It will not understand many mature as we explain before. You can do it though play a part something else at home and even in your workplace. for that reason easy! So, are you question? Just exercise just what we find the money for below as competently as evaluation traveling salesman problem an overview of applications what you behind to read!

Novel Trends in the Traveling Salesman Problem - Donald Davendra - 2020-12-09
The Traveling Salesman Problem (TSP) is widely considered one of the most intensively studied problems in computational mathematics and operations research. Since its inception, it has become the poster child for computational complexity research. A number of problems have been transformed to a TSP problem and its application base now extends into scheduling, manufacturing, routing, and logistics. With the advent of high-performance computing and advanced meta-heuristics such as GPU programming and swarm-based algorithms, the TSP problem is positioned firmly as the go-to problem for the development of the next generation of high-performance intelligent heuristics. This book looks to leverage some of these new paradigms for both students and researchers in this field.

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In Pursuit of the Traveling Salesman - William J. Cook - 2014-11-09
What is the shortest possible route for a traveling salesman seeking to visit each city on a list exactly once and return to his city of origin? It sounds simple enough, yet the traveling salesman problem is one of the most intensely studied puzzles in applied mathematics—and it has defied solution to this day. In this book, William Cook takes readers on a mathematical excursion, picking up the salesman's trail in the 1800s when Irish mathematician W. R. Hamilton first defined the problem, and venturing to the furthest limits of today's state-of-the-art attempts to solve it. He also explores its many important applications, from genome sequencing and designing computer processors to arranging music and hunting for planets. In Pursuit of the Traveling Salesman travels to the very threshold of our understanding about the nature of complexity, and challenges you yourself to discover the solution to this captivating mathematical problem.

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The Traveling Salesman Problem - David L. Applegate - 2011-09-19
This book presents the latest findings on one of the most intensely investigated subjects in computational mathematics—the traveling salesman problem. It sounds simple enough: given a set of cities and the cost of travel between each pair of them, the problem challenges you to find the cheapest route by which to visit all the cities and return home to where you began. Though seemingly modest, this exercise has inspired studies by mathematicians, chemists, and physicists. Teachers use it in the classroom. It has practical applications in genetics, telecommunications, and neuroscience. The authors of this book are the same pioneers who for nearly two decades have led the investigation into the traveling salesman problem. They have derived solutions to almost eighty-six thousand cities, yet a general solution to the problem has yet to be discovered. Here they describe the method and computer code they used to solve a broad range of large-scale problems, and along the way they demonstrate the interplay of applied mathematics with increasingly powerful computing platforms. They also give the fascinating history of the problem—how it developed, and why it continues to intrigue us.

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Stochastic local search (SLS) algorithms are among the most prominent and successful techniques for solving computationally difficult problems. Offering a systematic treatment of SLS algorithms, this book examines the general concepts and specific instances of SLS algorithms and considers their development, analysis, and application.

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The Traveling Salesman Problem and Its Variations - G. Gutin - 2006-05-02
Traveling Salesman Problem: an Overview of Applications, Formulations, and Solution Approaches - researchers and provides the state of the art in theory and algorithms for the traveling salesman problem (TSP).

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The Traveling Salesman Problem: an Overview of Exact and Approximate Algorithms - Laporte, Gilbert - 1991
The Traveling Salesman Problem is central to the area of Combinatorial Optimization, and it is through this problem that many of the most important developments in the area have been made. This book focuses on essential ideas; through them it illustrates all the concepts and techniques of combinatorial optimization concisely but comprehensively. The extensive reference list and numerous exercises direct the reader towards related fields, and give results. Each of the twelve chapters in this volume is concerned with a specific aspect of the Traveling Salesman Problem, and is written by an authority on that aspect. It is hoped, that the book will serve as a state-of-the-art survey of the Traveling Salesman problem which will encourage further investigations, and that it will also be useful for its comprehensive coverage of the techniques of combinatorial optimization.

