MONITORING AND DEBUGGING OF DISTRIBUTED REAL-TIME SYSTEMS

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Monitoring And Debugging Of Distributed Real Time Systems

Oscar Nierstrasz

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Monitoring and Debugging of Distributed Real-time Systems Jeffrey J.-P. Tsai,Steve J. H. Yang,1995 Distributed Real-Time Systems Jeffrey J. P. Tsai,1996-08-10 Distributed real time systems DRTSs are used in a wide range of applications including command and control systems flight control systems robotics patient monitoring systems and many others This volume provides an overview of various systematic approaches to the testing and debugging of DRTSs tasks that typically consume 50% to 70% of a new system s development costs Distributed Real Time Systems covers both the theoretical and practical issues involved in monitoring visualization and analysis methodology for verifying and debugging DRTSs It describes in detail how to overcome timing verification difficulties and improve system performance and reliability Complete with many carefully worked out examples as well as dozens of illustrations this timely and accessible work Explains real world debugging approaches proposed or tested using static analysis or dynamic analysis with or without monitoring Features step by step instructions for design implementation in hardware and software detecting timing errors and their causes graphical debugging methods and more Covers numerous analytical techniques including timed Petri nets temporal logic timed state transition systems timed process algebra and synchronous programming languages Makes distributed systems analysis accessible through examples such as a distributed telephone switching system and a fault tolerant distributed system Reviews many relevant professional papers and current research work The joint product of four leaders in the field Distributed Real Time Systems is an important text and reference for electrical and software engineers graduate students and anyone involved in computer and data processing technology **Real-Time Systems** Albert M. K. Cheng,2003-03-13 Test und Validierung spielen bei Echtzeitsystemen eine zentrale Rolle Auf die Spezifikationen die der Hersteller angibt muss sich der Kunde hier in besonders hohem Ma e verlassen k nnen Bisher sind zu diesem Thema nur Artikelsammlungen erschienen Jetzt liegt endlich ein Buch vor das sich f r Fachleute und Studenten gleicherma en eignet und dem Leser einen umfassenden berblick ber die verschiedenen existierenden Ans tze verschafft Vor und Nachteile jedes Verfahrens werden ausf hrlich beschrieben das erleichtert die Methodenwahl in der Praxis Der Autor ist nicht nur ein anerkannter Experte auf seinem Gebiet sondern genie t auch einen hervorragenden p dagogischen Ruf **The Testability of Distributed Real-Time Systems** Werner Schütz,2007-07-23 BY H KOPETZ A real time computer system must provide the intended service in two di mensions the functional value dimension and the temporal dimension The verification of a real time system implementation is thus necessarily more com plex than the verification of a non real time system which has to be checked in the value dimension only Since the formal verification techniques of temporal properties have not yet matured to the point where these techniques can be used in practical system development systematic design and testing are the only alternatives for the development of dependable real time systems At present up to and more than fifty percent of the development eff ort of complex real time computer systems is spent on testing The test activities are thus a significant cost

