The breadth of AI, I've explored and explained in this best-selling text. Assuming no prior knowledge it covers topics like artificial intelligence and robotics. This text explores the range of problems that can be addressed by the use of modern computational intelligence approaches. The goal is to help you understand how these problems can be solved using appropriate methods. The book is divided into six parts. Part I contains one introductory chapter titled "A selected introduction to evolutionary computation" by Yao, which presents a concise but insightful introduction to evolutionary computation.

The pursuit of an efficient solution to a given problem can be achieved by means of evolutionary algorithms, in particular genetic algorithms (GAs). Genetic algorithms are a class of artificial intelligence algorithms that are inspired by the process of natural selection and the mechanism of natural evolution. They are widely used in optimization problems, where the objective is to find the best solution from a large set of possible solutions.

In this book, we present various aspects and applications of evolutionary algorithms. We begin with a general overview of the field and its history, followed by an introduction to the basic concepts and terminology. We then discuss different types of evolutionary algorithms and their underlying principles, followed by detailed descriptions of specific algorithms and their applications. Finally, we explore advanced topics and future directions in the field.

The book is designed for a broad audience, including students, researchers, and practitioners in various fields such as engineering, computer science, and economics. It is suitable for both self-study and as a textbook for courses on evolutionary algorithms.

In summary, this book provides a comprehensive and up-to-date introduction to the field of evolutionary algorithms. It offers a clear and concise overview of the key concepts and techniques, as well as practical guidance for applying these methods to real-world problems.
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or mass-product composition, similar to the algorithm that first used Mathematica in 1986. Some algorithms are developed to refine fuzzy controls systems but the main part of algorithm stays the same. Triggered by the success of fuzzy controls systems, other ways of applying fuzzy set theory are also investigated. They are usually referred to as 'fuzzy expert systems' and their purpose are to combine the idea of fuzzy theory with AI-based approach toward knowledge processing. These approaches can be more generally viewed as 'fuzzy information processing', that is to bring fuzzy idea into information processing systems.
The theoretical underpinnings of computing form a standard part of almost every computer science curriculum. But the classic treatment of this material isolates it from the myriad ways in which the theory influences the design of modern hardware and software systems. The book's goal is to change that. The book is organized into a core set of chapters (that cover the standard material suggested by the title), followed by a set of appendix chapters that highlight application areas including programming language design, compilers, software verification, networks, security, natural language processing, artificial intelligence, game playing, and computational biology.
The core material includes discussions of finite state machines, Markov models, hidden Markov models (HMMs), regular expressions, content-free grammars, pushdown automata, Chomsky and Graalbrough normal forms, context-free parsing, pumping theorems for regular and context-free languages, closure theorems and decision procedures for regular and context-free languages, Turing machines, nondeterminism, decidability and undecidability, the Church-Turing thesis, reduction proofs, Post Correspondence problem, tiling problems, the undecidability of first-order logic, asymptotic dominance, time and space complexity, the Cook-Laurie theorem, NP-completeness, Savitch's theorem, time and space hierarchy theorems, randomized algorithms and heuristic search. Throughout the discussion of these topics there are pointers into the application chapters. So, for example, the chapter that describes reduction proofs of undecidability has a link to the security chapter, which shows a reduction proof of the undecidability of the safety of a simple protection framework.

Despite the volume of research carried out in the design of database systems and the design of user interfaces, there is little cross-fertilization between the two areas. The control of user interfaces to database systems is, therefore, significantly less advanced than other aspects of DBMS design. As database functionality is used in a wider range of areas, such as design applications, the suitability of the user interface is becoming increasingly important. It is, therefore, necessary to begin applying the knowledge developed by HCI researchers to the specialized domain of database systems. This book contains revised papers from the International Workshop on interfaces to Database Systems, held in Glasgow, 1-3 July 1992. The workshop aimed to develop an interaction between the design of database systems and user interfaces. It discussed both the production of interfaces tailored to particular applications, and also general methods within which interfaces can be developed. Some of the papers concentrate on usability aspects, some discuss different interface metaphors, whilst others tackle the question of designing a general conceptual model. The latter topic is of particular importance, as it is only by achieving an abstract model of what the user understands to be in the database that the data can be associated with appropriate interface facilities. Among the contents of the volume are: integrated interfaces to publicly available databases; database query interface for medical information systems; an integrated approach to task-oriented database retrieval interfaces;

GRADI a graphical database interface for a multimedia DBMS; cognitive view mechanism for multimedia information systems; a graphical schema representation for object-oriented database; a conceptual framework for error analysis in SQL interfaces; a browser for a version entity relationship database; interfaces to Database Systems (IDBS) is unique in that it brings together a variety of approaches from the database and HCI research communities. It will provide essential reading for researchers of database systems and also industrial developers of DBMS. Artificial Intelligence (AI) is the part of computer science concerned with designing intelligent computer systems (systems that exhibit characteristics we associate with intelligence in human behavior). This book is the first published textbook of AI in chemical engineering; and provides broad and in-depth coverage of AI programming, AI principles, expert systems, and neural networks in chemical engineering. This book introduces the computational means and methodologies that are used to enable computers to perform intelligent engineering tasks. A key goal is to move beyond the principles of AI into its applications in chemical engineering. After reading this book, a chemical engineer will have a firm grounding in AI.


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