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Ant Colony Optimization-Marco Dorigo 2004 From real to artificial ants - The ant colony optimization metaheuristic - Ant colony optimization algorithms for the traveling salesman problem - Ant colony optimization theory - Ant colony optimization for NP-Hard problems - AntNet : an ACO algorithm for data network routing - Conclusions and prospects for the future.

Ant Colony Optimization-Helio Barbosa 2013-02-20 Ant Colony Optimization (ACO) is the best example of how studies aimed at understanding and modeling the behavior of ants and other social insects can provide inspiration for the development of computational algorithms for the solution of difficult mathematical problems. Introduced by Marco Dorigo in his PhD thesis (1992) and initially applied to the travelling salesman problem, the ACO field has experienced a tremendous growth, standing today as an important nature-inspired stochastic metaheuristic for hard optimization problems. This book presents state-of-the-art ACO methods and is divided into two parts: (I) Techniques, which includes parallel implementations, and (II) Applications, where recent contributions of ACO to diverse fields, such as traffic congestion and control, structural optimization, manufacturing, and genomics are presented.

Ant Colony Optimization and Swarm Intelligence-Marco Dorigo 2006-08-30 ANTS – The International Workshop on Ant Colony Optimization and Swarm Intelligence is now at its ?fth edition. The series started in 1998 with the - ganization of ANTS 1998. At that time the goal was to gather in a common meeting those researchers interested in ant colony optimization: more than 50 researchers from around the world joined for the ?rst time in Brussels, Belgium, to discuss ant colony optimization and swarm intelligence related research. A selectionofthebest paperspresentedatthe workshopwaspublished asa special issue of the Future Generation Computer Systems journal (Vol. 16, No. 8, 2000). Two years later, ANTS 2000, organized again in Brussels, attracted more than 70 participants. The 41 extended abstracts presented as talks or posters at the workshopwere collected in a booklet distributed to participants, and a selection of the best papers was published as a special section of the IEEE Transactions on Evolutionary Computation (Vol. 6, No. 4, 2002). After these ?rst two successful editions, it was decided to make of ANTS a seriesofbiannualeventswitho?cialworkshopproceedings.Thethirdandfourth editions were organized in September 2002 and September 2004, respectively. Proceedings were published by Springer within the Lecture Notes in Computer Science (LNCS) series. The proceedings of ANTS 2002, LNCS Volume 2463, contained 36 contri- tions: 17 full papers, 11 short papers, and 8 extended abstracts,selected out of a total of 52 submissions. Those of ANTS 2004, LNCS Volume 3172, contained 50 contributions:22 full papers, 19 shortpapers, and 9 extended abstracts,selected out of a total of 79 submissions.

Applications of Evolutionary Computation-Giovanni Squillero 2016-03-22 The two volumes LNCS 9597 and 9598 constitute the refereed conference proceedings of the 19th European Conference on the Applications of Evolutionary Computation, EvoApplications 2016, held in Porto, Portugal, in March/April 2016, co-located with the Evo* 2016 events EuroGP, EvoCOP, and EvoMUSART. The 57 revised full papers presented together with 17 poster papers were carefully reviewed and selected from 115 submissions. EvoApplications 2016 consisted of the following 13 tracks: EvoBAFIN (natural computing methods in business analytics and finance), EvoBIO (evolutionary computation, machine learning and data mining in computational biology), EvoCOMNET (nature-inspired techniques for telecommunication networks and other parallel and distributed systems), EvoCOMPLEX (evolutionary algorithms and complex systems), EvoENERGY (evolutionary computation in energy applications), EvoGAMES (bio-inspired algorithms in games), EvoIASP (evolutionary computation in image analysis, signal processing, and pattern recognition), EvoINDUSTRY (nature-inspired techniques in industrial settings), EvoNUM (bio-inspired algorithms for continuous parameter optimization), EvoPAR (parallel implementation of evolutionary algorithms), EvoRISK (computational intelligence for risk management, security and defence applications), EvoROBOT (evolutionary robotics), and EvoSTOC (evolutionary algorithms in stochastic and dynamic environments).

