Algebraic theory of processes

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➕ Tools

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Abstract

Algebraic Theory of Processes provides the first general and systematic introduction to the semantics of concurrent systems, a relatively new research area in computer science. It develops the mathematical foundations of the algebraic approach to the formal semantics of languages and applies these ideas to a particular semantic theory of distributed processes. The book is unique in developing three complementary views of the semantics of concurrent processes: a behavioral view where processes are deemed to be equivalent if they cannot be distinguished by any experiment; a denotational model where processes are interpreted as certain kinds of trees; and a proof-theoretic view where processes may be transformed into equivalent processes using valid equations or transformations. It is an excellent guide on how to reason about and relate behavioral, denotational, and proof-theoretical aspects of languages in general: all three views are developed for a sequence of increasingly complex algebraic languages for concurrency and in each case they are shown to be equivalent. Algebraic Theory of Processes is a valuable source of information for theoretical computer scientists, not only as an elegant and comprehensive introduction to the field but also in its discussion of the author's own theory of the behavioral semantics of processes ("testing equivalence") and original results in example languages for distributed processes, It is self-contained; the problems addressed are motivated from the standpoint of computer science, and all the required algebraic concepts are covered. There are exercises at the end of each chapter.

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Abstract: In the past few years, several process-algebraic frameworks have been proposed that incorporate the notion of epistemic knowledge. These frameworks allow for reasoning about knowledge-related properties, such as anonymity, secrecy and authentication, in the operational specifications given in process-algebraic languages. Hitherto, no sound and (ground-)complete axiomatization has been given for the abovementioned process-algebraic frameworks. In this paper, we define notions of bisimulation that are suitable for such process algebras with Algebraic Theory of Processes provides the first general and systematic introduction to the semantics of concurrent systems, a relatively new research area in computer science. (paperback not available in U.S. and Canada). MIT Press Direct is a distinctive collection of influential MIT Press books curated for scholars and libraries worldwide. CogNet. The essential research tool for scholars in the Brain & Cognitive Sciences. Knowledge Futures Group. The Knowledge Futures Group serves as an incubator, a knowledge transfer agency, and a staging platform for the development of open access business models and open source publishing technologies. Digital. Resources.