

1. Record Nr.	UNINA9910813834903321
Titolo	Understanding large temporal networks and spatial networks : exploration, pattern searching, visualization and network evolution / / Vladimir Batagelj [and three others]
Pubbl/distr/stampa	Chichester, [England] : , : Wiley, , 2014 ©2014
ISBN	1-118-91537-2 1-118-91536-4
Descrizione fisica	1 online resource (467 p.)
Collana	Wiley Series in Computational and Quantitative Social Science
Disciplina	302.3
Soggetti	Social networks - Mathematical models Social networks - Computer simulation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes at the end of each chapters.
Nota di contenuto	Understanding Large Temporal Networks and Spatial Networks: Exploration, Pattern Searching, Visualization and Network Evolution; Contents; Preface; 1 Temporal and Spatial Networks; 1.1 Modern Social Network Analysis; 1.2 Network Sizes; 1.3 Substantive Concerns; 1.3.1 Citation Networks; 1.3.2 Other Types of Large Networks; 1.4 Computational Methods; 1.5 Data for Large Temporal Networks; 1.5.1 The Main Datasets; 1.5.2 Secondary Datasets; 1.6 Induction and Deduction; 2 Foundations of Methods for Large Networks; 2.1 Networks; 2.1.1 Descriptions of Networks; 2.1.2 Degrees 2.1.3 Descriptions of Properties 2.1.4 Visualizations of Properties; 2.2 Types of Networks; 2.2.1 Temporal Networks; 2.2.2 Multirelational Networks; 2.2.3 Two-mode Networks; 2.3 Large Networks; 2.3.1 Small and Middle Sized Networks; 2.3.2 Large Networks; 2.3.3 Complexity of Algorithms; 2.4 Strategies for Analyzing Large Networks; 2.5 Statistical Network Measures; 2.5.1 Using Pajek and R Together; 2.5.2 Fitting Distributions; 2.6 Subnetworks; 2.6.1 Clusters, Clusterings, Partitions, Hierarchies; 2.6.2 Contractions of Clusters; 2.6.3 Subgraphs; 2.6.4 Cuts; 2.7 Connectivity Properties of Networks 2.7.1 Walks 2.7.2 Equivalence Relations and Partitions; 2.7.3

Connectivity; 2.7.4 Condensation; 2.7.5 Bow-tie Structure of the Web Graph; 2.7.6 The Internal Structure of Strong Components; 2.7.7 Bi-connectivity and -connectivity; 2.8 Triangular and Short Cycle Connectivities; 2.9 Islands; 2.9.1 Defining Islands; 2.9.2 Some Properties of Islands; 2.10 Cores and Generalized Cores; 2.10.1 Cores; 2.10.2 Generalized Cores; 2.11 Important Vertices in Networks; 2.11.1 Degrees, Closeness, Betweenness and Other Indices; 2.11.2 Clustering; 2.11.3 Computing Further Indices Through Functions
2.12 Transition to Methods for Large Networks
3 Methods for Large Networks; 3.1 Acyclic Networks; 3.1.1 Some Basic Properties of Acyclic Networks; 3.1.2 Compatible Numberings: Depth and Topological Order; 3.1.3 Topological Orderings and Functions on Acyclic Networks; 3.2 SPC Weights in Acyclic Networks; 3.2.1 Citation Networks; 3.2.2 Analysis of Citation Networks; 3.2.3 Search Path Count Method; 3.2.4 Computing SPLC and SPNP Weights; 3.2.5 Implementation Details; 3.2.6 Vertex Weights; 3.2.7 General Properties of Weights; 3.2.8 SPC Weights; 3.3 Probabilistic Flow in Acyclic Network
3.4 Nonacyclic Citation Networks
3.5 Two-mode Networks from Data Tables; 3.5.1 Multiplication of Two-mode Networks; 3.6 Bibliographic Networks; 3.6.1 Co-authorship Networks; 3.6.2 Collaboration Networks; 3.6.3 Other Derived Networks; 3.7 Weights; 3.7.1 Normalizations of Weights; 3.7.2 -Rings; 3.7.3 4-Rings and Analysis of Two-mode Networks; 3.7.4 Two-mode Cores; 3.8 Pathfinder; 3.8.1 Pathfinder Algorithms; 3.8.2 Computing the Closure Over the Pathfinder Semiring; 3.8.3 Spanish Algorithms; 3.8.4 A Sparse Network Algorithm; 3.9 Clustering, Blockmodeling, and Community Detection
3.9.1 The Louvain Method and VOS

Sommario/riassunto

This book explores social mechanisms that drive network change and link them to computationally sound models of changing structure to detect patterns. This text identifies the social processes generating these networks and how networks have evolved.
