

Guest Editors' Introduction

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BY bringing together a small selection of papers covering various aspects related to dependability of computing systems, this special issue provides a means to identify the important problems facing the area at present, and assess what future directions may be. The limited space available for the special issue dictates that some excellent papers, providing important data points for a comprehensive view of the area, are missing from this collection. Keeping this limitation in mind, we find that the selected papers can be classified in one of several ways. One may distinguish among papers that describe dependable structures or architectures, and papers that describe design methodologies for verification, validation, and testing. While the title of this special issue, "Dependability of Computing Systems," clearly admits papers of the former category and puts less emphasis on the latter, methodologies for verification, validation, and testing play an important role in achieving dependable systems. One may also distinguish among papers that address the circuit level, and papers that address the system level. At the circuit level, the topics covered by the selected papers include field-programmable gate arrays (FPGAs), and fail-safe VLSI circuits. At the system level, the topics include system-level diagnosis, fault tolerant architectures for digital signal processing, fault tolerant and intrusion tolerant systems, real-time communication systems, preventive maintenance of software systems, and data integrity. Papers can also be classified based on whether they deal with hardware or software, and whether they deal with the system design and development phases or with system analysis.

We received a total of 64 submissions, of which we selected 12 papers. Every submission was sent to five referees. We received a total of 231 reviews back from 155 referees. Several papers that are not included in this special issue have been forwarded for consideration in later issues of this journal.

This special issue would not have been possible without the help and support of many individuals. We would like to thank the authors for submitting excellent papers, and the referees who made it possible for us to assess the papers and put together this special issue. The Editor-in-Chief, Professor Jane Liu, and the project editor, Professor Farnam Jahanian, helped us with questions we had along the way, and we are grateful for their help. Last but not least, our assistants for this project, Marie-Jose Fontagne and Joelle Penavayre from LAAS and Carrie Hogarty from the University of Iowa, helped us with the large amount of correspondence involved in putting together this special issue.



Karama Kanoun is “Directeur de Recherche” of CNRS. She received the Certified Engineer degree from National School of Civil Aviation, Toulouse in 1977, the Doctor-Engineer degree and the Doctor-ès-Science degrees from the National Polytechnic Institute of Toulouse in 1980 and 1989 respectively. She joined LAAS in 1977 as a member of the “Fault-Tolerance and Dependable Computing” group. Her current research interests include modeling and evaluation of computer system dependability considering hardware as well as software. She has authored and co-authored more than eighty papers. She has conducted several research contracts and has been a consultant for several French companies as well as abroad (the International Union of Telecommunications, Ansaldo Trasporti, ESTEC). She acts as a referee for several international conferences and journals. Besides serving on program committees of international conferences, she served as a program committee co-chair of the Fifth International Symposium on Software Reliability Engineering (ISSRE'94), a Vice Chair of the Second International Conference on Reliability, Maintainability and Safety, 1994 and as general chair of ISSRE'95. She is member of the IEEE Computer Society's Technical Committees on Fault-Tolerant Computing and on Software Reliability Engineering. She is a project Reviewer for the European Commission.



Irith Pomeranz received the BSc degree (summa cum laude) in computer engineering and the DSc degree from the Department of Electrical Engineering at the Technion—Israel Institute of Technology in 1985 and 1989, respectively. From 1989 to 1990, she was a lecturer in the Department of Computer Science at the Technion. In 1990, she joined the Department of Electrical and Computer Engineering at the University of Iowa, where she is currently an associate professor. Her research interests are testing of VLSI circuits, design for testability, synthesis, and design verification. Dr. Pomeranz is a recipient of the U.S. National Science Foundation Young Investigator Award in 1993, and of the University of Iowa Faculty Scholar Award in 1997. She is an associate editor of the ACM Transactions on Design Automation.