The Traveling Salesman Problem: an Overview of Applications, Formulations, and Solution Approaches - Rajesh Matai - 2010
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Bio-Inspired Computational Algorithms and Their Applications - Shangce Gao - 2012-03-07
Bio-inspired computational algorithms are always hot research topics in artificial intelligence communities. Biology is a bewildering source of inspiration for the design of intelligent artifacts that are capable of efficient and autonomous operation in unknown and changing environments. It is difficult to resist the fascination of creating artifacts that display elements of lifelike intelligence, thus needing techniques for control, optimization, prediction, security, design, and so on. Bio-Inspired Computational Algorithms and Their Applications is a compendium that addresses this need. It integrates contrasting techniques of genetic algorithms, artificial immune systems, particle swarm optimization, and hybrid models to solve many real-world problems. The works presented in this book give insights into the creation of innovative improvements over algorithm performance, potential applications on various practical tasks, and combination of different techniques. The book provides a reference to researchers, practitioners, and students in both artificial intelligence and engineering communities, forming a foundation for the development of the field.

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Combinatorial Optimization - Bernhard Korte - 2006-01-27
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Fundamentals of Supply Chain Theory - Lawrence V. Snyder - 2019-07-01
Comprehensively teaches the fundamentals of supply chain theory. This book presents the methodology and foundations of supply chain management and also demonstrates how recent developments build upon classic models. The authors focus on strategic, tactical, and operational aspects of supply chain management and cover a broad range of topics from forecasting, inventory management, and facility location to transportation, process flexibility, and auctions. Key mathematical models for optimizing the design, operation, and evaluation of supply chains are presented as well as models currently emerging from the research frontier. Fundamentals of Supply Chain Theory, Second Edition contains new chapters on transportation (traveling salesman and vehicle routing problems), integrated supply chain models, and applications of supply chain theory. New sections have also been added throughout, on topics including machine learning models for forecasting, conic optimization for facility location, a multi-supplier model for supply uncertainty, and a game-theoretic analysis of auctions. The second edition also contains case studies for each chapter that illustrate the real-world implementation of the models presented. This edition also contains nearly 200 new homework problems, over 60 new worked examples, and over 140 new illustrative figures. Plentiful teaching supplements are available, including an Instructor's Manual and PowerPoint slides, as well as MATLAB programming assignments that require students to code algorithms in an effort to provide a deeper understanding of the material. Ideal as a textbook for upper-undergraduate and graduate-level courses in supply chain management in engineering and business schools. Fundamentals of Supply Chain Theory, Second Edition will also appeal to anyone interested in quantitative approaches for studying supply chains.

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Generalized Network Design Problems - Petrica C. Pop - 2012-10-30
Generalized network design is a very hot topic of research. The monograph describes in a unified manner a series of mathematical models, methods, propositions, and algorithms developed in the last years on generalized network design problems. The book consists of seven chapters, where in addition to an introductory chapter, a number of six generalized network design problems are formulated and examined. The book will be useful for researchers and graduate students interested in operations research, optimization, applied mathematics, and computer science. Due to the substantial practical importance of some presented problems, researchers in other areas will also find it useful.

Nature-Inspired Computation and Swarm Intelligence - Xin-She Yang - 2020-04-24
Nature-inspired computation and swarm intelligence have become popular and effective tools for solving problems in optimization, computational intelligence, soft computing and data science. Recently, the literature in the field has expanded rapidly, with new algorithms and applications emerging. Nature-Inspired Computation and Swarm Intelligence: Algorithms, Theory and Applications is a timely reference giving a comprehensive review of relevant state-of-the-art developments in algorithms, theory and applications of nature-inspired algorithms and swarm intelligence. It reviews and documents the new developments, focusing on nature-inspired algorithms and their theoretical analysis, as well as providing a guide to their implementation. The book includes case studies of diverse real-world applications, balancing explanation of the theory with practical implementation. Nature-Inspired Computation and Swarm Intelligence: Algorithms, Theory and Applications is suitable for researchers and graduate students in computer science, engineering, data science, and management science, who want a comprehensive review of algorithms, theory and implementation within the fields of nature inspired computation and swarm intelligence. Introduces nature-inspired algorithms and their fundamentals, including: particle swarm optimization, bat algorithm, cuckoo search, firefly algorithm, flower pollination algorithm, differential evolution and genetic algorithms as well as multi-objective optimization algorithms and others. Provides a theoretical foundation and analyses of algorithms, including: statistical theory and Markov chain theory on the convergence and stability of algorithms, dynamical system theory, benchmarking of optimization, no-free-lunch theorems, and a generalized mathematical framework includes a diversity of case studies of real-world applications: feature selection, clustering and classification, tuning of restricted Boltzmann machines, travelling salesman problem, classification of white blood cells, music generation by artificial intelligence, swarm robots, neural networks, engineering designs and others.