Recent Advances on Hybrid Intelligent Systems-Oscar Castillo 2012-09-14 This book presents recent advances on hybrid intelligent systems using soft computing techniques for intelligent control and robotics, pattern recognition, time series prediction and optimization of complex problems. Soft Computing (SC) consists of several intelligent computing paradigms, including fuzzy logic, neural networks, and bio-inspired optimization algorithms, which can be used to produce powerful hybrid intelligent systems. The book is organized in five main parts, which contain groups of papers around a similar subject. The first part consists of papers with the main theme of hybrid intelligent systems for control and robotics, which are basically state of the art papers that propose new models and concepts, which can be the basis for achieving intelligent control and mobile robotics. The second part contains papers with the main theme of hybrid intelligent systems for pattern recognition and time series prediction, which are basically papers using nature-inspired techniques, like evolutionary algorithms, fuzzy logic and neural networks, for achieving efficient pattern recognition or time series prediction. The third part contains papers with the theme of bio-inspired and genetic optimization methods, which basically consider the proposal of new methods and applications of bio-inspired optimization to solve complex optimization of real problems. The fourth part contains papers that deal with the application of intelligent optimization techniques in real world problems in scheduling, planning and manufacturing. The fifth part contains papers with the theme of evolutionary methods and intelligent computing, which are papers considering soft computing methods for applications related to diverse areas, such as natural language processing, recommending systems and optimization.

Encyclopedia of Internet Technologies and Applications-Freire, Mario 2007-10-31 Provides the most thorough examination of Internet technologies and applications for researchers in a variety of related fields. For the average Internet consumer, as well as for experts in the field of networking and Internet technologies.

Advances in Computational Intelligence-Joan Cabestany 2011-05-30 This two-volume set LNCS 6691 and 6692 constitutes the refereed proceedings of the 11th International Work-Conference on Artificial Neural Networks, IWANN 2011, held in Torremolinos-Málaga, Spain, in June 2011. The 154 revised papers were carefully reviewed and selected from 202 submissions for presentation in two volumes. The first volume includes 69 papers organized in topical sections on mathematical and theoretical methods in computational intelligence; learning and adaptation; bio-inspired systems and neuro-engineering; hybrid intelligent systems; applications of computational intelligence; new applications of brain-computer interfaces; optimization algorithms in graphic processing units; computing languages with bio-inspired devices and multi-agent systems; computational intelligence in multimedia processing; and biologically plausible spiking neural processing.

Robot Shaping-Marco Dorigo 1998 foreword by Lashon Booker To program an autonomous robot to act reliably in a dynamic environment is a complex task. The dynamics of the environment are unpredictable, and the robots' sensors provide noisy input. A learning autonomous robot, one that can acquire knowledge through interaction with its environment and then adapt its behavior, greatly simplifies the designer's work. A learning robot need not be given all of the details of its environment, and its sensors and actuators need not be finely tuned. Robot Shaping is about designing and building learning autonomous robots. The term "shaping" comes from experimental psychology, where it describes the incremental training of animals. The authors propose a new engineering discipline, "behavior engineering," to provide the methodologies and tools for creating autonomous robots. Their techniques are based on classifier systems, a reinforcement learning architecture originated by John Holland, to which they have added several new ideas, such as "mutespec," classifier system "energy,"and dynamic population size. In the book they present Behavior Analysis and Training (BAT) as an example of a behavior engineering methodology.

Bio-Inspired Computing and Communication-Pietro Liò 2008-12-18 The book constitutes the thoroughly refereed post-workshop proceedings of the First Workshop on Bio-Inspired Design of Networks, BIOWIRE 2007, held in Cambridge, UK, in April 2007. The 35 revised full papers presented were carefully reviewed and selected from many high quality submissions. All recent developments in the field of bio-inspired design of networks are addressed, with particular regard to wireless networks and the self-organizing properties of biological networks. The papers are organized in topical sections on biological networks, network epidemics, complex networks, bio-inspired network mode, network protocol in wireless communication, data management, distributed computing, and security.

