



1983

Distinguished Dissertation

*Synthesis of Digital
Designs from Recursion
Equations*
Steven D. Johnson

Synthesis Of Digital Designs From Recursion Equations

**Georgios Keramidas, Nikolaos
Voros, Michael Hübner**



Synthesis Of Digital Designs From Recursion Equations:

Designing Correct Circuits Geraint Jones, Mary Sheeran, 2013-12-14 These proceedings contain the papers presented at a workshop on Designing Correct Circuits jointly organised by the Universities of Oxford and Glasgow and held in Oxford on 26-28 September 1990 There is a growing interest in the application to hardware design of the techniques of software engineering As the complexity of hardware systems grows and as the cost both in money and time of making design errors becomes more apparent so there is an eagerness to build on the success of mathematical techniques in program development The harsher constraints on hardware designers mean both that there is a greater need for good abstractions and rigorous assurances of the trustworthiness of designs and also that there is greater reason to expect that these benefits can be realised The papers presented at this workshop consider the application of mathematics to hardware design at several different levels of abstraction At the lowest level of this spectrum Zhou and Hoare show how to describe and reason about synchronous switching circuits using UNILY a formalism that was developed for reasoning about parallel programs Aagaard and Leeser use standard mathematical techniques to prove correct their implementation of an algorithm for Boolean simplification The circuits generated by their formal synthesis system are thus correct by construction Thuau and Pilaud show how the declarative language LUSTRE which was designed for programming real time systems can be used to specify synchronous circuits

Theorem Proving in Higher Order Logics Jim Grundy, Malcolm Newey, 1998-09-09 This book constitutes the refereed proceedings of the 11th International Conference on Theorem Proving in Higher Order Logics TPHOLs 98 held in Canberra Australia in September-October 1998 The 26 revised full papers presented were carefully reviewed and selected from a total of 52 submissions Also included are two invited papers The papers address all current aspects of theorem proving in higher order logics and formal verification and program analysis Besides the HOL system the theorem provers Coq Isabelle LAMBDA LEGO NuPrl and PVS are discussed

Correct Hardware Design and Verification Methods George J. Milne, Laurence Pierre, 1993-05-12 These proceedings contain the papers presented at the Advanced Research Working Conference on Correct Hardware Design Methodologies held in Arles France in May 1993 and organized by the ESPRIT Working Group 6018 CHARME 2 and the Universit de Provence Marseille in cooperation with IFIP Working Group 10.2 Formal verification is emerging as a plausible alternative to exhaustive simulation for establishing correct digital hardware designs The validation of functional and timing behavior is a major bottleneck in current VLSI design systems slowing the arrival of products in the marketplace with its associated increase in cost From being a predominantly academic area of study until a few years ago formal design and verification techniques are now beginning to migrate into industrial use As we are now witnessing an increase in activity in this area in both academia and industry the aim of this working conference was to bring together researchers and users from both communities

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

Components and Services for IoT Platforms Georgios Keramidas,Nikolaos Voros,Michael Hübner,2016-09-23 This book serves as a single source reference to the state of the art in Internet of Things IoT platforms services tools programming languages and applications In particular the authors focus on IoT related requirements such as low power time to market connectivity reliability interoperability security and privacy Authors discuss the question of whether we need new IoT standardization bodies or initiatives toward a fully connected cyber physical world Coverage includes the research outcomes of several current European projects related to IoT platforms services APIs tools and applications

Computer Hardware Description Languages and their Applications D. Agnew,L. Claesen,R. Camposano,2014-05-21 Hardware description languages HDLs have established themselves as one of the principal means of designing electronic systems The interest in and usage of HDLs continues to spread rapidly driven by the increasing complexity of systems the growth of HDL driven synthesis the research on formal design methods and many other related advances This research oriented publication aims to make a strong contribution to further developments in the field The following topics are explored in depth BDD based system design and analysis system level formal verification formal reasoning on hardware languages for protocol specification VHDL HDL based design methods high level synthesis and text graphical HDLs There are short papers covering advanced design capture and recent work in high level synthesis and formal verification In addition several invited presentations on key issues discuss and summarize recent advances in real time system design automatic verification of sequential circuits and languages for protocol specification

