

Model Checking

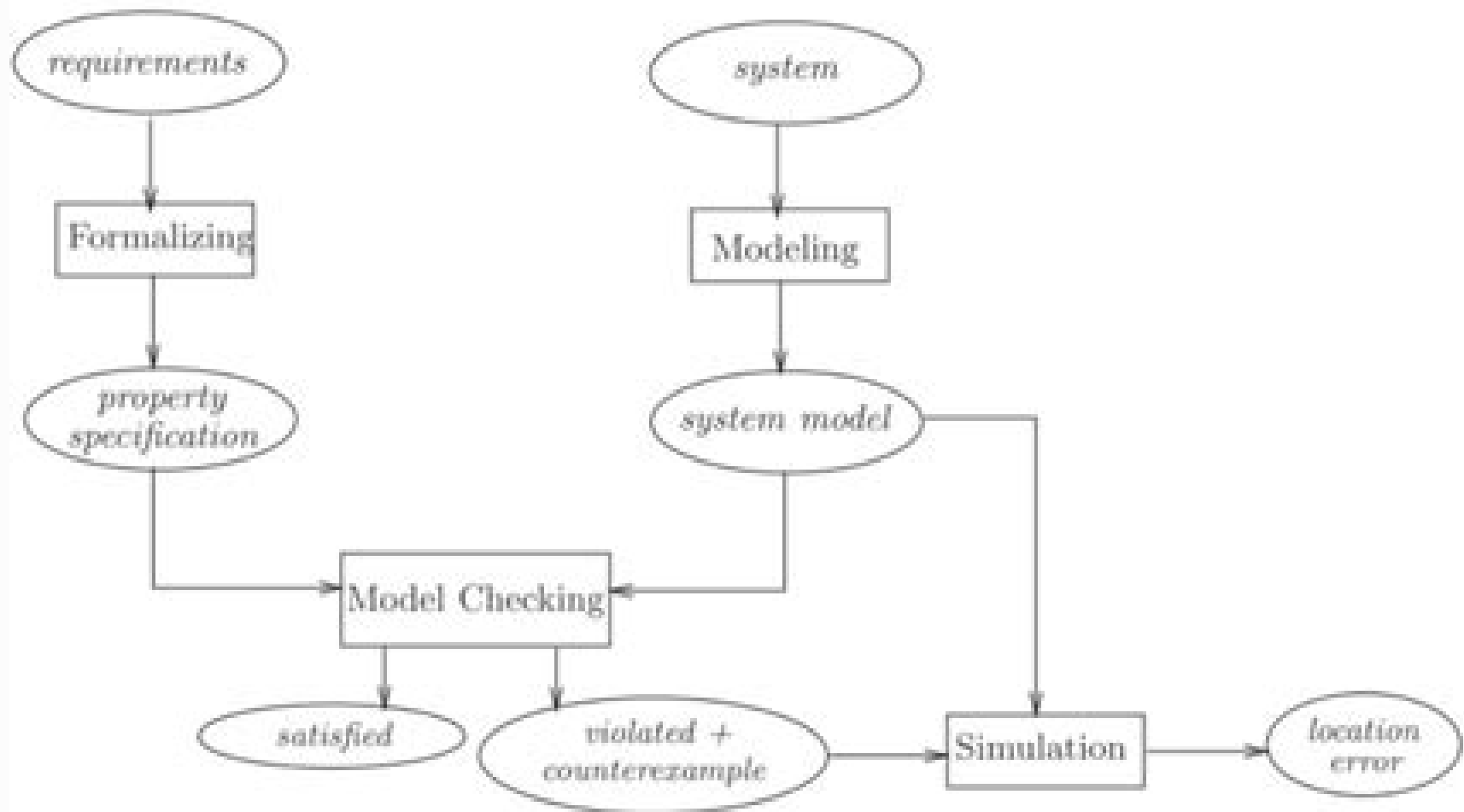


Figure 1.4: Schematic view of the model-checking approach.

Principles Of Model Checking

Klaus Havelund, Rupak Majumdar



Principles Of Model Checking:

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improving techniques as abstraction and symbolic manipulation The book includes an extensive set of examples most of which run through several chapters and a complete set of basic results accompanied by detailed proofs Each chapter concludes with a summary bibliographic notes and an extensive list of exercises of both practical and theoretical nature

Model Checking Software Corina S. Pasareanu, 2009-06-19 This book constitutes the refereed proceedings of the 16th International SPIN workshop on Model Checking Software SPIN 2009 held in Grenoble France in June 2009 The 15 revised full papers presented together with 3 tool papers and 4 invited talks were carefully reviewed and selected from 41 submissions The papers cover theoretical and algorithmic foundations as well as tools for software model checking by addressing theoretical advances and empirical evaluations related to state space and path exploration techniques as implemented in software verification tools