Ant Colony Optimization and Swarm Intelligence-Marco Dorigo 2008-09-20 The series of biannual international conferences "ANTS – International C- ference on Ant Colony Optimization and Swarm Intelligence", now in its sixth edition, was started ten years ago, with the organization of ANTS'98. As some readers might recall, the ?rst edition of ANTS was titled "ANTS'98 - From Ant Colonies to Arti?cial Ants: First International Workshop on Ant Colony Op- mization. " In fact, at that time the focus was mainly on ant colony optimization (ACO), the ?rst swarm intelligence algorithm to go beyond a pure scienti?c interest and to enter the realm of real-world applications. Interestingly, in the ten years after the ?rst edition there has been a gr- ing interest not only for ACO, but for a number of other studies that belong more generally to the area of swarmintelligence. The rapid growth of the swarm intelligence ?eld is attested by a number of indicators. First, the number of s- missions and participants to the ANTS conferences has steadily increased over the years. Second, a number of international conferences in computational - telligence and related disciplines organize workshops on subjects such as swarm intelligence, ant algorithms, ant colony optimization, and particle swarm op- mization. Third, IEEE startedorganizing,in 2003,the IEEE SwarmIntelligence Symposium (in order to maintain unity in this growing ?eld, we are currently establishingacooperationagreementbetweenIEEE SISandANTSsoastohave 1 IEEE SIS in odd years and ANTS in even years). Last, the Swarm Intelligence journal was born.

Ant Colony Optimization and Swarm Intelligence-Directeur de Recherches Du Fnrs Marco Dorigo 2004-08-19 This book constitutes the refereed proceedings of the 4th International Workshop on Ant Colony Optimization and Swarm Intelligence, ANTS 2004, held in Brussels, Belgium in September 2004. The 22 revised full papers, 19 revised short papers, and 9 poster abstracts presented were carefully reviewed and selected from 79 papers submitted. The papers are devoted to theoretical and foundational aspects of ant algorithms, ant colony optimization and swarm intelligence and deal with a broad variety of optimization applications in networking and operations research.

Handbook of Research on Ubiquitous Computing Technology for Real Time Enterprises-M␣hlh␣user, Max 2008-01-31 "This book combines the fundamental methods, algorithms, and concepts of pervasive computing with current innovations and solutions to emerging challenges. It systemically covers such topics as network and application scalability, wireless network connectivity, adaptability and "context-aware" computing, information technology security and liability, and human-computer interaction"--Provided by publisher.

Artificial Ants-Nicolas Monmarché 2010-12-01 During the last decade, artificial ants have experienced rapid development in the research community, mainly for solving optimization problems. This book provides an overview of the situation ant colony algorithms reached. Artificial Ants encompasses solution methods of hard optimization problems and new trends for collective intelligence. Part 1 helps to understand the basis of ant colony algorithms, and to discover a panorama of applications in the field of optimization, particularly in the industrial world. Part 2 deals with broader issues and provides an overview of current research in the field of artificial ants.

The Eudaemonic Pie-Thomas A Bass 2017-03-14 The Eudaemonic Pie is the bizarre true story of how a band of physicists and computer wizards took on Las Vegas.

Scatter Search-Manuel Laguna 2012-12-06 The book Scatter Search by Manuel Laguna and Rafael Martí represents a long-awaited "missing link" in the literature of evolutionary methods. Scatter Search (SS)-together with its generalized form called Path Relinking-constitutes the only evolutionary approach that embraces a collection of principles from Tabu Search (TS), an approach popularly regarded to be divorced from evolutionary procedures. The TS perspective, which is responsible for introducing adaptive memory strategies into the metaheuristic literature (at purposeful level beyond simple inheritance mechanisms), may at first seem to be at odds with population-based approaches. Yet this perspective equips SS with a remarkably effective foundation for solving a wide range of practical problems. The successes documented by Scatter Search come not so much from the adoption of adaptive memory in the range of ways proposed in Tabu Search (except where, as often happens, SS is advantageously coupled with TS), but from the use of strategic ideas initially proposed for exploiting adaptive memory, which blend harmoniously with the structure of Scatter Search. From a historical perspective, the dedicated use of heuristic strategies both to guide the process of combining solutions and to enhance the quality of offspring has been heralded as a key innovation in evolutionary methods, giving rise to what are sometimes called "hybrid" (or "memetic") evolutionary procedures. The underlying processes have been introduced into the mainstream of evolutionary methods (such as genetic algorithms, for example) by a series of gradual steps beginning in the late 1980s.

