the problems when they arise in practice, apply the algorithms to solve them, and use the impossibility results to determine whether problems are unsolvable. The book also provides readers with the basic mathematical tools for designing new algorithms and proving new impossibility results. In addition, it teaches readers how to reason carefully about distributed algorithms—to model them formally, devise precise specifications for their required behavior, prove their correctness, and evaluate their performance with realistic measures.

Optimal Control of Nonsmooth Distributed Parameter Systems (Dan Tiba) 2006-11-14 The book is devoted to the study of distributed control problems governed by various nonsmooth state systems. The main questions investigated include existence of optimal pairs, first order optimality conditions, state-constrained systems, approximation and discretization, bang-bang and regularity properties for optimal control. In order to give the reader a better overview of the domain, several sections deal with topics that do not enter directly into the announced subject. Boundary control, delay differential equations, some prerequisites relating to convex analysis, nonlinear operators and partial differential equations are collected in the first chapter or are ignored appropriately in the text. The monograph is intended for graduate students and for researchers interested in this area of mathematics.

Distributed Artificial Intelligence (Michael N. Huhns) 2012-12-02 Distributed Artificial Intelligence presents a collection of papers describing the state of research in distributed artificial intelligence (DAI). DAI is concerned with the cooperative solution of problems by a decentralized group of agents. The agents may range from simple processing elements to complex entities exhibiting rational behavior. The book is organized into three parts. Part I addresses ways to develop control abstractions that efficiently guide problem-solving (conceptual abstractions for shared cooperation, and descriptive abstractions for result in effective organizational structure. Part II describes architectures for developing and testing DAI systems. Part III discusses applications of DAI in manufacturing, office automation, and man-machine interactions. This book is intended for researchers, system developers, and students in artificial intelligence and related disciplines. It can also be used as a reference for students and researchers in other disciplines, such as psychology, philosophy, computer science, and distributed computing, who seek to understand the nature of DAI.

Holographic Reduced Representation (Tony A. Plate) 2003 While neuroscientists garner success in identifying brain regions and in analyzing individual neurons, ground is still being broken at the intermediate scale of understanding how neurons combine to encode information. This book proposes a method of representing information in a computer that would be suited for modeling the brain's methods of processing information. Holographic Reduced Representations (HRRs) are introduced here to model how the brain distributes each piece of information among thousands of neurons. Thus far it has been previously thought that the representational structure of a language cannot be encoded practically in a distributed representation, but HRRs can overcome the problems of such proposals. Thus this work has implications for psychology, neuroscience, linguistics, and computer science, and engineering.