element in any real time system project The attack on this cost element has to proceed from two fronts the design for testability and the development of a systematic test methodology supported by an appropriate tool set This book covers both of these topics *Embedded Software and Systems* Laurence T. Yang,2005-12-05 This book constitutes the refereed proceedings of the Second International Conference on Embedded Software and Systems ICESS 2005 held in Xi an China in December 2005 The 63 revised full papers presented together with the abstracts of 3 keynote speeches were thoroughly reviewed and selected from 361 submissions The papers are organized in topical sections on embedded hardware embedded software real time systems power aware computing hardware software co design and system on chip testing and verification reconfigurable computing agent and distributed computing wireless communications mobile computing pervasive ubiquitous computing and intelligence multimedia and human computer interaction network protocol security and fault tolerance and abstracts of eight selected workshop papers Monitoring, Testing, and Abstractions of Real-time Specifications Monica Anne Brockmeyer,1999 Parallel and Distributed Processing Jose Rolim,1998-03-18 This book constitutes the refereed proceedings of 10 international workshops held in conjunction with the merged 1998 IPPS SPDP symposia held in Orlando Florida US in March April 1998 The volume comprises 118 revised full papers presenting cutting edge research or work in progress In accordance with the workshops covered the papers are organized in topical sections on reconfigurable architectures run time systems for parallel programming biologically inspired solutions to parallel processing problems randomized parallel computing solving combinatorial optimization problems in parallel PC based networks of workstations fault tolerant parallel and distributed systems formal methods for parallel programming embedded HPC systems and applications and parallel and distributed real time systems Embedded Systems Handbook 2-Volume Set Richard Zurawski,2018-10-08 During the past few years there has been an dramatic upsurge in research and development implementations of new technologies and deployments of actual solutions and technologies in the diverse application areas of embedded systems These areas include automotive electronics industrial automated systems and building automation and control Comprising 48 chapters and the contributions of 74 leading experts from industry and academia the Embedded Systems Handbook Second Edition presents a comprehensive view of embedded systems their design verification networking and applications The contributors directly involved in the creation and evolution of the ideas and technologies presented offer tutorials research surveys and technology overviews exploring new developments deployments and trends To accommodate the tremendous growth in the field the handbook is now divided into two volumes New in This Edition Processors for embedded systems Processor centric architecture description languages Networked embedded systems in the automotive and industrial automation fields Wireless embedded systems Embedded Systems Design and Verification Volume I of the handbook is divided into three sections It begins with a brief introduction to embedded systems design and verification The book then provides a comprehensive overview of embedded processors and various aspects of system on chip

and FPGA as well as solutions to design challenges The final section explores power aware embedded computing design issues specific to secure embedded systems and web services for embedded devices Networked Embedded Systems Volume II focuses on selected application areas of networked embedded systems It covers automotive field industrial automation building automation and wireless sensor networks This volume highlights implementations in fast evolving areas which have not received proper coverage in other publications Reflecting the unique functional requirements of different application areas the contributors discuss inter node communication aspects in the context of specific applications of networked embedded systems *Embedded Systems Handbook* Richard Zurawski,2018-09-03 Considered a standard industry resource the Embedded Systems Handbook provided researchers and technicians with the authoritative information needed to launch a wealth of diverse applications including those in automotive electronics industrial automated systems and building automation and control Now a new resource is required to report on current developments and provide a technical reference for those looking to move the field forward yet again Divided into two volumes to accommodate this growth the Embedded Systems Handbook Second Edition presents a comprehensive view on this area of computer engineering with a currently appropriate emphasis on developments in networking and applications Those experts directly involved in the creation and evolution of the ideas and technologies presented offer tutorials research surveys and technology overviews that explore cutting edge developments and deployments and identify potential trends This first self contained volume of the handbook Embedded Systems Design and Verification is divided into three sections It begins with a brief introduction to embedded systems design and verification It then provides a comprehensive overview of embedded processors and various aspects of system on chip and FPGA as well as solutions to design challenges The final section explores power aware embedded computing design issues specific to secure embedded systems and web services for embedded devices Those interested in taking their work with embedded systems to the network level should complete their study with the second volume Network Embedded Systems **Fieldbus Technology** Nitaigour P. Mahalik,2013-03-09 Fieldbus Technology FT an enabling platform has already emerged in order to cater the need for sophisticated and flexible control and as a matter of fact it has becoming the preferred choice for the next generation real time automation and control solutions This book incorporates a selection of research and development papers Its scope is on history and background contemporary standards underlying architecture comparison between different Fieldbus systems applications latest innovations new trends as well as on compatibility interoperability and interchangeability *Monitoring, Testing and Debugging of Distributed Real-time Systems* Henrik Thane,Tekniska högskolan i Stockholm. Institutionen för maskinkonstruktion,2000 *Compositional Verification of Concurrent and Real-Time Systems* Eric Y.T. Juan,Jeffrey J.P. Tsai,2012-12-06 With the rapid growth of networking and high computing power the demand for large scale and complex software systems has increased dramatically Many of the software systems support or supplant human control of safety critical systems such as flight control systems