Stochastic Global Optimization and Its Applications with Fuzzy Adaptive Simulated Annealing-Hime Aguiar e Oliveira Junior 2012-01-26 Stochastic global optimization is a very important subject, that has applications in virtually all areas of science and technology. Therefore there is nothing more opportune than writing a book about a successful and mature algorithm that turned out to be a good tool in solving difficult problems. Here we present some techniques for solving several problems by means of Fuzzy Adaptive Simulated Annealing (Fuzzy ASA), a fuzzy-controlled version of ASA, and by ASA itself. ASA is a sophisticated global optimization algorithm that is based upon ideas of the simulated annealing paradigm, coded in the C programming language and developed to statistically find the best global fit of a nonlinear constrained, non-convex cost function over a multi-dimensional space. By presenting detailed examples of its application we want to stimulate the reader's intuition and make the use of Fuzzy ASA (or regular ASA) easier for everyone wishing to use these tools to solve problems. We kept formal mathematical requirements to a minimum and focused on continuous problems, although ASA is able to handle discrete optimization tasks as well. This book can be used by researchers and practitioners in engineering and industry, in courses on optimization for advanced undergraduate and graduate levels, and also for self-study.

Nature Inspired Cooperative Strategies for Optimization (NICSO 2008)-Natalio Krasnogor 2009-09-14 The inspiration from Biology and the Natural Evolution process has become a research area within computer science. For instance, the description of the arti?cial neuron given by McCulloch and Pitts was inspired from biological observations of neural mechanisms; the power of evolution in nature in the diverse species that make up our world has been related to a particular form of problem solving based on the idea of survival of the ?ttest; similarly, - ti?cial immune systems, ant colony optimisation, automated self-assembling programming, membrane computing, etc. also have their roots in natural phenomena. The ?rst and second editions of the International Workshop on Nature Inspired Cooperative Strategies for Optimization (NICSO), were held in Granada, Spain, 2006, and in Acireale, Italy, 2007, respectively. As in these two previous editions, the aim of NICSO 2008, held in Tenerife, Spain, was to provide a forum were the latest ideas and state of the art research related to nature inspired cooperative strategies for problem solving were discussed. The contributions collected in this book were strictly peer reviewed by at least three members of the international programme committee, to whom we are indebted for their support and assistance. The topics covered by the contributionsincludenature-inspiredtechniqueslikeGeneticAlgorithms,Ant Colonies, Amorphous Computing, Arti?cial Immune Systems, Evolutionary Robotics, Evolvable Systems, Membrane Computing, Quantum Computing, Software Self Assembly, Swarm Intelligence, etc.

Scheduling-Michael Pinedo 2002 Focusing on theory and applications of scheduling, the applications are drawn primarily from production and manufacturing environments, but state principles that are relevant to other settings as well. The broad range of topics includes deterministic and stochastic models.

Microrobotics and Micromechanical Systems-Society of Photo-optical Instrumentation Engineers 1995

Scheduling Algorithms-Peter Brucker 2013-04-17 Besides scheduling problems for single and parallel machines and shop scheduling problems, the book covers advanced models involving due-dates, sequence dependent change-over times and batching. A discussion of multiprocessor task scheduling and problems with multi-purpose machines is accompanied by the methods used to solve such problems, such as polynomial algorithms, dynamic programming procedures, branch-and-bound algorithms and local search heuristics, and the whole is rounded off with an analysis of complexity issues.

