

1. Record Nr.	UNISA996210529803316
Titolo	Algorithms and Models for the Web Graph [[electronic resource]] : 11th International Workshop, WAW 2014, Beijing, China, December 17-18, 2014, Proceedings / / edited by Anthony Bonato, Fan Chung Graham, Pawe Praat
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2014
ISBN	3-319-13123-0
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (IX, 161 p. 30 illus.)
Collana	Theoretical Computer Science and General Issues, , 2512-2029 ; ; 8882
Disciplina	005.1
Soggetti	Algorithms Computer science—Mathematics Discrete mathematics Data mining Information storage and retrieval systems Application software Discrete Mathematics in Computer Science Data Mining and Knowledge Discovery Information Storage and Retrieval Computer and Information Systems Applications
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	Intro -- Preface -- Organization -- Contents -- Clustering and the Hyperbolic Geometry of Complex Networks -- 1 Introduction -- 1.1 Random Geometric Graphs on the Hyperbolic Plane -- 1.2 Notation -- 2 Some Geometric Aspects of the Two Models -- 3 The Clustering Coefficient -- 4 Conclusions -- References -- Burning a Graph as a Model of Social Contagion -- 1 Introduction -- 2 Properties of the Burning Number -- 2.1 Characterizations of Burning Number via Trees -- 2.2 Bounds -- 3 Burning in the ILT Model -- 4 Cartesian Grids -- 5 Conclusions and Future Work -- References -- Personalized PageRank with Node-Dependent Restart -- 1 Introduction and Definitions -- 2 Occupation-Time Personalized PageRank -- 3 Location-of-Restart

Personalized PageRank -- 4 Interesting Particular Cases -- 4.1  
Constant Probability of Restart -- 4.2 Restart Probabilities Proportional to Powers of Degrees -- 4.3 Random Walk with Jumps -- 5 Discussion  
-- References -- Efficient Computation of the Weighted Clustering Coefficient -- 1 Introduction -- 1.1 Related Works -- 2 Preliminaries -- 2.1 Generalizations of Clustering Coefficient in Weighted Networks -- 3 Computing the Weighted Clustering Coefficient in Probabilistic Networks -- 4 Efficient Estimators for the Weighted Clustering Coefficient -- 5 Experiments -- References -- Global Clustering Coefficient in Scale-Free Networks -- 1 Introduction -- 2 Clustering Coefficients -- 3 Scale-Free Graphs -- 4 Existence of a Graph with Given Degree Distribution -- 4.1 Result -- 4.2 Auxiliary Results -- 4.3 Proof of Theorem 1 -- 5 Global Clustering Coefficient -- 5.1 Result -- 5.2 Proof of Theorem 4 -- 6 Experiments -- 7 Conclusion -- References -- Efficient Primal-Dual Graph Algorithms for MapReduce -- 1 Introduction -- 1.1 Problem Formulations and Results -- 1.2 Technique: Width Modulation -- 1.3 Related Work.  
2 Undirected Densest Subgraph -- 2.1 Linear Program and Duality -- 2.2 Width Modulation -- 2.3 Binary Search for  $D^*$  -- 2.4 Rounding Step: Recovering the Densest Subgraph -- 2.5 Summary of the Algorithm -- 2.6 Number of MapReduce Phases -- References -- A The Multiplicative Weights Update Framework -- B Densest Subgraph in Directed Graphs -- B.1 Parametric LP Formulation -- B.2 Covering Program and Width Modulation -- B.3 Parametric Search -- B.4 Rounding Step: Recovering the Densest Subgraph -- C Fractional Matchings in Bipartite Graphs -- C.1 Covering Program, Width Modulation, and Binary Search -- C.2 Rounding Step: Recovering the Fractional Matching -- References -- Computing Diffusion State Distance Using Green's Function and Heat Kernel on Graphs -- 1 Introduction -- 2 Notation and Background -- 3 Proof of Main Theorem -- 4 Some Examples of the DSD Distance -- 4.1 The Path  $P_n$  -- 4.2 The Cycle  $C_n$  -- 4.3 The Hypercube  $Q_n$  -- 5 Random Graphs -- 6 Examples of Biological Networks -- References -- Relational Topic Factorization for Link Prediction in Document Networks -- 1 Introduction -- 2 Related Work -- 3 Proposed Model -- 3.1 Relational Topic Factorization -- 3.2 Learning the Parameters -- 4 Empirical Results -- 4.1 Dataset -- 4.2 Evaluation Metrics -- 4.3 In-matrix Prediction -- 4.4 Out-of-Matrix Prediction -- 4.5 Relationship with Document Properties -- 4.6 Examining Topic Spaces -- 5 Conclusions and Future Work -- References -- Firefighting as a Game -- 1 Introduction -- 2 Game-Theoretical Definitions -- 3 The Firefighting Game -- 3.1 Utility Functions -- 3.2 Quality of Equilibria -- 3.3 Price of Anarchy for Trees -- 4 Coalitions -- 4.1 Price of Anarchy -- 4.2 Graphs with Constant Cut-Width -- 5 Conclusions -- References -- PageRank in Scale-Free Random Graphs -- 1 Introduction -- 2 Directed Random Graphs -- 3 PageRank Iterations in the DCM.  
4 Main Result: Coupling with a Thorny Branching Tree -- 5 Numerical Results -- References -- Modelling of Trends in Twitter Using Retweet Graph Dynamics -- 1 Introduction -- 2 Related Work -- 3 Datasets -- 4 Retweet Graphs -- 5 Model -- 5.1 Growth of the Graph -- 5.2 Component Size Distribution -- 5.3 Influence of  $q$ ,  $p$  and -- 6 The Model in Practice -- 7 Conclusion and Discussion -- References -- LiveRank: How to Refresh Old Crawls -- 1 Introduction -- 2 Model -- 2.1 Performance Metric -- 2.2 PageRank -- 2.3 Static LiveRanks -- 2.4 Sample-Based LiveRanks -- 2.5 Dynamic LiveRanks -- 3 Datasets -- 3.1 uk-2002 Dataset -- 3.2 uk-2006 Dataset -- 3.3 Correlations -- 4 LiveRanks Evaluation -- 4.1 Static and Sample-Based LiveRanks -- 4.2 Quantitative and Qualitative Impact of the Training Set -- 4.3 Dynamic

**Sommario/riassunto**

This book constitutes the refereed proceedings of the 11th International Workshop on Algorithms and Models for the Web Graph, WAW 2014, held in Beijing, China, in December 2014. The 12 papers presented were carefully reviewed and selected for inclusion in this volume. The aim of the workshop was to further the understanding of graphs that arise from the Web and various user activities on the Web, and stimulate the development of high-performance algorithms and applications that exploit these graphs. The workshop gathered the researchers who are working on graph-theoretic and algorithmic aspects of related complex networks, including social networks, citation networks, biological networks, molecular networks, and other networks arising from the Internet.