

1. Record Nr.	UNINA9910484668003321
Titolo	Algorithmics of Large and Complex Networks [[electronic resource]] : Design, Analysis, and Simulation // edited by Jürgen Lerner, Dorothea Wagner, Katharina Zweig
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2009
ISBN	3-642-02094-1
Edizione	[1st ed. 2009.]
Descrizione fisica	1 online resource (X, 401 p.)
Collana	Theoretical Computer Science and General Issues, , 2512-2029 ; ; 5515
Classificazione	DAT 416f DAT 516f SS 4800
Disciplina	005.11
Soggetti	Computer programming Computer networks Computer science Algorithms Computer science—Mathematics Discrete mathematics Numerical analysis Programming Techniques Computer Communication Networks Theory of Computation Discrete Mathematics in Computer Science Numerical Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Network Algorithms -- Design and Engineering of External Memory Traversal Algorithms for General Graphs -- Minimum Cycle Bases and Their Applications -- A Survey on Approximation Algorithms for Scheduling with Machine Unavailability -- Iterative Compression for Exactly Solving NP-Hard Minimization Problems -- Approaches to the Steiner Problem in Networks -- A Survey on Multiple Objective Minimum Spanning Tree Problems -- Traffic Networks -- Engineering

Route Planning Algorithms -- From State-of-the-Art Static Fleet Assignment to Flexible Stochastic Planning of the Future -- Traffic Networks and Flows over Time -- Communication Networks -- Interactive Communication, Diagnosis and Error Control in Networks -- Resource Management in Large Networks -- Multicast Routing and Design of Sparse Connectors -- Management of Variable Data Streams in Networks -- Models of Non-atomic Congestion Games -- From Unicast to Multicast Routing -- New Data Structures for IP Lookup and Conflict Detection -- Network Analysis and Simulation -- Group-Level Analysis and Visualization of Social Networks -- Modeling and Designing Real-World Networks -- Algorithms and Simulation Methods for Topology-Aware Sensor Networks.

Sommario/riassunto

Networks play a central role in today's society, since many sectors employing information technology, such as communication, mobility, and transport - even social interactions and political activities - are based on and rely on networks. In these times of globalization and the current global financial crisis with its complex and nearly incomprehensible entanglements of various structures and its huge effect on seemingly unrelated institutions and organizations, the need to understand large networks, their complex structures, and the processes governing them is becoming more and more important. This state-of-the-art survey reports on the progress made in selected areas of this important and growing field, thus helping to analyze existing large and complex networks and to design new and more efficient algorithms for solving various problems on these networks since many of them have become so large and complex that classical algorithms are not sufficient anymore. This volume emerged from a research program funded by the German Research Foundation (DFG) consisting of projects focusing on the design of new discrete algorithms for large and complex networks. The 18 papers included in the volume present the results of projects realized within the program and survey related work. They have been grouped into four parts: network algorithms, traffic networks, communication networks, and network analysis and simulation.