Intelligent Data Engineering and Automated Learning -- IDEAL 2013-Hujun Yin 2013-10-16 This book constitutes the refereed proceedings of the 14th International Conference on Intelligent Data Engineering and Automated Learning, IDEAL 2013, held in Hefei, China, in October 2013. The 76 revised full papers presented were carefully reviewed and selected from more than 130 submissions. These papers provided a valuable collection of latest research outcomes in data engineering and automated learning, from methodologies, frameworks and techniques to applications. In addition to various topics such as evolutionary algorithms, neural networks, probabilistic modelling, swarm intelligent, multi-objective optimisation, and practical applications in regression, classification, clustering, biological data processing, text processing, video analysis, including a number of special sessions on emerging topics such as adaptation and learning multi-agent systems, big data, swarm intelligence and data mining, and combining learning and optimisation in intelligent data engineering.

Innovations in E-Systems for Business and Commerce-Seifedine Kadry 2017-09-08 Innovations in E-Systems for Business and Commerce presents some of the latest research and direction in the field of e-business and e-commerce. With up-to-date information for top researchers from around the world, the volume covers a wide selection of topics on innovations in e-business and e-commerce. E-systems are becoming standard practice across all sectors, including healthcare, engineering, business, education, security, and citizen interaction with local and national government. The use of Internet technologies facilitates rapid and easy dissemination of information and data as well as increased convenience and efficiency to assist service providers and end-users. This book is aimed at three groups of people: undergraduate students and postgraduate students conducting research in the areas of e-systems related to e-business or e-commerce; researchers at universities and other institutions working in these fields; and practitioners in the research and development departments of industrial settings. The volume can also be used as an advanced reference for classroom use.

Annual Meeting of the North American Fuzzy Information Processing Society--NAFIPS.-North American Fuzzy Information Processing Society. Annual Meeting 2005

Intelligent Systems Technologies and Applications-Sabu M. Thampi 2017-10-20 This book constitutes the thoroughly refereed post-conference proceedings of the third International Symposium on Intelligent Systems Technologies and Applications (ISTA'17), September 13-16, 2017, Manipal, Karnataka, India. All submissions were evaluated on the basis of their significance, novelty, and technical quality. This proceedings contains 34 papers selected for presentation at the Symposium.

Beyond the Cognitive Map-A. David Redish 1999 There are currently two major theories about the role of the hippocampus, a distinctive structure in the back of the temporal lobe. One says that it stores a cognitive map, the other that it is a key locus for the temporary storage of episodic memories. A. David Redish takes the approach that understanding the role of the hippocampus in space will make it possible to address its role in less easily quantifiable areas such as memory. Basing his investigation on the study of rodent navigation--one of the primary domains for understanding information processing in the brain--he places the hippocampus in its anatomical context as part of a greater functional system. Redish draws on the extensive experimental and theoretical work of the last 100 years to paint a coherent picture of rodent navigation. His presentation encompasses multiple levels of analysis, from single-unit recording results to behavioral tasks to computational modeling. From this foundation, he proposes a novel understanding of the role of the hippocampus in rodents that can shed light on the role of the hippocampus in primates, explaining data from primate studies and human neurology. The book will be of interest not only to neuroscientists and psychologists, but also to researchers in computer science, robotics, artificial intelligence, and artificial life.

From Molecule to Metaphor-Jerome Feldman 2008-01-25 In From Molecule to Metaphor, Jerome Feldman proposes a theory of language and thought that treats language not as an abstract symbol system but as a human biological ability that can be studied as a function of the brain, as vision and motor control are studied. This theory, he writes, is a "bridging theory" that works from extensive knowledge at two ends of a causal chain to explicate the links between. Although the cognitive sciences are revealing much about how our brains produce language and thought, we do not yet know exactly how words are understood or have any methodology for finding out. Feldman develops his theory in computer simulations—formal models that suggest ways that language and thought may be realized in the brain. Combining key findings and theories from biology, computer science, linguistics, and psychology, Feldman synthesizes a theory by exhibiting programs that demonstrate the required behavior while remaining consistent with the findings from all disciplines. After presenting the essential results on language, learning, neural computation, the biology of neurons and neural circuits, and the mind/brain, Feldman introduces specific demonstrations and formal models of such topics as how children learn their first words, words for abstract and metaphorical concepts, understanding stories, and grammar (including "hot-button" issues surrounding the innateness of human grammar). With this accessible, comprehensive book Feldman offers readers who want to understand how our brains create thought and language a theory of language that is intuitively plausible and also consistent with existing scientific data at all levels.

