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The salesman's problem: Computational research by David L. Applegate, Robert E. Bixby, Vasek Chvatal and William J. Our main task in this book is to describe the method and computer code that have managed to solve a wide range of large-scale instances of TSP. Along the way, we cover the interaction of applied mathematics and increasingly powerful computing platforms, using the TSP solution as a common model in computing science. Table Content Links to Bookstores Cover illustration by Julian Lethbridge, Travel Seller 4, 1995, Butter on Lingerie, 72 x 72 inches, Robert and Jane Meyerhoff Collection, photo by Adam Reich. This book presents the latest findings on one of the most intensively researched subjects in computational mathematics - the problem of the salesman. It sounds quite simple: given the set of cities and the fare between each couple of them, the problem challenges you to find the cheapest route on which you can visit all the cities and go home to where you started. Although this exercise is seemingly modest, inspired mathematicians, chemists and physicists. Teachers use it in the classroom. It has practical applications in the fields of genetics, telecommunications and neuroscience. The authors of this book are the same pioneers who for almost two decades led the investigation of the problem of the salesman. They have brought solutions to nearly eighty-six thousand cities, but a common solution has yet to be found. Here they describe the method and computer code they used to solve a wide range of large-scale problems, and along the way they demonstrate the interaction of applied mathematics with increasingly powerful computing platforms. They also give a fascinating story of the problem - how it evolved, and why it continues to intrigue us. In Pursuit of The Salesman: Mathematics at the Limit of Computing is a book about the problem of salesman William Cook, published in 2012 by the Princeton University Press Office, with a paperback reprint in 2014. The Committee on the Basic Library List of the Mathematical Association of America proposed to include it in the mathematics libraries for students. Topics Problem Salesman asks to find the shortest cyclical tour of a set of points, in the plane or in more abstract mathematical spaces. Since the problem is NP-tough, algorithms that take polynomial time are unlikely to be guaranteed to find its optimal solution; On the other hand, finding the brute force of all permutations will always solve the problem accurately, but it will take too long to be used for all but the smallest problems. Carving down the middle between these too-fast and too-slow times work, and working out a system that can find an accurate solution to larger instances raises difficult questions about the design of algorithms that have led to the development of many concepts and methods of combinatorial optimization. The opening chapter of the book explores the limits of the calculation on the problem, from the 49-point problems solved manually in the mid-1950s by George Danzig, D.R. Fulkerson and Selmer M. Johnson, to the problem with 85,900 points optimally solved in 2006 by Concorde TSP Solver, which Cook helped develop. The following chapters cover an early history of the problem and related problems, including Leonhard Euler's work on the Seven Bridges of Koenigsberg, William Rowan Hamilton's play Icosian and Julia Robinson, first naming the problem in 1949. Another chapter describes the real application of the problem, ranging from genome sequencing and designing computer processors and organizing music and hunting for planets. Reviewer Brian Hayes calls the book's most charming revelation the fact that one such real-world application was planning routes for real travel vendors in the early 20th century. Chapters four to seven, the core of the book, discuss methods of problem solving, leading from Euristism and meta-criticism, linear relaxation programming and plane cutting techniques, to a to-ground and related method that combines these techniques and is used by Concorde. The following two chapters also cover technical materials, the performance of computer implementations and the theory of the computational complexity of the problem. The remaining chapters are more human-centered, covering human and animal solutions strategies, as well as incorporating TSP solutions into works by Julian Lethbridge, Robert Bosch, and others. A brief final summary suggests possible future directions, including the possibility of progress on P vs. NP. The audience book is designed for a non-specific audience, avoids technical details and is written in an easy-to-understand style. It includes many historical othos, examples, applications, as well as biographical information and photos of key players in history, making it accessible to readers without a mathematical background. Although In Pursuit of the Traveling Salesman is not a textbook, reviewer Christopher Thompson suggests that some of his materials about the use of linear programming and the application of the problem would be well suited for use in the classroom, referring in part to how it links several areas, including numerical analysis, graph theory, algorithm design, logic, and statistics. Reviewer Stan Wagon writes that any reader interested in algorithm combinators will find great value in this book. Jan Karel Lenstra and David Schmoys That the letter is relaxed and entertaining; The presentation is excellent. We loved reading it. And reviewer Haris Aziz concludes: The book is strongly recommended to anyone with a mathematical curiosity and interest in developing ideas. Similar works about Cook's work with Concorde, suitable for more serious researchers on this issue and related topics, can be found in Cook's earlier book with David Applegate, Robert E. Bixby and Vaclav Chvatal, The Traveling Salesman Problem: A Computational Study (2007). Other books about the salesman problem, also more technical than Chasing a Salesman, include The Salesman Problem: A Tour of The Reimmeric Optimization of Combinators (by Lawler, Lenstra, Rinna Kahn and Schmoys, 1985) and The Problem of the Salesman and Its Variation (By Gutina and Punne). 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TSP is perhaps the most studied NP-hard combinator optimization problem, and there are many methods that have been applied. Let's start by discussing the approximation algorithms in sections 21.1 and 21.2. In practice, so-called local search algorithms (discussed in section 21.3) find the best solutions for large instances, although they do not have an end performance ratio. Travel Seller Problem Travel Seller Problem Vertex Cover Local Search Algorithm Hamilton Way These keywords were added by the machine, not the authors. This process is experimental and keywords can be updated as the learning algorithm improves. This is a preview of the content of the subscription, log in to check access. You can't show a preview. Download the PDF PREVIEW preview. Applegate, D.L., Bixby, R, Chwatal, W., and Cook, WJ: The Salesman Problem: Computational Research. Princeton University Press 2007Google ScholarCook, WJ, Cunningham, W.H., Pulleyblank, W.R., and Schrijver, A. 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