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Temporal Logics in Computer Science

This comprehensive text provides a modern and technically precise exposition of the fundamental theory and applications of temporal logics in computer science. Part I presents the basics of discrete transition systems, including constructions and behavioural equivalences. Part II examines the most important temporal logics for transition systems and Part III looks at their expressiveness and complexity. Finally, Part IV describes the main computational methods and decision procedures for model checking and model building – based on tableaux, automata and games – and discusses their relationships.

The book contains a wealth of examples and exercises, as well as an extensive annotated bibliography. Thus, the book is not only a solid professional reference for researchers in the field but also a comprehensive graduate textbook that can be used for self-study as well as for teaching courses.

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Finite-State Systems

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University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

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www.cambridge.org
Information on this title: www.cambridge.org/9781107028364

First published 2016

Printed in the United Kingdom by Clays, St Ives plc

A catalogue record for this publication is available from the British Library

ISBN 978-1-107-02836-4 Hardback

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