Encyclopedia of Computer Science and Technology Allen Kent,James G. Williams,1993-04-05 This comprehensive reference work provides immediate fingertip access to state of the art technology in nearly 700 self contained articles written by over 900 international authorities Each article in the Encyclopedia features current developments and trends in computers software vendors and applications extensive bibliographies of leading figures in the field such as Samuel Alexander John von Neumann and Norbert Wiener and in depth analysis of future directions

Theorem Proving in Higher Order Logics Joakim von Wright,Jim Grundy,John Harrison,1996-08-07 This book constitutes the refereed proceedings of the 9th International Conference on Theorem Proving in Higher Order Logics TPHOL 96 held in Turku Finland in August 1996 The 27 revised full papers included together with one invited paper were carefully selected from a total of 46 submissions The topics addressed are theorem proving technology proof automation and decision

procedures mechanized theorem proving extensions of higher order logics integration of external tools novel applications and others All in all the volume is an up to date report on the state of the art in this increasingly active field **Digital Systems Reference Book** Brian Holdsworth, Graham R. Martin, 1993 Designed to provide comprehensive coverage of the field of digital systems in a concise but authoritative form For ease of access the book has been divided into five parts fundamentals devices for digital systems system design and techniques system development and applications **Theorem Proving in Higher Order Logics**, 1998 **Correct Hardware Design and Verification Methods**, 1995 *The Fusion of Hardware Design and Verification* George J. Milne, 1988 Functional Programming Languages and Computer Architecture Jean-Pierre Jouannaud, 1985 **Algorithms and Parallel VLSI Architectures II** Patrice Quinton, Yves Robert, 1992 Since the emergence of VLSI the relationship between the development of parallel algorithms and the design of special purpose architecture has always been of major concern The analysis of this relationship is the main topic of this book Hardware and software issues closely depend upon one another and cannot be solved independently Beyond the natural complexity of algorithm design the designer has to face that of choosing the appropriate technology medium for its efficient realization The dramatic developments in VLSI technology now offers extraordinary opportunities for implementing complex applications As application specific systems can offer 100 to 1000 fold improvements in cost performance over general purpose computers on applications they are attracting increasing attention in both academic and industrial communities Highly specialized application specific arrays of processors which are the targeted architectures in this book are extremely appealing The papers in this volume give a thorough overview on current research in the areas of parallel algorithms synthesis methods VLSI architectures and design tools Publishers Trade List Annual, 1992, 1992 **The Publishers' Trade List Annual**, 1995 *American Book Publishing Record*, 1984-12 *Readings in Planning* James Allen, James A. Hendler, Austin Tate, 1990 This book presents four contributions to planning research within an integrated framework James Allen offers a survey of his research in the field of temporal reasoning and then describes a planning system formalized and implemented directly as an inference process in the temporal logic Starting from the same logic Henry Kautz develops the first formal specification of the plan recognition process and develops a powerful family of algorithms for plan recognition in complex situations Richard Pelavin then extends the temporal logic with model operators that allow the representation to support reasoning about complex planning situations involving simultaneous interacting actions and interaction with external events Finally Josh Tenenbergh introduces two different formalisms of abstraction in planning systems and explores the properties of these abstraction techniques in depth **Report**, 1987 *Designing Correct Circuits* Jørgen Staunstrup, Robin Sharp, 1992 The papers compiled in this volume cover a wide range of topics within the general area of provably correct design including proofs of fundamental results post hoc formal verification of designs and design techniques where correctness is ensured by construction The papers are unique in that they demonstrate the use of design techniques for designing real chips The book

should thus not be missed by students and researchers interested in the deployment of formally based techniques on real problems within a great diversity of application areas Application areas treated within the volume range from packet routers arbiters multiprocessors serial parallel converters and CPUs to arithmetic units and counters A significant group of the papers is concerned with the special requirements of asynchronous and delay insensitive design

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