Intelligent Computational Optimization in Engineering - Mario Koeppen - 2011-07-15
Inspired Computation and Swarm Intelligence: Algorithms, Theory and Applications is suitable for researchers and graduate students in computer science, engineering, data science, and management science, who want a comprehensive review of algorithms, theory and implementation within the fields of nature inspired computation and swarm intelligence. Introduces nature-inspired algorithms and their fundamentals, including: particle swarm optimization, bat algorithm, cuckoo search, firefly algorithm, flower pollination algorithm, differential evolution and genetic algorithms as well as multi-objective optimization algorithms and others. Provides a theoretical foundation and analyses of algorithms, including: statistical theory and Markov chain theory on the convergence and stability of algorithms, dynamical system theory, benchmarking of optimization, no-free-lunch theorems, and a generalized mathematical framework includes a diversity of case studies of real-world applications: feature selection, clustering and classification, tuning of restricted Boltzmann machines, travelling salesman problem, classification of white blood cells, music generation by artificial intelligence, swarm robots, neural networks, engineering designs and others.
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Intelligent Computational Optimization in Engineering - Mario Koepen - 2011-07-15
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Perspectives in Operations Research - Frank B. Alt - 2006-12-26
A Symposium was held on February 25, 2006 in honor of the 80th birthday of Saul I. Gass and his major
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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
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Topics in Combinatorial Optimization - S. Rinaldi - 1980-12-31
In recent years, the need for a review of the state of the art in Combinatorial Optimization has been felt by many
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General of the International Centre of Mechanical Sciences, Professor A. Marzollo, who invited the contributors of
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Algorithm Theory - SWAT 2010 - Haim Kaplan - 2010-06-10
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Integer Programming and Network Models - H.A. Eiselt - 2013-03-14
The purpose of this book is to provide readers with an introduction to the very active field of integer programming
and network models. The idea is to cover the main parts of the field without being too detailed or too technical. As
a matter of fact, we found it somewhat surprising that most—especially newer—books are strongly algorithmically
oriented. In contrast, the main emphasis of this book is on models rather than methods. This focus expresses our
view that methods are tools to solve actual problems and not ends in themselves. As such, graduate (and with
some omissions, undergraduate) students may find this book helpful in their studies as will practitioners who
design with Excel Solver has been expanded into a full chapter New chapter on several advanced optimum design
topics serves the needs of instructors who teach more advanced courses

**Introduction to Optimum Design** - Jasbir Arora - 2011-08-12

Introduction to Optimum Design, Third Edition describes an organized approach to engineering design optimization in a rigorous yet simplified manner. It illustrates various concepts and procedures with simple examples and demonstrates their applicability to engineering design problems. Formulation of a design problem as an optimization problem is emphasized and illustrated throughout the text. Excel and MATLAB® are featured as learning and teaching aids. Basic concepts of optimality conditions and numerical methods are described with simple and practical examples, making the material highly teachable and learnable. Includes applications of optimization methods for structural, mechanical, aerospace, and industrial engineering problems. Introduction to MATLAB Optimization Toolbox Practical design examples introduce students to the use of optimization methods early in the book. New example problems throughout the text are enhanced with detailed illustrations. Optimum design with Excel Solver has been expanded into a full chapter. New chapter on several advanced optimum design topics serves the needs of instructors who teach more advanced courses.

