Automata theory and mathematical logic are intimately related—a connection that adds to the educational experience in introductory books. They serve as foundations of tools that help formally specify and verify (debug) complex computing systems such as microprocessors and operating systems. This book grips the interest of beginning students by emphasizing the applied side of automata theory and logic, and then teaches them the necessary rigor. It shows how to "sculpt" automata using interactive tools, compare them, calculate reachable states through fixed-points, and learn model checking (industrial debugging workhorses). It also covers many classical topics such as computability and complexity.

“This classroom-tested undergraduate textbook is unique in presenting logic and automata theory as a single subject...I highly recommend this book to you as the best route I know into the concepts underlying modern industrial formal verification.”

—Professor Michael J.C. Gordon FRS, The University of Cambridge Computer Laboratory

“This is a valuable book. I learned a good deal from reading it, and encountered many attractive topic treatments and fresh insights. Throughout, I certainly plan to add it to my reference shelf and recommend it to my students and colleagues. It covers automata in depth, providing good intuitions along the way, and culminating with applications that are used every day in the field. In this respect, it is a departure from the conventional textbooks on complexity and computability, although the ‘traditional’ aspects remain well represented. The book is well organized for coordinated use in several courses, ranging from core undergraduate to senior and graduate level topics."

—Professor Steven D. Johnson, Indiana University