AI Magazine- 2004

Swarm Intelligence-Eric Bonabeau 1999-09-23 Social insects--ants, bees, termites, and wasps--can be viewed as powerful problem-solving systems with sophisticated collective intelligence. Composed of simple interacting agents, this intelligence lies in the networks of interactions among individuals and between individuals and the environment. A fascinating subject, social insects are also a powerful metaphor for artificial intelligence, and the problems they solve--finding food, dividing labor among nestmates, building nests, responding to external challenges--have important counterparts in engineering and computer science. This book provides a detailed look at models of social insect behavior and how to apply these models in the design of complex systems. The book shows how these models replace an emphasis on control, preprogramming, and centralization with designs featuring autonomy, emergence, and distributed functioning. These designs are proving immensely flexible and robust, able to adapt quickly to changing environments and to continue functioning even when individual elements fail. In particular, these designs are an exciting approach to the tremendous growth of complexity in software and information. Swarm Intelligence draws on up-to-date research from biology, neuroscience, artificial intelligence, robotics, operations research, and computer graphics, and each chapter is organized around a particular biological example, which is then used to develop an algorithm, a multiagent system, or a group of robots. The book will be an invaluable resource for a broad range of disciplines.

American Book Publishing Record- 2005

Proceedings- 1994

The Traveling Salesman-Gerhard Reinelt 2003-08-02 Still today I am receiving requests for reprints of the book, but unfortunately it is out of print. Therefore, since the book still seems to receive some attention, I p- posed to Springer Verlag to provide a free online edition. I am very happy that Springer agreed. Except for the correction of some typographical errors, the online edition is just a copy of the printed version, no updates have been made. In particular, Table 13.1 gives the status of TSPLIB at the time of publishing the book. For accessing TSPLIB the link http://www.iwr.uni-heidelberg.de/iwr/comopt/software/TSPLIB95/ should be used instead of following the procedure described in Chapter 13. Heidelberg, January 2001 Gerhard Reinelt Preface More than ?fteen years ago, I was faced with the following problem in an assignment for a class in computer science. A brewery had to deliver beer to ?ve stores, and the task was to write a computer program for determining the shortest route for the truck driver to visit all stores and return to the brewery. All my attemps to ?nd a reasonable algorithm failed, I could not help enumerating all possible routes and then select the best one.

Algorithms for Optimization-Mykel J. Kochenderfer 2019-03-12 A comprehensive introduction to optimization with a focus on practical algorithms for the design of engineering systems. This book offers a comprehensive introduction to optimization with a focus on practical algorithms. The book approaches optimization from an engineering perspective, where the objective is to design a system that optimizes a set of metrics subject to constraints. Readers will learn about computational approaches for a range of challenges, including searching high-dimensional spaces, handling problems where there are multiple competing objectives, and accommodating uncertainty in the metrics. Figures, examples, and exercises convey the intuition behind the mathematical approaches. The text provides concrete implementations in the Julia programming language. Topics covered include derivatives and their generalization to multiple dimensions; local descent and first- and second-order methods that inform local descent; stochastic methods, which introduce randomness into the optimization process; linear constrained optimization, when both the objective function and the constraints are linear; surrogate models, probabilistic surrogate models, and using probabilistic surrogate models to guide optimization; optimization under uncertainty; uncertainty propagation; expression optimization; and multidisciplinary design optimization. Appendixes offer an introduction to the Julia language, test functions for evaluating algorithm performance, and mathematical concepts used in the derivation and analysis of the optimization methods discussed in the text. The book can be used by advanced undergraduates and graduate students in mathematics, statistics, computer science, any engineering field, (including electrical engineering and aerospace engineering), and operations research, and as a reference for professionals.

