Advances in Artificial Intelligence

Artificial Immune Systems

This book presents the proceedings of the workshops of the 8th International Conference on Intelligent Environments IE 12, held in Guanajuato, Mexico, in June 2012. Topics covered in the workshops include intelligent environments supporting healthcare and well-being artificial intelligence techniques for ambient intelligence large-scale intelligent environments intelligent domestic robots intelligent environment technology in education multimodal interfaces applied in skills transfer, healthcare and rehabilitation thereliability of intelligent environments and improving industrial automation using

Artificial Immune Systems

Um mergulho interdisciplinar na origem e no uso dos algoritmos de nossos computadores e celulares, com dicas valiosas que nos ajudam a enfrentar problemas do dia a dia. Quando ouvimos falar em algoritmos, em geral pensamos em programas de computador que estão fazendo algum trabalho em nosso lugar. No entanto, os algoritmos – séries de passos usadas para resolver problemas – têm sido parte de nossas vidas desde a Idade da Pedra. Explicando com clareza problemas matemáticos célebres e descrevendo a origem e o funcionamento de vários algoritmos, o jornalista Brian Christian e o professor de psicologia e ciência cognitiva Tom Griffiths nos mostram que tanto seres humanos como computadores enfrentam limites e dificuldades para resolver problemas. Mais do que apontar os melhores caminhos para otimizar tarefas, este livro ilumina aspectos surpreendentes do funcionamento da mente humana, de nossas emoções e de nosso comportamento. Com o apoio de pesquisas multidisciplinares e de entrevistas com especialistas de diversas áreas, Algoritmos para viver é um mergulho revelador nos processos matemáticos que regem parte cada vez maior de nossa vida cotidiana.

Search Methodologies

Elements of Programming Interviews in Python

Testado por cerca de uma década em cursos universitários e adaptado às necessidades dos estudantes, 'Algoritmos' explica os fundamentos de algoritmos em uma linha histórica. A ênfase está na compreensão da ideia matemática por trás de cada algoritmo, de uma forma intuitiva, rigorosa, sem ser formal. Tópicos avançados cuidadosamente escolhidos podem ser adequados aos cursos, de acordo com a necessidade do professor. Um capítulo opcional sobre algoritmos quânticos para indústria provê uma perspectiva geral sobre este tópico.
The Design and Analysis of Computer Algorithms

The study of directed graphs (digraphs) has developed enormously over recent decades, yet the results are rather scattered across the journal literature. This is the first book to present a unified and comprehensive survey of the subject. In addition to covering the theoretical aspects, the authors discuss a large number of applications and their generalizations to topics such as the traveling salesman problem, project scheduling, genetics, network connectivity, and sparse matrices. Numerous exercises are included. For all graduate students, researchers and professionals interested in graph theory and its applications, this book will be essential reading.

Motion and Operation Planning of Robotic Systems

A maioria das pessoas não se dá conta de que muitas atividades que realizamos cotidianamente, como uma busca no Google ou uma compra na Amazon, dependem de algoritmos de Inteligência Artificial (IA). Esta se define como uma área da ciência computacional que leva as máquinas a executarem tarefas similares àquelas desempenhadas pela inteligência humana, tais como percepção visual, tomada de decisão, tradução, reconhecimento de voz etc. De fato, os recursos próprios da IA espreitam-se hoje por uma diversidade de atividades humanas. Os assistentes pessoais inteligentes organizam rotinas, os "automatizadores" de documentos auxiliam em uma variedade de tarefas, softwares analisam comportamentos online, algoritmos são capazes de prever o sucesso de narrativas audiovisuais, softwares avançados voltam-se para o reconhecimento perceptivo, a aprendizagem profunda (deep learning) é capaz de realizar diagnóstico médico e a aprendizagem de máquina (machine learning) pode auxiliar nos tratamentos de saúde; há ainda software para sistemas aéreos autônomos, robôs com cara de gente, que conversam com simpatia. E os avanços não param aí. Nesse contexto, este livro está dedicado ao exame do papel que a IA vem desempenhando, de modo invisível, mas incisivo, nas redes sociais. Os capítulos procuram estudar o tema sob uma diversidade de facetas, todas elas de grande relevância, pois compreender os efeitos que a IA está produzindo na sociedade está se tornando preocupação crucial para todos que se interessam pelos destinos da vida humana daqui para o futuro.