Model Checking Software Dragan Bosnacki, Stefan Leue, 2003-08-01 The SPIN workshop series brings together researchers and practitioners interested in explicit state model checking technology as it is applied to the verification of software systems Since 1995 when the SPIN workshop series was instigated SPIN workshops have been held on an annual basis at Montreal 1995 New Brunswick 1996 Enschede 1997 Paris 1998 Trento 1999 Toulouse 1999 Stanford 2000 and Toronto 2001 While the first SPIN workshop was a stand alone event later workshops have been organized as more or less closely related events with larger conferences in particular with CAV 1996 TACAS 1997 FORTE PSTV 1998 FLOC 1999 World Congress on Formal Methods 1999 FMOODS 2000 and ICSE 2001 This year SPIN 2002 was held as a satellite event of ETAPS 2002 the European Joint Conferences on Theory and Practice of Software The collocation of SPIN workshops with conferences has proven to be very successful and has helped to disseminate SPIN model checking technology to wider audiences Since 1999 the proceedings of the SPIN workshops have appeared in Springer Verlag's Lecture Notes in Computer Science series The history of successful SPIN workshops is evidence for the maturing of model checking technology not only in the hardware domain but increasingly also in the software area While in earlier years algorithms and tool development around the SPIN model checker were the focus of this workshop series the scope has recently widened to include more general approaches to software model checking Current research in this area concentrates not so much on completely verifying system models but rather on analyzing source code in order to discover software faults

Model Checking Software Alastair Donaldson, David Parker, 2012-07-18 This book constitutes the thoroughly refereed proceedings of the 19th International SPIN workshop on Model Checking Software SPIN 2012 held in Oxford UK in July 2012 The 11 revised full papers presented together with 5 tool papers and 4 invited talks were carefully reviewed and selected from 30 submissions The papers are grouped in topical sections on model checking techniques parallel model checking case studies model checking for concurrency and tool demonstrations

Principles of the Spin Model Checker Mordechai Ben-Ari, 2008-04-13 This is the first introductory textbook on Spin the only requirement is a background in programming Spin models are written in the Promela language which is easily learned by students and programmers Spin is

easy to install and use The Spin model checker is not only a widely used professional tool but it is also a superb tool for teaching important concepts of computer science such as verification concurrency and nondeterminism The book introduces Spin based software that the author has developed for teaching Complete programs demonstrate each construct and concept and these programs are available on a companion website

Model Checking Software Klaus Havelund,Rupak Majumdar,2008-07-25 This book constitutes the refereed proceedings of the 15th International SPIN workshop on Model Checking Software SPIN 2008 held in Los Angeles CA USA in August 2008 The 17 revised full papers presented together with 1 tool paper and 4 invited talks were carefully reviewed and selected from 41 submissions The main focus of the workshop series is software systems including models and programs The papers cover theoretical and algorithmic foundations as well as tools for software model checking and foster interactions and exchanges of ideas with related areas in software engineering such as static analysis dynamic analysis and testing

Verification, Model Checking, and Abstract Interpretation Roberto Giacobazzi,Josh Berdine,Isabella Mastroeni,2013-01-03 This book constitutes the refereed proceedings of the 14th International Conference on Verification Model Checking and Abstract Interpretation VMCAI 2013 held in Rome Italy in January 2013 co located with the Symposium on Principles of Programming Languages POPL 2013 The 27 revised full papers presented were carefully reviewed and selected from 72 submissions The papers cover a wide range of topics including program verification model checking abstract interpretation and abstract domains program synthesis static analysis type system deductive methods program certification debugging techniques program transformation optimization hybrid and cyber physical systems

Modeling Time in Computing Carlo A. Furia,Dino Mandrioli,Angelo Morzenti,Matteo Rossi,2012-10-19 Models that include a notion of time are ubiquitous in disciplines such as the natural sciences engineering philosophy and linguistics but in computing the abstractions provided by the traditional models are problematic and the discipline has spawned many novel models This book is a systematic thorough presentation of the results of several decades of research on developing analyzing and applying time models to computing and engineering After an opening motivation introducing the topics structure and goals the authors introduce the notions of formalism and model in general terms along with some of their fundamental classification criteria In doing so they present the fundamentals of propositional and predicate logic and essential issues that arise when modeling time across all types of system Part I is a summary of the models that are traditional in engineering and the natural sciences including fundamental computer science dynamical systems and control theory hardware design and software algorithmic and complexity analysis Part II covers advanced and specialized formalisms dealing with time modeling in heterogeneous software intensive systems formalisms that share finite state machines as common ancestors Petri nets in many variants notations based on mathematical logic such as temporal logic process algebras and dual language approaches combining two notations with different characteristics to model and verify complex systems e g model checking frameworks Finally the book concludes with summarizing remarks and

hints towards future developments and open challenges The presentation uses a rigorous yet not overly technical style appropriate for readers with heterogeneous backgrounds and each chapter is supplemented with detailed bibliographic remarks and carefully chosen exercises of varying difficulty and scope The book is aimed at graduate students and researchers in computer science while researchers and practitioners in other scientific and engineering disciplines interested in time modeling with a computational flavor will also find the book of value and the comparative and conceptual approach makes this a valuable introduction for non experts The authors assume a basic knowledge of calculus probability theory algorithms and programming while a more advanced knowledge of automata formal languages and mathematical logic is useful

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