

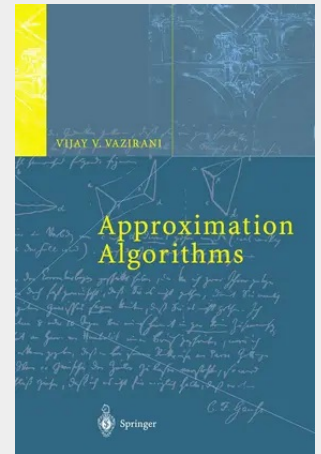
Approximation Algorithms

Most natural optimization problems, including those arising in important application areas, are NP-hard. Therefore, under the widely believed conjecture that $P \neq NP$, their exact solution is prohibitively time consuming. Charting the landscape of approximability of these problems, via polynomial-time algorithms, therefore becomes a compelling subject of scientific inquiry in computer science and mathematics. This book presents the theory of approximation algorithms.

This book is divided into three parts. Part I covers combinatorial algorithms for a number of important problems, using a wide variety of algorithm design techniques. Part II presents linear programming based algorithms. These are categorized under two fundamental techniques: rounding and the primal-dual schema. Part III covers four important topics: the first is the problem of finding a shortest vector in a lattice; the second is the approximability of counting, as opposed to optimization, problems; the third topic is centered around recent breakthrough results, establishing hardness of approximation for many key problems, and giving new legitimacy to approximation algorithms as a deep theory; and the fourth topic consists of the numerous open problems of this young field.

This book is suitable for use in advanced undergraduate and graduate-level courses on approximation algorithms. An undergraduate course in algorithms and the theory of NP-completeness should suffice as a prerequisite for most of the chapters. This book can also be used as supplementary text in basic undergraduate and graduate algorithms courses.

Most natural optimization problems, including those arising in important application areas, are NP-hard. Therefore, under the widely believed conjecture that $P \neq NP$, their exact solution is prohibitively time consuming. Charting the landscape of approximability of these problems, via polynomial-time algorithms, therefore becomes a compelling subject of scientific inquiry in computer science and mathematics. This book presents the theory of approximation algorithms. This book is divided into three parts. Part I covers combinatorial algorithms for a number of important problems, using a wide variety of algorithm design techniques. Part II presents linear programming based algorithms. These are categorized under two fundamental techniques: rounding and the primal-dual schema. Part III covers four important topics: the first is the problem of finding a shortest vector in a lattice; the second is the approximability of counting, as opposed to optimization, problems; the third topic is centered around recent breakthrough results, establishing hardness of approximation for many key problems, and giving new legitimacy to approximation algorithms as a deep theory; and the fourth topic consists of the numerous open problems of this young field. This book is suitable for use in advanced undergraduate and graduate-level courses on approximation algorithms. An undergraduate course in algorithms and the theory of NP-completeness should suffice as a prerequisite for most of the chapters. This book can also be used as supplementary text in basic undergraduate and graduate algorithms courses.



96,29 €

89,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783540653677

Medium: Buch

ISBN: 978-3-540-65367-7

Verlag: Springer Netherlands

Erscheinungstermin: 02.07.2001

Sprache(n): Englisch

Auflage: 2001

Produktform: Gebunden

Gewicht: 1640 g

Seiten: 380

Format (B x H): 155 x 235 mm