**Encyclopedia of Operations Research and Management Science** - Saul I. Gass - 2012-12-06

Operations Research: 1934-1941,” 35, 1, 143-152; “British The goal of the Encyclopedia of Operations Research and Operational Research in World War II,” 35, 3, 453-470; Management Science is to provide to decision makers and “U. S. Operations Research in World War II,” 35, 6, 910-925; problem solvers in business, industry, government and and the 1984 article by Harold Lardner that appeared in academia a comprehensive overview of the wide range of Operations Research: “The Origin of Operational Research,” ideas, methodologies, and synergistic forces that combine to 32, 465-475. The preeminent decision-making fields of operations research and management science (OR/MS). To this end, we The Encyclopedia contains no entries that define the fields enlists a distinguished international group of academics of operations research and management science. OR and MS and practitioners to contribute articles on subjects for are often equated to one another. If one defines them by the which they are renowned: methodologies they employ, the equation would probably The editors, working with the Encyclopedia’s Editorial inspection. If one defines them by their historical Advisory Board, surveyed developments and their impact on society, topics collectively encompass the foundations, apply the equation becomes fuzzy. The formalism OR grew out of, and emerging elements of this ever-changing field. We the operational problems of the British and U. s. military also wanted to establish the close associations that OR/MS efforts in World War II.

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The Vehicle Routing Problem - Paolo Toth - 2002

This book extremely useful. No knowledge of Spark or Scala is assumed, although prior programming experience (especially with other JVM languages) will be useful to pick up concepts quicker. What You Will Learn Understand object-oriented & functional programming concepts of Scala In-depth understanding of Scala collection APIs Work with RDD and DataFrame to learn Spark's core abstractions. Analysing structured and unstructured data using SparkSQL and GraphX. Scalable and fault-tolerant streaming application development using Spark structured streaming Learn machine-learning best practices for classification, regression, dimensionality reduction, and recommendation system to build predictive models with widely used algorithms in Spark MLlib & ML Build clustering models to cluster a vast amount of data. Understand tuning, debugging, and monitoring. Spark applications deploy Spark applications on real clusters in Standalone, Mesos, and YARN. In Detail Scala has been observing wide adoption over the past few years, especially in the field of data science and analytics. Spark, built on Scala, has gained a lot of recognition and is being used widely in productions. Thus, if you want to leverage the power of Scala and Spark to make sense of big data, this book is for you. The first part introduces you to Scala, helping you understand and develop object-oriented functional programming concepts needed for Spark application development. It then moves on to Spark to cover the basic abstractions using RDD and DataFrame. This will help you develop scalable and fault-tolerant streaming applications by analyzing structured and unstructured data using SparkSQL, GraphX, and Spark structured streaming. Finally, the book moves on to some advanced topics, such as monitoring, configuration, debugging, testing, and deployment. You will also learn how to develop Spark applications using SparkR and PySpark APIs, interactive data analytics using Zeppelin, and in-memory data processing with Alluxio. By the end of this book, you will have a thorough understanding of Spark, and you will be able to perform full-stack data analytics with a feel that no amount of data is too big. Style and approach Filled with practical examples and use cases, this book will not only help you get up and running with Spark, but will also take you farther down the road to becoming a data scientist.

