

Contents

Opening Session	1
Six Difficult Problems in the Design of Responsive Systems <i>H. Kopetz (Technical University of Vienna, Austria)</i>	3
Issues in Responsive Protocols Design <i>Y. Kakuda, T. Kikuno (Osaka University, Japan)</i>	17
Responsive Systems Theory	27
A Probabilistic Duration Calculus <i>Z. Liu (University of Warwick, Coventry, UK)</i> <i>A. P. Ravn, E. V. Sørensen</i> <i>(Technical University of Denmark, Lyngby, Denmark)</i> <i>C. Zhou (United Nations University, Macau)</i>	29
Timed Statecharts and Real Time Logic <i>L. Barroca (University of York, York, UK)</i>	53
Fault-Tolerant Distributed Sort Generated from a Verification Proof Outline <i>H. Lutfiyya (University of Western Ontario, Canada)</i> <i>M. Schollmeyer, B. McMillin (University of Missouri-Rolla, USA)</i>	71
Responsive Protocols	97
Towards a Responsive Network Protocol <i>A. Shionoaki (Keio University, Japan)</i> <i>M. Tokoro (Sony Computer Science Laboratory, Japan)</i>	99
Fault-Tolerant Object by Group-to-Group Communications in Distributed Systems <i>H. Higaki, T. Soneoka (NTT, Japan)</i>	123

Space-Time Tradeoff in Hierarchical Routing Schemes	
<i>K. Ishida (Hiroshima Prefectural University, Japan)</i>	147
Work in Progress	165
Fault-Tolerance Support for Responsive Computer Systems	
<i>R. D. Schlichting (The University of Arizona, USA)</i>	167
Position Paper: Responsive Airborne Radar Systems	
<i>L. Sha, J. Lehoczky, M. Bodson (SEI/CMU, USA)</i>	
<i>P. Krupp, C. Nowacki (The MITRE Corp.)</i>	179
Overview of an Integrated Toolset Under Development for the CSR Paradigm	
<i>I. Lee, S. Davidson (University of Pennsylvania, USA)</i>	189
A Distributed Snapshots Algorithm and its Application to Protocol Stabilization	
<i>K. Saleh (Concordia University, Canada)</i>	
<i>H. Ural (University of Ottawa, Canada)</i>	
<i>A. Agarwal (Concordia University, Canada)</i>	197
Protocol Validation Tool and Its Applicability to Responsive Protocols	
<i>H. Saito, T. Hasegawa (KDD R & D Laboratories, Japan)</i>	207
Keynote Address	223
The Concepts and Technologies of Dependable and Real-time Computer Systems for Shinkansen Train Control	
<i>A. Hachiga (Railway Technical Research Institute, Japan)</i>	225
Real-Time Systems	253
Exception Handling in Real-Time Software from Specification to Design	
<i>R. de Lemos, A. Saeed, A. Waterworth (University of Newcastle upon Tyne, UK)</i>	255

Realizing Changes of Operational Modes with a Pre Run-Time Scheduled Hard Real-Time System	
<i>G. Fohler (Technical University of Vienna, Austria)</i>	287
Formal Specification and Simulation of a Real-Time Concurrency Control Protocol	
<i>P. van der Stok, L. Somers, P. Thijsen (Eindhoven University of Technology, Netherlands)</i>	301
Panel Discussion	319
What Are the Key Paradigms in the Integration of Timeliness and Availability ?	
<i>F. Cristian (University of California San Diego, USA)</i>	321
Contribution to the Panel: What are the Key Paradigms in the Integration of Timeliness and Availability	
<i>G. Le Lann (INRIA, France)</i>	327
Complicated Paradigm of Responsive Systems	
<i>Y. Tohma (Tokyo Institute of Technology, Japan)</i>	331
Toward Responsive Distributed Systems	
<i>M. Tokoro (Sony Computer Science Laboratory ,Japan)</i>	335
Responsive System Design	337
A Reconfigurable Parallel Processor Based on a TDLCA Model	
<i>M. Tsunoyama (Nagaoka College of Technology, Japan)</i>	
<i>M. Kawanaka (NEC Robotics Engineering Ltd, Japan)</i>	
<i>S. Naito (Tokyo Metropolitan University, Japan)</i>	339
A Modeling Approach for Dynamically Reconfigurable Systems	
<i>H. de Meer, H. Mauser (University of Erlangen-Nuremberg, Germany)</i>	357
Author Index	377