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   Parallel Metaheuristics Enrique Alba,2005-09-19 Solving complex optimization problems with parallel metaheuristics Parallel Metaheuristics brings together an international group of experts in parallelism and metaheuristics to provide a much needed synthesis of these two fields Readers discover how metaheuristic techniques can provide useful and practical solutions for a wide range of problems and application domains with an emphasis on the fields of telecommunications and bioinformatics This volume fills a long existing gap allowing researchers and practitioners to develop efficient metaheuristic algorithms to find solutions The book is divided into three parts Part One Introduction to Metaheuristics and Parallelism including an Introduction to Metaheuristic Techniques Measuring the Performance of Parallel Metaheuristics New Technologies in Parallelism and a head to head discussion on Metaheuristics and Parallelism Part Two Parallel Metaheuristic Models including Parallel Genetic Algorithms Parallel Genetic Programming Parallel Evolution Strategies Parallel Ant Colony Algorithms Parallel Estimation of Distribution Algorithms Parallel Scatter Search Parallel Variable Neighborhood Search Parallel Simulated Annealing Parallel Tabu Search Parallel GRASP Parallel Hybrid Metaheuristics Parallel Multi Objective Optimization and Parallel Heterogeneous Metaheuristics Part Three Theory and Applications including Theory of Parallel Genetic Algorithms Parallel Metaheuristics Applications Parallel Metaheuristics in Telecommunications and a final chapter on Bioinformatics and Parallel Metaheuristics Each self contained chapter begins with clear overviews and introductions that bring the reader up to speed describes basic techniques and ends with a reference list for further study Packed with numerous tables and figures to illustrate the complex theory and processes this comprehensive volume also includes numerous practical real world optimization problems and their solutions This is essential reading for students and researchers in computer science mathematics and engineering who deal with parallelism metaheuristics and optimization in general   **Handbook of Metaheuristics** Michel Gendreau,Jean-Yves Potvin,2018-09-20 The third edition of this handbook is designed to provide a broad coverage of the concepts implementations and applications in metaheuristics The book s chapters serve as stand alone presentations giving both the necessary underpinnings as well as practical guides for implementation The nature of metaheuristics invites an analyst to modify basic methods in response to problem characteristics past experiences and personal preferences and the chapters in this handbook are designed to facilitate this process as well This new edition has been fully revised and features new chapters on swarm intelligence and automated design of metaheuristics from flexible algorithm frameworks The authors who have contributed to this volume represent leading figures from the metaheuristic community and are responsible for pioneering contributions to the fields they write about Their collective work has significantly enriched the field of optimization in general and combinatorial optimization in particular Metaheuristics are solution methods that orchestrate an interaction between local improvement procedures and higher level strategies to create a process capable of escaping from local optima and performing a robust search of a solution

space In addition many new and exciting developments and extensions have been observed in the last few years Hybrids of metaheuristics with other optimization techniques like branch and bound mathematical programming or constraint programming are also increasingly popular On the front of applications metaheuristics are now used to find high quality solutions to an ever growing number of complex ill defined real world problems in particular combinatorial ones This handbook should continue to be a great reference for researchers graduate students as well as practitioners interested in metaheuristics **Hybrid Metaheuristics** Francisco Almeida,2006-09-29 This book constitutes the refereed proceedings of the Third International Workshop on Hybrid Metaheuristics HM 2006 held in Gran Canaria Spain in October 2006 The 13 revised full papers presented together with one invited paper were carefully reviewed and selected from 42 submissions

Modeling, Simulation and Optimization of Complex Processes HPSC 2018 Hans Georg Bock,Willi Jäger,Ekaterina Kostina,Hoang Xuan Phu,2020-12-01 This proceedings volume highlights a selection of papers presented at the 7th International Conference on High Performance Scientific Computing which took place in Hanoi Vietnam during March 19 23 2018 The conference has been organized by the Institute of Mathematics of the Vietnam Academy of Science and Technology the Interdisciplinary Center for Scientific Computing IWR of Heidelberg University and the Vietnam Institute for Advanced Study in Mathematics The contributions cover a broad interdisciplinary spectrum of scientific computing and showcase recent advances in theory methods and practical applications Subjects covered include numerical simulation methods for optimization and control machine learning parallel computing and software development as well as the applications of scientific computing in mechanical engineering airspace engineering environmental physics decision making hydrogeology material science and electric circuits *Network Design with Applications to Transportation and Logistics* Teodor Gabriel Crainic,Michel Gendreau,Bernard Gendron,2021-07-16 This book explores the methodological and application developments of network design in transportation and logistics It identifies trends challenges and research perspectives in network design for these areas Network design is a major class of problems in operations research where network flow combinatorial and mixed integer optimization meet The analysis and planning of transportation and logistics systems continues to be one of the most important application areas of operations research Networks provide the natural way of depicting such systems so the optimal design and operation of networks is the main methodological area of operations research that is used for the analysis and planning of these systems This book defines the current state of the art in the general area of network design and then turns to its applications to transportation and logistics New research challenges are addressed Network Design with Applications to Transportation and Logistics is divided into three parts Part I examines basic design problems including fixed cost network design and parallel algorithms After addressing the basics Part II focuses on more advanced models Chapters cover topics such as multi facility network design flow constrained network design and robust network design Finally Part III is dedicated entirely to the potential application areas for network design These areas range from rail networks to city