Data Structures In C

This book constitutes the refereed proceedings of the 18th EPIA Conference on Artificial Intelligence, EPIA 2017, held in Porto, Portugal, in September 2017. The 69 revised full papers and 2 short papers presented were carefully reviewed and selected from a total of 177 submissions. The papers are organized in 16 tracks devoted to the following topics: agent-based modelling for criminological research (ABM4Crime), artificial intelligence in cyber-physical and distributed embedded systems (AICPDES), artificial intelligence in games (AIG), artificial intelligence in medicine (AIM), artificial intelligence in power and energy systems (AIPES), artificial intelligence in transportation systems (AITS), artificial life and evolutionary algorithms (ALEA), ambient intelligence and affective environments (AmIA), business applications of artificial intelligence (BAAI), intelligent robotics (IROBOT), knowledge discovery and business intelligence (KDBI), knowledge representation and reasoning (KKR), multi-agent systems: theory and applications (MASTA), software engineering for autonomous and intelligent systems (SE4AIS), social simulation and modelling (SSM), and text mining and applications (TeMA).

Algorithms Illuminated (Part 2)

Você não sabe o que é vídeo marketing? Que bom que você tirou o meu livro da prateleira e está aqui lendo essa orelha. Agora que estou com a sua atenção presa aqui, eu quero seu voto de confiança - ou melhor um olho de confiança - no conteúdo que eu coloquei dentro dessas páginas sobre o vídeo marketing. Na outra orelha eu me apresento, mas depois você lê ela, o que você precisa saber que desde 2006 eu trabalho com vídeos focados em varejo e vendas, e toda essa expertise resultou no conteúdo desse livro, com pontos reais que eu uso no dia-a-dia da minha empresa com clientes e alunos. As estratégias e táticas aqui colocadas vão desde o início, ou seja, para você que está entrando nesse mundo, até o mais avançado disponível no momento que finalizei esse livro (ou seja, compra esse livro para a editora se animar e me permitir escrever uma segunda edição rs). Dentro do livro você encontra dicas práticas para você aplicar em seus vídeos, como
por exemplo, o uso dos meus métodos para a criação de roteiros, ou mesmo o meu famoso roteiro chicote onde com apenas 6 perguntas você vai poder criar roteiros para qualquer tipo de assunto que exista no mundo. É claro que essa é só uma citação pois nesse calhamaço de páginas (que eu espero que você rabisque e anote muito) tem muito conteúdo valioso sobre video marketing, e a minha real felicidade é te dar boas-vindas ao Video Marketing.

Algoritmos


The latest edition of the essential text and professional reference, with substantial new material on such topics as vEB trees, multithreaded algorithms, dynamic programming, and edge-based flow. Some books on algorithms are rigorous but incomplete; others cover masses of material but lack rigor. Introduction to Algorithms uniquely combines rigor and comprehensiveness. The book covers a broad range of algorithms in depth, yet makes their design and analysis accessible to all levels of readers. Each chapter is relatively self-contained and can be used as a unit of study. The algorithms are described in English and in a pseudocode designed to be readable by anyone who has done a little programming. The explanations have been kept elementary without sacrificing depth of coverage or mathematical rigor. The first edition became a widely used text in universities worldwide as well as the standard reference for professionals. The second edition featured new chapters on the role of algorithms, probabilistic analysis and randomized algorithms, and linear programming. The third edition has been revised and updated throughout. It includes two completely new chapters, on van Emde Boas trees and multithreaded
algorithms, substantial additions to the chapter on recurrence (now called “Divide-and-Conquer”), and an appendix on matrices. It features improved treatment of dynamic programming and greedy algorithms and a new notion of edge-based flow in the material on flow networks. Many exercises and problems have been added for this edition. The international paperback edition is no longer available; the hardcover is available worldwide.

Logicomix

The first edition of Search Methodologies: Introductory Tutorials in Optimization and Decision Support Techniques was originally put together to offer a basic introduction to the various search and optimization techniques that students might need to use during their research, and this new edition continues this tradition. Search Methodologies has been expanded and brought completely up to date, including new chapters covering scatter search, GRASP, and very large neighborhood search. The chapter authors are drawn from across Computer Science and Operations Research and include some of the world’s leading authorities in their field. The book provides useful guidelines for implementing the methods and frameworks described and offers valuable tutorials to students and researchers in the field.

