1.	Record Nr.	UNINA9910520082703321
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	Titolo	Introduction to Computation : Haskell, Logic and Automata / / by Donald Sannella, Michael Fourman, Haoran Peng, Philip Wadler
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
	ISBN	3-030-76908-9
	Edizione	[1st ed. 2021.]
	Descrizione fisica	1 online resource (371 pages)
	Collana	Undergraduate Topics in Computer Science, , 2197-1781
	Disciplina	004.015113
	Soggetti	Computer science
		Computer science - Mathematics
		Algorithms
		Theory of Computation
		Mathematics of Computing
		Computer Science Logic and Foundations of Programming
		Design and Analysis of Algorithms
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	1. Sets -- 2. Types -- 3. Simple Computations -- 4. Venn Diagrams and Logical Connectives -- 5. Lists and Comprehensions -- 6. Features and Predicates -- 7. Testing Your Programs -- 8. Patterns of Reasoning -- 9. More Patterns of Reasoning -- 10. Lists and Recursion -- 11. More Fun with Recursion -- 12. Higher-Order Functions -- 13. Higher and Higher -- 14. Sequent Calculus -- 15. Algebraic Data Types -- 16. Expression Trees -- 17. Karnaugh Maps -- 18. Relations and Quantifiers -- 19. Checking Satisfiability -- 20. Data Representation -- 21. Data Abstraction -- 22. Efficient CNF Conversion -- 23. Counting Satisfying Valuations -- 24. Type Classes -- 25. Search in Trees -- 26. Combinatorial Algorithms -- 27. Finite Automata -- 28. Deterministic Finite Automata -- 29. Non-Deterministic Finite Automata -- 30. Input/Output and Monads -- 31. Regular Expressions -- 32 Non-Regular Languages -- Index.
	Sommario/riassunto	Computation is a process of calculation involving arithmetic and logical steps, following a given set of rules (an algorithm). This uniquely

accessible textbook introduces students to computation using a very distinctive approach, quite rapidly leading them into essential topics with sufficient depth, yet in a highly intuitive manner. The work is anchored in coverage of functional programming (in Haskell), symbolic logic, and finite automata-- each a critical component of the foundations of Informatics, and together offering students a clear glimpse into an intellectual journey beyond mere mastery of technical skills. From core elements like types, Venn diagrams and logic, to patterns of reasoning, sequent calculus, recursion and algebraic data types, the book spans the breadth of key concepts and methods that will enable students to readily progress with their studies in Computer Science. Topics and features: Spans the key concepts and methods that underpin computation Develops symbolic logic, with a view toward honing clarity of thought; and automata, as a foundation for future study of both their applications and related theoretical topics Introduces powerful functional programming ideas that will be useful regardless which programming languages are used later Provides numerous exercises to support a clear and open, accessible approach Offers a dedicated website with resources for instructors and students, including code and links to online information Includes a wide array of marginal notes, empowering readers to "go beyond" the content presented Approaches logic and automata through Haskell code, to bring key concepts alive and foster understanding through experimentation Assuming no formal background in programming, this highly practical and accessible textbook provides the grounding fundamentals of computation for undergraduate students. Its flexible, yet clearexpository style also makes the book eminently suitable as a self-study instructional guide for professionals or nonspecialists interested in these topics. Prof. Donald Sannella, Prof. Michael Fourman, and Prof. Philip Wadler are each at the University of Edinburgh's School of Informatics, Edinburgh, UK. Mr. Haoran Peng will soon pursue research interests in machine learning and machine intelligence at Cambridge University, Cambridge, UK.