logistics to energy transport All of the chapters are written by leading researchers in the field which should appeal to analysts and planners   *Springer Handbook of Computational Intelligence* Janusz Kacprzyk,Witold Pedrycz,2015-05-28 The Springer Handbook for Computational Intelligence is the first book covering the basics the state of the art and important applications of the dynamic and rapidly expanding discipline of computational intelligence This comprehensive handbook makes readers familiar with a broad spectrum of approaches to solve various problems in science and technology Possible approaches include for example those being inspired by biology living organisms and animate systems Content is organized in seven parts foundations fuzzy logic rough sets evolutionary computation neural networks swarm intelligence and hybrid computational intelligence systems Each Part is supervised by its own Part Editor s so that high quality content as well as completeness are assured   Algorithms and Protocols for Wireless and Mobile Ad Hoc Networks Azzedine Boukerche,2009 Focuses on several aspects of wireless ad hoc networks particularly algorithmic methods and distributed computing with mobility and computation capability This book provides the crucial building foundation for the design and construction of the future generation of ad hoc networks   Parallel Evolutionary Computations Nadia Nedjah,Enrique Alba,Luiza de Macedo Mourelle,2006-05-08 Parallel Evolutionary Computation focuses on the aspects related to the parallelization of evolutionary computations such as parallel genetic operators parallel fitness evaluation distributed genetic algorithms and parallel hardware implementations as well as on their impact on several applications The book is divided into four parts The first part deals with a clear software like and algorithmic vision on parallel evolutionary optimizations The second part is about hardware implementations of genetic algorithms a valuable topic which is hard to find in the present literature The third part treats the problem of distributed evolutionary computation and presents three interesting applications wherein parallel EC new ideas are featured Finally the last part deals with the up to date field of parallel particle swarm optimization to illustrate the intrinsic similarities and potential extensions to techniques in this domain The book offers a wide spectrum of sample works developed in leading research throughout the world about parallel implementations of efficient techniques at the heart of computational intelligence It will be useful both for beginners and experienced researchers in the field of computational intelligence   **Alchemical Libraries Almanack** ,2006   **Parallel Combinatorial Optimization** El-Ghazali Talbi,2006-10-13 This text provides an excellent balance of theory and application that enables you to deploy powerful algorithms frameworks and methodologies to solve complex optimization problems in a diverse range of industries Each chapter is written by leading experts in the fields of parallel and distributed optimization Collectively the contributions serve as a complete reference to the field of combinatorial optimization including details and findings of recent and ongoing investigations   **Encyclopedia of data warehousing and mining** John Wang,2008   *Mathematical Reviews* ,2006   *Book Review Index* ,2006 Every 3rd issue is a quarterly cumulation   *Parallel and Distributed Processing* ,1998   Metaheuristics in Combinatorial Optimization Gilbert Laporte,Ibrahim H. Osman,1996   *High Performance Algorithms*

and Software in Nonlinear Optimization Renato de Leone,1998-11-30 This book contains a selection of papers presented at the conference on High Performance Software for Nonlinear Optimization HPSNO97 which was held in Ischia Italy in June 1997 The book provides an overview of the nonlinear optimization field including algorithms software evaluation implementation issues applications and areas of research through authoritative papers by some of the most active and well known researchers in the field The papers of the Proceedings can be recommended to mathematicians physicists and engineers working in the fields mentioned above as well as recommended for further reading within graduate studies   The British National Bibliography Arthur James Wells,2005   **American Book Publishing Record** ,2005   *INFOR.* ,2003   **Interfaces** ,2004 Seeks to improve communication between managers and professionals in OR MS

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