“As I embarked on the pleasant journey of reading through the chapters of this book, I became convinced that this is one of the best sources of introductory material on the search methodologies topic to be found. The book’s subtitle, “Introductory Tutorials in Optimization and Decision Support Techniques”, aptly describes its aim, and the editors and contributors to this volume have achieved this aim with remarkable success. The chapters in this book are exemplary in giving useful guidelines for implementing the methods and frameworks described.” Fred Glover, Leeds School of Business, University of Colorado Boulder, USA “[The book] aims to present a series of well written tutorials by the leading experts in their fields. Moreover, it does this by covering practically the whole possible range of topics in the discipline. It enables students and practitioners to study and appreciate the beauty and the power of some of the computational search techniques that are able to effectively navigate through search spaces that are sometimes inconceivably large. I am convinced that this second edition will build on the success of the first edition and that it will prove to be just as popular.” Jacek Blazewicz, Institute of Computing Science, Poznan University of Technology and Institute of Bioorganic Chemistry, Polish Academy of Sciences

Logistics Management and Optimization through Hybrid Artificial Intelligence Systems

The first edition won the award for Best 1990 Professional and Scholarly Book in Computer Science and Data Processing by the Association of American Publishers. There are books on algorithms that are rigorous but incomplete and others that cover masses of material but lack rigor. Introduction to Algorithms combines rigor and comprehensiveness. The book covers a broad range of algorithms in depth, yet makes their design and analysis accessible to all levels of readers. Each chapter is relatively self-contained and can be used as a unit of study. The algorithms are described in English and in a pseudocode designed to be readable by anyone who has done a little programming. The explanations have been kept elementary without sacrificing depth of coverage or mathematical rigor. The first edition became the standard reference for professionals and a widely used text in universities worldwide. The second edition features new chapters on the role of algorithms, probabilistic analysis and randomized algorithms, and linear programming, as well as extensive revisions to virtually every section of the book. In a subtle but important change, loop invariants are introduced early and used throughout the text to prove algorithm correctness. Without changing the mathematical and analytic focus, the authors have moved much of the mathematical foundations material from Part I to an appendix and have included additional motivational material at the beginning.

Computational Science and Its Applications - ICCSA 2004

August 6, 2009 Author, Jon Kleinberg, was recently cited in the New York Times for his statistical analysis research in the Internet age. Algorithm Design introduces algorithms by looking at the real-world problems that motivate them. The book teaches students a range of design and analysis techniques for problems that arise in computing applications. The text encourages an understanding of the algorithm
design process and an appreciation of the role of algorithms in the broader field of computer science.

**Introduction to Algorithms, third edition**

An overview of the rapidly growing field of ant colony optimization that describes theoretical findings, the major algorithms, and current applications. The complex social behaviors of ants have been much studied by science, and computer scientists are now finding that these behavior patterns can provide models for solving difficult combinatorial optimization problems. The attempt to develop algorithms inspired by one aspect of ant behavior, the ability to find what computer scientists would call shortest paths, has become the field of ant colony optimization (ACO), the most successful and widely recognized algorithmic technique based on ant behavior. This book presents an overview of this rapidly growing field, from its theoretical inception to practical applications, including descriptions of many available ACO algorithms and their uses. The book first describes the translation of observed ant behavior into working optimization algorithms. The ant colony metaheuristic is then introduced and viewed in the general context of combinatorial optimization. This is followed by a detailed description and guide to all major ACO algorithms and a report on current theoretical findings. The book surveys ACO applications now in use, including routing, assignment, scheduling, subset, machine learning, and bioinformatics problems. AntNet, an ACO algorithm designed for the network routing problem, is described in detail. The authors conclude by summarizing the progress in the field and outlining future research directions. Each chapter ends with bibliographic material, bullet points setting out important ideas covered in the chapter, and exercises. Ant Colony Optimization will be of interest to academic and industry researchers, graduate students, and practitioners who wish to learn how to implement ACO algorithms.

