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Collana	Lecture Notes in Computer Science, , 1611-3349 ; ; 1710
Disciplina	004.0684
Soggetti	Computer science Compilers (Computer programs) Computers, Special purpose Machine theory Artificial intelligence Theory of Computation Computer Science Logic and Foundations of Programming Compilers and Interpreters Special Purpose and Application-Based Systems Formal Languages and Automata Theory Artificial Intelligence
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Methodology -- Theories of programming: Top-Down and Bottom-up and Neeting in the Middle -- A Triptych Software Development Paradigm: Domain, Requirements and Software Towards a Nodel Development of a Decision Support System for Sustainable Development -- A Triptych Software Development Paradigm: Domain, Requirements and Software Towards a Nodel Development of a Decision Support System for Sustainable Development -- Real-Time Constraints Through the ProCoS Layers -- Real-Time Constraints Through the ProCoS Layers -- Monotonicity in Calculational Proofs -- Monotonicity in Calculational Proofs -- Programming -- The Alma Project, or How First-Order Logic Can Help us in Imperative Programming -- Type and Effect Systems -- Automation -- Proving

Theorems About Java-Like Byte Code -- Multiple State and Single State  
Tableaux for Combining Local and Global Nodel Checking -- On the  
Existence of Network Invariants for Verifying Parameterized Systems --  
Compilation -- Verification of Compilers -- Translation Validation:  
From SIGNAL to C -- Compilation and Synthesis for Real-Time  
Embedded Controllers -- Optimization Under the Perspective of  
Soundness, Completeness, and Reusability -- Application --  
Verification of Automotive Control Units -- Correct Real-Time Software  
for Programmable Logic Controllers -- Formal Methods for the  
International Space Station ISS -- METAFFrame in Practice: Design of  
Intelligent Network Services.

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Sommario/riassunto

Computers are gaining more and more control over systems that we use or rely on in our daily lives, privately as well as professionally. In safety-critical applications, as well as in others, it is of paramount importance that systems controlled by a computer or computing systems themselves reliably behave in accordance with the specification and requirements, in other words: here correctness of the system, of its software and hardware is crucial. In order to cope with this challenge, software engineers and computer scientists need to understand the foundations of programming, how different formal theories are linked together, how compilers correctly translate high-level programs into machine code, and why transformations performed are justifiable. On the occasion of Hans Langmaack's retirement from his professorship and in order to honor his fundamental contributions to the field, the volume editors invited 17 internationally well known researchers to evaluate the state of the art in the area of correct system design. This book presents 17 mutually reviewed invited papers organized in sections on methodology, programming, automation, compilation, and application. It is a unique outline of what has been achieved in the area which dates back to a pioneering paper by Alan Turing in 1949.

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