYNASC 2014 Program and Proceedings Chair

Viorel Negru  
SYNASC 2014 General Chair

Tetsuo Ida, Tudor Jebelean, Dana Petcu, Stephen M. Watt, Daniela Zaharie  
Members of the SYNASC 2014 Steering Committee