<< /Formal methods for components and objects>>

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Formal methods have been applied successfully to the verification of medium-sized programs in protocol and hardware design. However, their application to the development of large systems requires more emphasis on specification, modelling and validation techniques supporting the concepts of reusability and modifiability, and their implementation in new extensions of existing programming languages. This book presents 19 revised invited keynote lectures and revised tutorial lectures given by top-researchers at the 4th International Symposium on Formal Methods for Components and Objects, FMCO 2005, held in Amsterdam, Netherlands, in November 2005. The book provides a unique combination of ideas on software engineering and formal methods that reflect the current interest in the application or development of formal methods for large scale software systems such as component-based systems and object systems. The papers are organized in topical sections on component and service oriented computing, system design, tools, algebraic methods, model checking, assertional methods, quantitative analysis.

Component and Service Oriented ComputingA Software Component Model and Its Preliminary FormalisationSynehronised Hyperedge Replacement as a Model for Service Oriented ComputingSystem DesignControl of Modular and Distributed Discrete-Event SystemsModel-Based Security Engineering with UML: Introducing Security AspectsThe Pragmatics of STAIRSToolsSmallfoot: Modular Automatic Assertion Checking with Separation LogicOrion: High-Precision Methods for Static Error Analysis of C and C++ ProgramsAlgebraic MethodsBeyond Bisimulation: The "up-to" TechniquesSeparation Results Via Leader Election ProblemsDivide and Congruence: From Decomposition of Modalities toPreservation of Branching BisimulationModel CheckingAbstraction and Refinement in Model CheckingProgram Compatibility ApproachesCluster-Based LTL Model Checking of Large SystemsSafety and Liveness in Concurrent Pointer ProgramsAssertional MethodsModular Specification of Encapsulated Object-Oriented ComponentsBeyond Assertions: Advanced Specification and Verification with JML and ESC/Java2Boogie: A Modular Reusable Verifier for Object-Oriented ProgramsQuantitative AnalysisOn a Probabilistic Chemical Abstract Machine and the Expressiveness of Linda LanguagesPartial Order Reduction for Markov Decision Processes: A SurveyAuthor Index

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