space shuttle control systems aircraft avionics control systems robotics patient monitoring systems nuclear power plant control systems and so on Failure of safety critical systems could result in great disasters and loss of human life Therefore software used for safety critical systems should preserve high assurance properties In order to comply with high assurance properties a safety critical system often shares resources between multiple concurrently active computing agents and must meet rigid real time constraints However concurrency and timing constraints make the development of a safety critical system much more error prone and arduous The correctness of software systems nowadays depends mainly on the work of testing and debugging Testing and debugging involve the process of de tecting locating analyzing isolating and correcting suspected faults using the runtime information of a system However testing and debugging are not sufficient to prove the correctness of a safety critical system In contrast static analysis is supported by formalisms to specify the system precisely Formal verification methods are then applied to prove the logical correctness of the system with respect to the specification Formal verifica tion gives us greater confidence that safety critical systems meet the desired assurance properties in order to avoid disastrous consequences Responsive Computing Miroslaw Malek,2012-12-06 Responsive Computing brings together in one place important contributions and state of the art research results in this rapidly advancing area Responsive Computing serves as an excellent reference providing insight into some of the most important issues in the field

Transputer and Occam Developments World Occam and Transputer User Group. Technical Meeting,1995 This volume contains papers presented at the 18th meeting of the World Occam and Transputer User Group Wotug The papers cover a wide range of transputer and OCCAM related topics such as the the porting and development of the OCCAM language highlighting the need for cross platform implementations of OCCAM compilers design approaches and applications

Safety of Computer Control Systems 1992 (SAFECOMP' 92) H.H. Frey,2014-05-23 SAFECOMP 92 advances the state of the art reviews experiences of the past years considers the guidance now available and identifies the skills methods tools and techniques required for the safety of computer control systems Real-Time and Distributed Real-Time Systems Amitava Gupta,Anil Kumar Chandra,Peter Luksch,2016-04-27 Digital computers have revolutionized computation and transformed how computers are used to control systems in real life giving birth to real time systems Furthermore massive developments in the communications domain have made it possible for real time systems to perform coordinated actions over communication interfaces resulting in the evoluti Model Driven Engineering Languages and Systems Oscar Nierstrasz,2006-09-22 This book constitutes the refereed proceedings of the 9th International Conference on Model Driven Engineering Languages and Systems formerly UML conferences MoDELS 2006 The book presents 51 revised full papers and 2 invited papers Discussion is organized in topical sections on evaluating UML MDA in software development concrete syntax applying UML to interaction and coordination aspects model integration formal semantics of UML security model transformation tools and implementation and more **Distributed Algorithms** Sam Toueg,Paul G. Spirakis,Lefteris

Kirousis,1992-03-11 This volume contains the proceedings of the fifth International Workshop on Distributed Algorithms WDAG 91 held in Delphi Greece in October 1991 The workshop provided a forum for researchers and others interested in distributed algorithms communication networks and decentralized systems The aim was to present recent research results explore directions for future research and identify common fundamental techniques that serve as building blocks in many distributed algorithms The volume contains 23 papers selected by the Program Committee from about fifty extended abstracts on the basis of perceived originality and quality and on thematic appropriateness and topical balance The workshop was organizedby the Computer Technology Institute of Patras University Greece **Transputers '94** Monique Becker,Luc Litzler,Michel Trehel,1994 The research reports presented in this volume focus on the implications of the T9000 microprocessor which offers new elements in transputing and parallel programming Subjects discussed include genetic algorithms image analysis neural networks robotics and parallel architectures *Intelligent Image Database Systems* Shi Kuo Chang,Erland Jungert,Genoveffa Tortora (□d.),1996 This book covers the principles and recent research results in intelligent image database systems design Special emphasis is placed on spatial reasoning and the techniques for image indexing and retrieval mainly based on the Theory of Symbolic Projection In addition applications of the theory and techniques to intelligent image database systems design are also discussed

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