**Algoritmos En C++**

La última de las aportaciones de las populares series de libros de Sedgewick, conduce su amplia colección de algoritmos hacia un entorno de programación orientada a objeto (POO) con implementaciones en el lenguaje de programación en C++. Estos algoritmos a

**Smart and Digital Cities**

This book is the result of several years of research trying to better characterize parallel genetic algorithms (pGAs) as a powerful tool for optimization, search, and learning. Readers can learn how to solve complex tasks by reducing their high computational times. Dealing with two scientific fields (parallelism and GAs) is always difficult, and the book seeks at gracefully introducing from basic concepts to advanced topics. The presentation is structured in three parts. The first one is targeted to the algorithms themselves, discussing their components, the physical parallelism, and best practices in using and evaluating them. A second part deals with the theory for pGAs, with an eye on theory-to-practice issues. A final third part offers a very wide study of pGAs as practical problem solvers, addressing domains such as natural language processing, circuits design, scheduling, and genomics. This volume will be helpful both for researchers and practitioners. The first part shows pGAs to either beginners and mature researchers looking for a unified view of the two fields: GAs and parallelism. The second part partially solves (and also opens) new investigation lines in theory of pGAs. The third part can be accessed independently for readers interested in applications. The result is an excellent source of information on the state of the art and future developments in parallel GAs.

**The Internet of Things**

This book constitutes the refereed proceedings of the First International Conference, AlCoB 2014, held in July 2014 in Tarragona, Spain. The 20 revised full papers were carefully reviewed and selected from 39 submissions. The scope of AlCoB includes topics of either theoretical or applied interest, namely: exact sequence analysis, approximate sequence analysis, pairwise sequence alignment, multiple sequence alignment, sequence assembly, genome rearrangement, regulatory motif finding, phylogeny reconstruction, phylogeny comparison,

Algoritmos para viver

The three volume set LNCS 3610, LNCS 3611, and LNCS 3612 constitutes the refereed proceedings of the First International Conference on Natural Computation, ICNC 2005, held in Changsha, China, in August 2005 as a joint event with the Second International Conference on Fuzzy Systems and Knowledge Discovery FSKD 2005 (LNAI volumes 3613 and 3614). The program committee selected 313 carefully revised full papers and 189 short papers for presentation in three volumes from 1887 submissions. The first volume includes all the contributions related to learning algorithms and architectures in neural networks, neurodynamics, statistical neural network models and support vector machines, and other topics in neural network models; cognitive science, neuroscience informatics, bioinformatics, and bio-medical engineering, and neural network applications such as communications and computer networks, expert system and informatics, and financial engineering. The second volume concentrates on neural network applications as pattern recognition and diagnostics, robotics and intelligent control, signal processing and multi-media, and other neural network applications; evolutionary learning, artificial immune systems, evolutionary theory, membrane, molecular, DNA computing, and ant colony systems. The third volume deals with evolutionary methodology, quantum computing, swarm intelligence and intelligent agents; natural computation applications as bioinformatics and bio-medical engineering, robotics and intelligent control, and other applications of natural computation; hardware implementations of natural computation, and fuzzy neural systems as well as soft computing.

Mentes geniales. La vida y obra de 12 grandes informáticos

This book addresses the broad multi-disciplinary topic of robotics, and presents the basic techniques for motion and operation planning in robotics systems. Gathering contributions from experts in diverse and wide ranging fields, it offers an overview of the most recent and cutting-edge practical applications of these methodologies. It covers both theoretical and practical approaches, and elucidates the transition from theory to implementation. An extensive analysis is provided, including humanoids, manipulators, aerial robots and ground mobile robots. “Motion and Operation Planning of Robotic Systems” addresses the following topics: *The theoretical background of robotics. *Application of motion planning techniques to manipulators, such as serial and parallel manipulators. *Mobile robots planning, including robotic applications related to aerial robots, large scale robots and traditional wheeled robots. *Motion planning for humanoid robots. An invaluable reference text for graduate students and researchers in robotics, this book is also intended for researchers studying robotics control design, user interfaces, modelling, simulation, sensors, humanoid robotics.

Ant Colony Optimization

This book provides a dual perspective on the Internet of Things and ubiquitous computing, along with their applications in healthcare and smart cities. It also covers other interdisciplinary aspects of the Internet of Things like big data, embedded Systems and wireless Sensor Networks. Detailed coverage of the underlying architecture, framework, and state-of-the-art methodologies form the core of the book.

