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Titolo	Formal Methods for Discrete-Time Dynamical Systems / / by Calin Belta, Boyan Yordanov, Ebru Aydin Gol
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XVIII, 284 p. 93 illus., 39 illus. in color.)
Collana	Studies in Systems, Decision and Control, , 2198-4182 ; ; 89
Disciplina	620
Soggetti	Automatic control Computational complexity System theory Control and Systems Theory Complexity Systems Theory, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Transition Systems -- Temporal Logics and Automata -- Model Checking -- Largest Finite Satisfying Region -- Finite Temporal Logic Control -- Discrete-Time Dynamical Systems -- Largest Satisfying Region -- Parameter Synthesis -- Temporal Logic Control -- Finite Bisimulations -- Language Guided Controller Synthesis -- Optimal Temporal Logic Control -- Background.
Sommario/riassunto	This book bridges fundamental gaps between control theory and formal methods. Although it focuses on discrete-time linear and piecewise affine systems, it also provides general frameworks for abstraction, analysis, and control of more general models. The book is self-contained, and while some mathematical knowledge is necessary, readers are not expected to have a background in formal methods or control theory. It rigorously defines concepts from formal methods, such as transition systems, temporal logics, model checking and synthesis. It then links these to the infinite state dynamical systems through abstractions that are intuitive and only require basic convex-analysis and control-theory terminology, which is provided in the

appendix. Several examples and illustrations help readers understand and visualize the concepts introduced throughout the book.