Evolutionary Algorithms in Engineering and Computer Science-K. Miettinen 1999-07-09 Evolutionary Algorithms in Engineering and Computer Science Edited by K. Miettinen, University of Jyväskylä, Finland M. M. Mäkelä, University of Jyväskylä, Finland P. Neittaanmäki, University of Jyväskylä, Finland J. Périaux, Dassault Aviation, France What is Evolutionary Computing? Based on the genetic message encoded in DNA, and digitalized algorithms inspired by the Darwinian framework of evolution by natural selection, Evolutionary Computing is one of the most important information technologies of our times. Evolutionary algorithms encompass all adaptive and computational models of natural evolutionary systems - genetic algorithms, evolution strategies, evolutionary programming and genetic programming. In addition, they work well in the search for global solutions to optimization problems, allowing the production of optimization software that is robust and easy to implement. Furthermore, these algorithms can easily be hybridized with traditional optimization techniques. This book presents state-of-the-art lectures delivered by international academic and industrial experts in the field of evolutionary computing. It bridges artificial intelligence and scientific computing with a particular emphasis on real-life problems encountered in application-oriented sectors, such as aerospace, electronics, telecommunications, energy and economics. This rapidly growing field, with its deep understanding and assesssment of complex problems in current practice, provides an effective, modern engineering tool. This book will therefore be of significant interest and value to all postgraduates, research scientists and practitioners facing complex optimization problems.

Autonomous Search-Youssef Hamadi 2012-01-05 Decades of innovations in combinatorial problem solving have produced better and more complex algorithms. These new methods are better since they can solve larger problems and address new application domains. They are also more complex which means that they are hard to reproduce and often harder to fine-tune to the peculiarities of a given problem. This last point has created a paradox where efficient tools are out of reach of practitioners. Autonomous search (AS) represents a new research field defined to precisely address the above challenge. Its major strength and originality consist in the fact that problem solvers can now perform self-improvement operations based on analysis of the performances of the solving process -- including short-term reactive reconfiguration and long-term improvement through self-analysis of the performance, offline tuning and online control, and adaptive control and supervised control. Autonomous search "crosses the chasm" and provides engineers and practitioners with systems that are able to autonomously self-tune their performance while effectively solving problems. This is the first book dedicated to this topic, and it can be used as a reference for researchers, engineers, and postgraduates in the areas of constraint programming, machine learning, evolutionary computing, and feedback control theory. After the editors' introduction to autonomous search, the chapters are focused on tuning algorithm parameters, autonomous complete (tree-based) constraint solvers, autonomous control in metaheuristics and heuristics, and future autonomous solving paradigms. Autonomous search (AS) represents a new research field defined to precisely address the above challenge. Its major strength and originality consist in the fact that problem solvers can now perform self-improvement operations based on analysis of the performances of the solving process -- including short-term reactive reconfiguration and long-term improvement through self-analysis of the performance, offline tuning and online control, and adaptive control and supervised control. Autonomous search "crosses the chasm" and provides engineers and practitioners with systems that are able to autonomously self-tune their performance while effectively solving problems. This is the first book dedicated to this topic, and it can be used as a reference for researchers, engineers, and postgraduates in the areas of constraint programming, machine learning, evolutionary computing, and feedback control theory. After the editors' introduction to autonomous search, the chapters are focused on tuning algorithm parameters, autonomous complete (tree-based) constraint solvers, autonomous control in metaheuristics and heuristics, and future autonomous solving paradigms. This is the first book dedicated to this topic, and it can be used as a reference for researchers, engineers, and postgraduates in the areas of constraint programming, machine learning, evolutionary computing, and feedback control theory. After the editors' introduction to autonomous search, the chapters are focused on tuning algorithm parameters, autonomous complete (tree-based) constraint solvers, autonomous control in metaheuristics and heuristics, and future autonomous solving paradigms. This is the first book dedicated to this topic, and it can be used as a reference for researchers, engineers, and postgraduates in the areas of constraint programming, machine learning, evolutionary computing, and feedback control theory. After the editors' introduction to autonomous search, the chapters are focused on tuning algorithm parameters, autonomous complete (tree-based) constraint solvers, autonomous control in metaheuristics and heuristics, and future autonomous solving paradigms.