Digraphs

Parallel Genetic Algorithms

This book presents up-to-date information on the future digital and smart cities. In particular, it describes novel insights about the use
of computational intelligence techniques and decentralized technologies, covering urban aspects and services, cities governance and social sciences. The topics covered here range from state-of-the-art computational techniques to current discussions regarding drones, blockchain, smart contracts and cryptocurrencies. The idealization of this material emerged with a journey of free knowledge exchange from a diverse group of authors, who met each other through four different events (workshops and special sessions) organized with the purpose of boosting the concepts surrounding smart cities. We believe that this book comprises innovative and precise information regarding state-of-the-art applications and ideas for the future of cities and society. It will surely be useful not only for the academic community but also to the industry professionals and city managers.

**Analisi ed esplorazione multivariata dei dati in ecologia e biologia**

Covering the basic techniques used in the latest research work, the author consolidates progress made so far, including some very recent and promising results, and conveys the beauty and excitement of work in the field. He gives clear, lucid explanations of key results and ideas, with intuitive proofs, and provides critical examples and numerous illustrations to help elucidate the algorithms. Many of the results presented have been simplified and new insights provided. Of interest to theoretical computer scientists, operations researchers, and discrete mathematicians.

**Kurt Gödel and the Foundations of Mathematics**

This easy-to-follow textbook provides a student-friendly introduction to programming and algorithms. Emphasis is placed on the threshold concepts that present barriers to learning, including the questions that students are often too embarrassed to ask. The book promotes an active learning style in which a deeper understanding is gained from evaluating, questioning, and discussing the material, and practised in hands-on exercises. Although R is used as the language of choice for all programs, strict assumptions are avoided in the explanations in order for these to remain applicable to other programming languages. Features: provides exercises at the end of each chapter; includes three mini projects in the final chapter; presents a list of titles for further reading at the end of the book; discusses the key aspects of loops, recursions, program and algorithm efficiency and accuracy, sorting, linear systems of equations, and file processing; requires no prior background knowledge in this area.

**Guide to Programming and Algorithms Using R**

Livro texto que oferece aos estudantes uma sólida compreensão da química orgânica, privilegiando o enfoque no funcionamento dos mecanismos das reações, fundamental para o bom desenvolvimento da disciplina.

**Introduction To Algorithms**

The natural mission of Computational Science is to tackle all sorts of human problems and to work out intelligent automata aimed at alleviating the b- den of working out suitable tools for solving complex problems. For this reason ComputationalScience,thoughoriginatingfromtheneedtosolvethemostch- lenging problems in science and engineering (computational science is the key player in the ?ght to gain fundamental advances in astronomy, biology, che- stry, environmental science, physics and several other scienti?c and engineering disciplines) is increasingly turning its attention to all ?elds of human activity. In all activities, in fact, intensive computation, information handling, kn- ledge synthesis, the use of ad-hoc devices, etc. increasingly need to be exploited and coordinated regardless of the location of both the users and the (various and heterogeneous) computing platforms. As a result the key to understanding the explosive growth of this discipline lies in two adjectives that more and more appropriately refer to Computational Science and its applications: interoperable and ubiquitous. Numerous examples of ubiquitous and interoperable tools and applications are given in the present four LNCS volumes containing the contributions delivered at the 2004 International Conference on Computational Science and its Applications.
Inteligência artificial & redes sociais

"This book offers the latest research within the field of HAIS, surveying the broad topics and collecting case studies, future directions, and cutting edge analyses, investigating biologically inspired algorithms such as ant colony optimization and particle swarm optimization"--

Algoritmos

Discrete optimization problems are everywhere, from traditional operations research planning (scheduling, facility location and network design); to computer science databases; to advertising issues in viral marketing. Yet most such problems are NP-hard; unless P = NP, there are no efficient algorithms to find optimal solutions. This book shows how to design approximation algorithms: efficient algorithms that find provably near-optimal solutions. The book is organized around central algorithmic techniques for designing approximation algorithms, including greedy and local search algorithms, dynamic programming, linear and semidefinite programming, and randomization. Each chapter in the first section is devoted to a single algorithmic technique applied to several different problems, with more sophisticated treatment in the second section. The book also covers methods for proving that optimization problems are hard to approximate. Designed as a textbook for graduate-level algorithm courses, it will also serve as a reference for researchers interested in the heuristic solution of discrete optimization problems.

