Algebraic theory of processes

Tools

Hennessy, Matthew (1988) *Algebraic theory of processes.* The Foundations Of Computing Series . MIT Press. ISBN 0262081717

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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.

Item Type: Book

Schools and Departments: School of Engineering and Informatics > Informatics

Subjects: Q Science > QA Mathematics > QA0075 Electronic computers. Computer science

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Using the algebraic signal processing theory, we construct signal models based on this shift and derive their corresponding signal processing concepts, including the proper notions of signal and filter spaces, z-transform, convolution, spectrum, and Fourier transform. The presented results extend the algebraic signal processing theory and provide a general theoretical framework for signal analysis using orthogonal polynomials. View. Show abstract.