Being There-Andy Clark 1998-01-23 Brain, body, and world are united in a complex dance of circular causation and extended computational activity. In Being There, Andy Clark weaves these several threads into a pleasing whole and goes on to address foundational questions concerning the new tools and techniques needed to make sense of the emerging sciences of the embodied mind. Clark brings together ideas and techniques from robotics, neuroscience, infant psychology, and artificial intelligence. He addresses a broad range of adaptive behaviors, from cockroach locomotion to the role of linguistic artifacts in higher-level thought.

Strengthening Forensic Science in the United States-National Research Council 2009-07-29 Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

Food Proteins and Bioactive Peptides-Maria Hayes 2018-06-01 This book is a printed edition of the Special Issue "Food Proteins and Bioactive Peptides" that was published in Foods

Adapting Minds-David J. Buller 2006-02-17 Was human nature designed by natural selection in the Pleistocene epoch? The dominant view in evolutionary psychology holds that it was—that our psychological adaptations were designed tens of thousands of years ago to solve problems faced by our hunter-gatherer ancestors. In this provocative and lively book, David Buller examines in detail the major claims of evolutionary psychology—the paradigm popularized by Steven Pinker in The Blank Slate and by David Buss in The Evolution of Desire—and rejects them all. This does not mean that we cannot apply evolutionary theory to human psychology, says Buller, but that the conventional wisdom in evolutionary psychology is misguided. Evolutionary psychology employs a kind of reverse engineering to explain the evolved design of the mind, figuring out the adaptive problems our ancestors faced and then inferring the psychological adaptations that evolved to solve them. In the carefully argued central chapters of Adapting Minds, Buller scrutinizes several of evolutionary psychology's most highly publicized "discoveries," including "discriminative parental solicitude" (the idea that stepparents abuse their stepchildren at a higher rate than genetic parents abuse their biological children). Drawing on a wide range of empirical research, including his own large-scale study of child abuse, he shows that none is actually supported by the evidence. Buller argues that our minds are not adapted to the Pleistocene, but, like the immune system, are continually adapting, over both evolutionary time and individual lifetimes. We must move beyond the reigning orthodoxy of evolutionary psychology to reach an accurate understanding of how human psychology is influenced by evolution. When we do, Buller claims, we will abandon not only the quest for human nature but the very idea of human nature itself.

The Wisdom of the Hive-Thomas D Seeley 2009-06-30 This book describes and illustrates the results of more than fifteen years of elegant experimental studies conducted by the author to investigate how a colony of bees is organized to gather its resources. The results of his research--including studies of the shaking signal, tremble dance, and waggle dance--offer the clearest, most detailed picture available of how a highly integrated animal society works.

Advances in Intelligent Information Hiding and Multimedia Signal Processing-Jeng-Shyang Pan 2016-11-21 This volume of Smart Innovation, Systems and Technologies contains accepted papers presented in IIH-MSP-2016, the 12th International Conference on Intelligent Information Hiding and Multimedia Signal Processing. The conference this year was technically co-sponsored by Tainan Chapter of IEEE Signal Processing Society, Fujian University of Technology, Chaoyang University of Technology, Taiwan Association for Web Intelligence Consortium, Fujian Provincial Key Laboratory of Big Data Mining and Applications (Fujian University of Technology), and Harbin Institute of Technology Shenzhen Graduate School. IIH-MSP 2016 is held in 21-23, November, 2016 in Kaohsiung, Taiwan. The conference is an international forum for the researchers and professionals in all areas of information hiding and multimedia signal processing.

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