The Design of Approximation Algorithms

¿Quién acuñó por primera vez el término inteligencia artificial? ¿Quién fue el legendario informático que se negó a usar un ordenador al final de su vida? ¿Quién escribió uno de los artículos más populares de la historia de la informática a través de una metáfora? ¿Quién creó uno de los sistemas informáticos más populares y que reside en cada móvil? ¿Quién fue la mujer que logró el mayor reconocimiento por sus contribuciones al desarrollo de software? Todas ellas fueron ganadoras del "nobel de la informática", el premio Turing, excepto uno, el que lleva el nombre del premio: Alan Turing. Encontrará historias de creatividad, voluntad y perseverancia. Sus vidas, sus anécdotas y sus principales contribuciones intelectuales son presentadas en este libro en un lenguaje ameno, sin caer en excesivos tecnicismos. ¿Cuál es el objetivo de este libro? Motivar a una nueva generación de informáticos (y profesionales de áreas similares) a seguir el camino de estas grandes mentes. Después de todo, la informática necesita de personas así. Camilo Chacón Sartori fue elegido escritor destacado por Quora en español durante cuatro años seguidos, 2018-2021, por sus más de 800 respuestas sobre ciencias de la computación. Actualmente tiene un pódcast llamado Había una vez un algoritmo, donde trata temas filosóficos, prácticos y teóricos sobre la computación. Obtuvo su licenciatura y máster en Ingeniería Informática, ambos, con distinción máxima.

Advances in Natural Computation

Emphasizing issues of computational efficiency, Michael Kearns and Umesh Vazirani introduce a number of central topics in computational learning theory for researchers and students in artificial intelligence, neural networks, theoretical computer science, and statistics.
topic in the book has been chosen to elucidate a general principle, which is explored in a precise formal setting. Intuition has been emphasized in the presentation to make the material accessible to the nontheoretician while still providing precise arguments for the specialist. This balance is the result of new proofs of established theorems, and new presentations of the standard proofs. The topics covered include the motivation, definitions, and fundamental results, both positive and negative, for the widely studied L. G. Valiant model of Probably Approximately Correct Learning; Occam's Razor, which formalizes a relationship between learning and data compression; the Vapnik-Chervonenkis dimension; the equivalence of weak and strong learning; efficient learning in the presence of noise by the method of statistical queries; relationships between learning and cryptography, and the resulting computational limitations on efficient learning; reducibility between learning problems; and algorithms for learning finite automata from active experimentation.

**Algorithms for Computational Biology**

Algorithms Illuminated is an accessible introduction to algorithms for anyone with at least a little programming experience, based on a sequence of popular online courses. Part 2 covers graph search and applications, shortest paths, and the usage and implementation of several data structures (heaps, search trees, hash tables, and bloom filters).

**An Introduction to Computational Learning Theory**

Una historia gráfica de locura y razón, amor y guerra. En una época de fuertes convulsiones políticas y sociales en Europa, que finalmente desembocarían en la Primera Guerra Mundial, un grupo de pensadores exploraba el campo de la lógica y la filosofía a través de la búsqueda de los fundamentos de las matemáticas. Narrada por su principal protagonista, Bertrand Russell –uno de los grandes filósofos británicos del siglo XX–, esta obra convierte una materia tan árida como las matemáticas en una historia apasionante, una aventura donde confluyen famosos intelectuales de la talla de Frege, Hilbert, Poincaré, Wittgenstein, Gödel y Cantor, personajes que marcaron para siempre nuestra concepción del mundo. La crítica ha dicho «Logícómix derrocha originalidad; en sus páginas se produce un rico y fascinante encuentro entre los mitos, las matemáticas, el teatro y los gigantes de la filosofía del siglo XX.» Posy Simmonds

**Advances in Computational Intelligence**

This book constitutes the refereed proceedings of the Third International Conference on Artificial Immune Systems, ICARIS 2004, held in Catania, Sicily, Italy, in September 2004. The 34 revised full papers presented were carefully reviewed and selected from 58 submissions. The papers are organized in topical sections on applications of artificial immune systems; conceptual, formal, and theoretical frameworks; artificial immune systems for robotics; emerging metaphors; immunoinformatics; theoretical and experimental studies; future applications; networks; modeling; and distinguishing properties of artificial immune systems.

