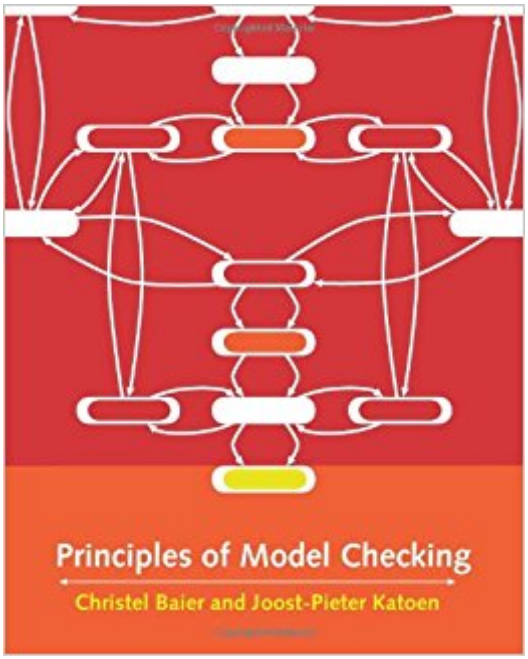
Principles Of Model Checking (MIT Press)



Synopsis

Our growing dependence on increasingly complex computer and software systems necessitates the development of formalisms, techniques, and tools for assessing functional properties of these systems. One such technique that has emerged in the last twenty years is model checking, which systematically (and automatically) checks whether a model of a given system satisfies a desired property such as deadlock freedom, invariants, and request-response properties. This automated technique for verification and debugging has developed into a mature and widely used approach with many applications. Principles of Model Checking offers a comprehensive introduction to model checking that is not only a text suitable for classroom use but also a valuable reference for researchers and practitioners in the field.The book begins with the basic principles for modeling concurrent and communicating systems, introduces different classes of properties (including safety and liveness), presents the notion of fairness, and provides automata-based algorithms for these properties. It introduces the temporal logics LTL and CTL, compares them, and covers algorithms for verifying these logics, discussing real-time systems as well as systems subject to random phenomena. Separate chapters treat such efficiency-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.

Book Information

Series: MIT Press
Hardcover: 984 pages
Publisher: The MIT Press (April 25, 2008)
Language: English
ISBN-10: 026202649X
ISBN-13: 978-0262026499
Product Dimensions: 8 x 1.3 x 10 inches
Shipping Weight: 4.2 pounds (View shipping rates and policies)
Average Customer Review: 4.7 out of 5 stars 6 customer reviews
Best Sellers Rank: #512,661 in Books (See Top 100 in Books) #141 inÂ Books > Textbooks > Computer Science > Algorithms #325 inÂ Books > Computers & Technology > Programming > Algorithms #521 inÂ Books > Textbooks > Computer Science > Operating Systems

Customer Reviews

This book offers one of the most comprehensive introductions to logic model checking techniques available today. The authors have found a way to explain both basic concepts and foundational theory thoroughly and in crystal clear prose. Highly recommended for anyone who wants to learn about this important new field, or brush up on their knowledge of the current state of the art. (Gerard J. Holzmann, NASA/JPL Laboratory for Reliable Software) Principles of Model Checking, by two principals of model-checkingresearch, offers an extensive and thorough coverage of the state of artin computer-aided verification. With its coverage of timed and probabilistic systems, the reader gets a textbook exposition of some ofthe most advanced topics in model-checking research. Obviously, one cannot expect to cover this heavy volume in a regular graduate course; rather, one can base several graduate courses on this book, which belongs on the bookshelf of every model-checking researcher. (Moshe Y. Vardi, Director, Computer and Information Technology Institute, Rice University)This is an impressive piece of work...The book can be used as a kind of reference manual for the classical basis of model checking for lecturers, who will be able to select some parts in order to construct a coherent and complete lecture on automatic verification; and of course for students, who will find many explanations, motivations, examples, and proofs to help them discover this very active research area. (FranÃ§ois Laroussinie The Computer Journal)

Christel Baier is Professor and Chair for Algebraic and Logical Foundations of Computer Science in the Faculty of Computer Science at the Technical University of Dresden. Joost-Pieter Katoen is Professor at the RWTH Aachen University and leads the Software Modeling and Verification Group within the Department of Computer Science. He is affiliated with the Formal Methods and Tools Group at the University of Twente.Joost-Pieter Katoen is Professor at the RWTH Aachen University and leads the Software Modeling and Verification Group within the Department of Computer Science. He is affiliated with the Formal Methods and Tools Group at the University of Twente.Cecilia Chu has worked as an interior designer inCanada and Hong Kong since 1990. Currently she teachesat Hong Kong Polytechnic University and Universityof Hong Kong SPACE, and has been actively involved incommunity design projects and research on urban conservation.

This product was priced much lower than the next highest price. The description was very honest in that there were some markings until page 300. I was very impressed with the honesty of the description.

It is THE book for most recent topics in Model Checking. It is very instructive and educational, so adequate for any undergraduate course.

like new. great. The hard cover is almost brand new. IT helps me a lot in study, I'll keep it

I've only skimmed this book, but it has a lot of useful information and will serve as a good reference.

"this book saved my life"

I used this book in an introduction to model checking class and found it to be very thorough and relatively readable, given the nature of the material.The examples are generally clear and illustrative; which is a huge benefit given the mathematical nature of the material.This book definitely qualifies as being of a theoretical bent and there is a LOT of material covered in its 975 pages.If you are more interested in exploring the practical side of model checking, or would simply prefer a programming book to a math book I would recommend: 'Principles of the Spin Model Checker' by Ben-Ari.

Becoming a Model The Bigger Book of John Deere: The Complete Model-by-Model Encyclopedia Plus Classic Toys, Brochures, and Collectibles Webcam Model for Beginners!: How to Make Loads of Cash from Your Living Room as a Cam Model