Scala and Spark for Big Data Analytics - Md. Rezaul Karim - 2017-07-25

Harness the power of Scala to program Spark and analyze tonnes of data in the blink of an eye! About This Book Learn Scala's sophisticated type system that combines Functional Programming and object-oriented concepts Work on a wide array of applications, from simple batch jobs to streaming process and machine learning Explore the most common as well as some complex use-cases to perform large-scale data analysis with Spark Who This Book is for Scala programmers who want to learn how to perform data analysis by harnessing the power of Spark; will find this book extremely useful. No knowledge of Spark or Scala is assumed, although prior programming experience (especially with other JVM languages) will be useful to pick up concepts quicker. What You Will Learn Understand object-oriented & functional programming concepts of Scala In-depth understanding of Scala collection APIs Work with RDD and DataFrame to learn Spark's core abstractions. Analysing structured and unstructured data using SparkSQL and GraphX. Scalable and fault-tolerant streaming application development using Spark structured streaming Learn machine-learning best practices for classification, regression, dimensionality reduction, and recommendation system to build predictive models with widely used algorithms in Spark MLlib & ML Build clustering models to cluster a vast amount of data. Understand tuning, debugging, and monitoring. Spark applications deploy Spark applications on real clusters in Standalone, Mesos, and YARN. In Detail Scala has been observing wide adoption over the past few years, especially in the field of data science and analytics. Spark, built on Scala, has gained a lot of recognition and is being used widely in productions. Thus, if you want to leverage the power of Scala and Spark to make sense of big data, this book is for you. The first part introduces you to Scala, helping you understand the object-oriented and functional programming concepts needed for Spark application development. It then moves on to Spark to cover the basic abstractions using RDD and DataFrame. This will help you develop scalable and fault-tolerant streaming applications by analyzing structured and unstructured data using SparkSQL, GraphX, and Spark structured streaming. Finally, the book moves on to some advanced topics, such as monitoring, configuration, debugging, testing, and deployment. You will also learn how to develop Spark applications using SparkR and PySpark APIs, interactive data analytics using Zeppelin, and in-memory data processing with Alluxio. By the end of this book, you will have a thorough understanding of Spark, and you will be able to perform full-stack data analytics with a feel that no amount of data is too big. Style and approach Filled with practical examples and use cases, this book will not only help you get up and running with Spark, but will also take you farther down the road to becoming a data scientist.
science and homeland security policy making Applied Risk Analysis for Guiding Homeland Security Policy and Decision-Making is an excellent textbook and/or supplement for upper-undergraduate and graduate-level courses related to homeland security risk analysis. It will also be an extremely beneficial resource and reference for homeland security policy analysts, risk analysts, and policymakers from private and public sectors, as well as researchers, academics, and practitioners who utilize security risk analysis methods.  

Advances in Multi-Objective Nature Inspired Computing - Carlos Coello Coello - 2010-02-04
The purpose of this book is to collect contributions that deal with the use of nature inspired metaheuristics for solving multi-objective combinatorial optimization problems. Such a collection intends to provide an overview of the state-of-the-art developments in this field, with the aim of motivating more researchers in operations research, engineering, and computer science, to do research in this area. As such, this book is expected to become a valuable reference for those wishing to do research on the use of nature inspired metaheuristics for solving multi-objective combinatorial optimization problems.

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Computational Intelligence and Informatics - Imre J. Rudas - 2010-10-08
The International Symposium of Hungarian Researchers on Computational Intell- th gence and Informatics celebrated its 10 edition in 2009. This volume contains a careful selection of papers that are based on and are extensions of corresponding l- tures presented at the jubilee conference. This annual Symposium was launched by Budapest Polytechnic (Budapest Technical University) and the Hungarian Fuzzy Association in 2000, with the aim to bring together Hungarian speaking researchers working on computational intelligence and related topics from all over the world, but with special emphasis on the Central Eu- pean region. th The Symposium of the 10 jubilee anniversary contained 70 reviewed papers. The growing interests, the enthusiasm of the participants have proved that the Symposium has become an internationally recognized scientific event providing a good platform for the annual meeting of Hungarian researchers. The main subject area called Computational Intelligence includes diverse topics, therefore, we offer snapshots rather than a full coverage of a small particular subject to the interested reader. This principle is also supported by the common national root of the authors. The book begins with Information Systems and Communication. This part contains papers on graphs of grammars, software and hardware solution for Mojette transf- mation, statistical intrusion detection, congestion forecast, and 3D-based internet communication and control.

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Search has been vital to artificial intelligence from the very beginning as a core technique in problem solving. The authors present a thorough overview of heuristic search with a balance of discussion between theoretical analysis and efficient implementation and application to real-world problems. Current developments in search such as pattern databases and search with efficient use of external memory and parallel processing units on main boards and graphics cards are detailed. Heuristic search as a problem solving tool is demonstrated in applications for puzzle solving, game playing, constraint satisfaction and machine learning. While no previous familiarity with heuristic search fits into the world of artificial intelligence and the one around us. Provides real-world success stories and case studies for heuristic search algorithms Includes many AI developments not yet covered in textbooks such as pattern databases, symbolic search, and parallel processing units