**Approximation Algorithms**

For anyone who has ever wondered how computers solve problems, an engagingly written guide for nonexperts to the basics of computer algorithms. Have you ever wondered how your GPS can find the fastest way to your destination, selecting one route from seemingly countless possibilities in mere seconds? How your credit card account number is protected when you make a purchase over the Internet? The answer is algorithms. And how do these mathematical formulations translate themselves into your GPS, your laptop, or your smart phone? This book offers an engagingly written guide to the basics of computer algorithms. In Algorithms Unlocked, Thomas Cormen—coauthor of the leading college textbook on the subject—provides a general explanation, with limited mathematics, of how algorithms enable computers to solve problems. Readers will learn what computer algorithms are, how to describe them, and how to evaluate them. They will discover simple ways to search for information in a computer; methods for rearranging information in a computer into a prescribed order (“sorting”); how to solve basic problems that can be modeled in a computer with a mathematical structure called a “graph” (useful for modeling road networks,
dependencies among tasks, and financial relationships; how to solve problems that ask questions about strings of characters such as DNA structures; the basic principles behind cryptography; fundamentals of data compression; and even that there are some problems that no one has figured out how to solve on a computer in a reasonable amount of time.

Algorithms

Turing (A Novel about Computation)

This book constitutes the refereed joint proceedings of the 7th Ibero-American Conference on AI and the 15th Brazilian Symposium on AI, IBERAMIA-SBIA 2000, held in Atibaia, Brazil in November 2000. The 48 revised full papers presented together with two invited contributions were carefully reviewed and selected from a total of 156 submissions. The papers are organized in topical sections on knowledge engineering and case-based reasoning, planning and scheduling, distributed AI and multi-agent systems, AI in education and intelligent tutoring systems, knowledge representation and reasoning, machine learning and knowledge acquisition, knowledge discovery and data mining, natural language processing, robotics, computer vision, uncertainty and fuzzy systems, and genetic algorithms and neural networks.

Workshop Proceedings of the 8th International Conference on Intelligent Environments

The two-volume set LNAI 7629 and LNAI 7630 constitutes the refereed proceedings of the 11th Mexican International Conference on Artificial Intelligence, MICAI 2012, held in San Luis Potosi, Mexico, in October/November 2012. The 80 revised papers presented were carefully reviewed and selected from 224 submissions. The second volume includes 40 papers focusing on soft computing. The papers are organized in the following topical sections: natural language processing; evolutionary and nature-inspired metaheuristic algorithms; neural networks and hybrid intelligent systems; fuzzy systems and probabilistic models in decision making.

Progress in Artificial Intelligence

The world of computation according to Turing, an interactive tutoring program, as told to star-crossed lovers: a novel. Our hero is Turing, an interactive tutoring program and namesake (or virtual emanation?) of Alan Turing, World War II code breaker and father of computer science. In this unusual novel, Turing's idiosyncratic version of intellectual history from a computational point of view unfolds in tandem with the story of a love affair involving Ethel, a successful computer executive, Alexandros, a melancholy archaeologist, and Ian, a charismatic hacker. After Ethel (who shares her first name with Alan Turing's mother) abandons Alexandros following a sundrenched idyll on Corfu, Turing appears on Alexandros's computer screen to unfurl a tutorial on the history of ideas. He begins with the philosopher-mathematicians of ancient Greece—"discourse, dialogue, argument, proof can only thrive in an egalitarian society"—and the Arab scholar in ninth-century Baghdad who invented algorithms; he moves on to many other topics, including cryptography and artificial intelligence, even economics and developmental biology. (These lessons are later critiqued amusingly and developed further in postings by a fictional newsgroup in the book's afterword.) As Turing's lectures progress, the lives of Alexandros, Ethel, and Ian converge in dramatic fashion, and the story takes us from Corfu to Hong Kong, from Athens to San Francisco—and of course to the Internet, the disruptive technological and social force that emerges as the main locale and protagonist of the novel. Alternately pedagogical and romantic, Turing (A Novel about Computation) should appeal both to students and professionals who want a clear and entertaining account of the development of computation and to the general reader who enjoys novels of ideas.

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