Recent Advances in Mathematical Programming - Robert Lawrence Graves - 2012-06-01

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Progress in Industrial Mathematics: Success Stories - Manuel Cruz - 2021-02-07
This book presents a panorama about the recent progress of industrial mathematics from the point of view of both industrials and researchers. The chapters correspond to a selection of the contributions presented in the "Industry Day" and in the Minisymposium "EU - MATHS - IN: Success Stories of Applications of Mathematics to Industry" organized in the framework of the International Conference ICIAM 2019 held in Valencia (Spain) on July 15-19, 2019. In the Industry Day, included for the first time in this series of Conferences, representatives of companies from different countries and several sectors presented their view about the benefits regarding the usage of mathematical tools and/or collaboration with mathematicians. The contributions of this special session were addressed to industry people. Minisymposium contributions detailed some collaborations between mathematicians and industrials that led to real benefits in several European companies. All the speakers were affiliated in some of the European National Networks that constitute the European Service Network of Mathematics for Industry and Innovation (EU-MATHS-IN).

Progress in Industrial Mathematics: Success Stories - Manuela Cruz - 2021-02-07
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This is a collection of state-of-the-art surveys on topics at the interface between transportation modeling and operations research given by leading international experts. Based on contributions to a NATO workshop, the surveys are up-to-date and rigorous presentations or applications of quantitative methods in the area. The subjects covered include dynamic traffic simulation techniques and dynamic routing in congested networks, operation and control of traffic management tools, optimized transportation data collection, and vehicle routing problems.

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Graphs, Doids and Semirings - Michel Gondrann - 2008-05-14
The primary objective of this essential text is to emphasize the deep relations existing between the semiring and doid structures with graphs and their combinatorial properties. It does so at the same time as demonstrating the modeling and problem-solving flexibility of these structures. In addition the book provides an extensive overview of the mathematical properties employed by "nonclassical" algebraic structures which either extend usual algebra or form a new branch of it.

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Local Search in Combinatorial Optimization - Emile Aarts - 2018-06-05
In the past three decades, local search has grown from a simple heuristic idea into a mature field of research in combinatorial optimization that is attracting ever-increasing attention. Local search is still the method of choice for NP-hard problems as it provides a robust approach for obtaining high-quality solutions to problems of a realistic size in reasonable time. Local Search in Combinatorial Optimization covers local search and its variants from both a theoretical and practical point of view, each topic discussed by a leading authority. This book is an important reference and invaluable source of inspiration for students and researchers in discrete mathematics, computer science, operations research, industrial engineering, and management science. In addition to the editors, the contributors are Mihalis Yannakakis, Craig A. Tovey, Jan H. M. Korst, Peter J. M. van Laarhoven, Alain Hertz, Eric Taillard, Dominique de Werra, Heinz Mühlenbein, Carsten Peterson, Bo Söderberg, David S. Johnson, Lyle A. McGeoch, Michel Gondrann, Gilbert Laporte, Jean-Yves Potvin, Gerard A. P. Kindervater, Martin W. P. Savelsbergh, Edward J. Anderson, Celia A. Glass, Chris N. Potts, C. L. Liu, Peichen Pan, Iiro Honkala, and Patric R. J. Östergård.

The Quadratic Assignment Problem - E. Cela - 2013-03-14
The quadratic assignment problem (QAP) was introduced in 1957 by Koopmans and Beckmann to model a location problem. Since then the QAP has been object of numerous investigations by mathematicians, computer scientists, and industrials that led to real benefits in several European companies. The speakers were affiliated in some of the European National Networks that constitute the European Service Network of Mathematics for Industry and Innovation (EU-MATHS-IN).

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A Confederacy of Dunces - John Kennedy Toole - 2008-05-14
“A green hunting cap squeezed the top of the fleshy balloon of a head. The green earflaps, full of large ears and uncut hair and the fine bristles that grew in the ears themselves, stuck out on either side like turn signals indicating two directions at once. Full, pursed lips protruded beneath the bushy black moustache and, at their corners, sunk into little folds filled with disapproval and potato chip crumbs.”

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