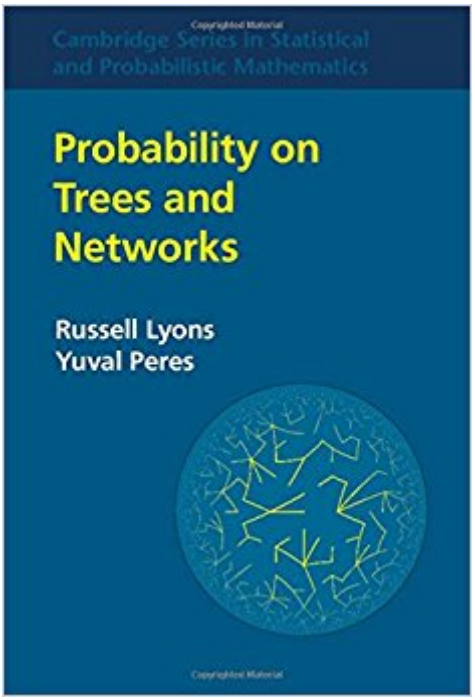
Probability On Trees And Networks (Cambridge Series In Statistical And Probabilistic Mathematics)



Synopsis

Starting around the late 1950s, several research communities began relating the geometry of graphs to stochastic processes on these graphs. This book, twenty years in the making, ties together research in the field, encompassing work on percolation, isoperimetric inequalities, eigenvalues, transition probabilities, and random walks. Written by two leading researchers, the text emphasizes intuition, while giving complete proofs and more than 850 exercises. Many recent developments, in which the authors have played a leading role, are discussed, including percolation on trees and Cayley graphs, uniform spanning forests, the mass-transport technique, and connections on random walks on graphs to embedding in Hilbert space. This state-of-the-art account of probability on networks will be indispensable for graduate students and researchers alike.

Book Information

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Customer Reviews

"This long-awaited work focuses on one of the most interesting and important parts of probability theory. Half a century ago, most work on models such as random walks, Ising, percolation and interacting particle systems concentrated on processes defined on the d-dimensional Euclidean lattice. In the intervening years, interest has broadened dramatically to include processes on more general graphs, with trees being a particularly important case. This led to new problems and richer behavior, and as a result, to the development of new techniques. The authors are two of the major

developers of this area; their expertise is evident throughout." Thomas M. Liggett, University of California, Los Angeles"Masterly, beautiful, encyclopaedic, and yet browsable - this great achievement is obligatory reading for anyone working near the conjunction of probability and network theory." Geoffrey Grimmett, University of Cambridge"For the last ten years, I have not let a doctoral student graduate without reading this [work]. Sadly, the earliest of those students are missing a considerable amount of material that the bound and published edition will contain. Not only are the classical topics of random walks, electrical theory, and uniform spanning trees covered in more coherent fashion than in any other source, but this book is also the best place to learn about a number of topics for which the other choices for textual material are limited. These include mass transport, random walk boundaries, and dimension and capacity in the context of Markov processes." Robin Pemantle, University of Pennsylvania"Lyons and Peres have done an amazing job of motivating their material and of explaining it in a conversational and accessible fashion. Even though the book emphasizes probability on infinite graphs, it is one of my favorite references for probability on finite graphs. If you want to understand random walks, isoperimetry, random trees, or percolation, this is where you should start." Daniel Spielman, Yale University, Connecticut"This long-awaited book offers a splendid account of several major areas of discrete probability. Both authors have made outstanding contributions to the subject, and the exceptional quality of the book is largely due to their high level of mastery of the field. Although the only prerequisites are basic probability theory and elementary Markov chains, the book succeeds in providing an elegant presentation of the most beautiful and deepest results in the various areas of probability on graphs. The powerful techniques that made these results available, such as the use of isoperimetric inequalities or the mass-transport principle, are also presented in a detailed and self-contained manner. This book will be indispensable to any researcher working in probability on graphs and related topics, and it will also be a must for anybody interested in the recent developments of probability theory." Jean-FranÃƒÂ§ois Le Gall, UniversitÃƒÂ© Paris-Sud

This authoritative state-of-the-art account of probability on networks for graduate students and researchers in mathematics, statistics, computer science, and engineering, brings together sixty years of research, including many developments where the authors played a leading role. The text emphasizes intuition, while also giving complete proofs.

Probabilistic Mathematics) Data Analysis and Graphics Using R: An Example-Based Approach (Cambridge Series in Statistical and Probabilistic Mathematics) Probability and Computing: Randomization and Probabilistic Techniques in Algorithms and Data Analysis Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference (Representation and Reasoning) Planting and Establishment of Tropical Trees: Tropical Trees: Propagation and Planting Manuals (Tropical Trees, Propagation and Planting Manuals Series) Nelson Pure Mathematics 2 and 3 for Cambridge International A Level (Nelson Mathematics for Cambridge International a Level) Quantum Probability (Probability and Mathematical Statistics) Probability: 2 Manuscripts Ã¢â ¬â œ Probability with Permutations and Markov Models Algebraic Geometry and Statistical Learning Theory (Cambridge Monographs on Applied and Computational Mathematics) Classical Potential Theory and Its Probabilistic Counterpart (Classics in Mathematics) Probability, Reliability, and Statistical Methods in Engineering Design An Introduction to Probability and Statistical Inference, Second Edition The Statistical Probability of Love at First Sight Designing and Deploying 802.11 Wireless Networks: A Practical Guide to Implementing 802.11n and 802.11ac Wireless Networks For Enterprise-Based Applications (2nd Edition) (Networking Technology) Cambridge Global English Stage 9 Workbook: for Cambridge Secondary 1 English as a Second Language (Cambridge International Examinations) Analytics: Business Intelligence, Algorithms and Statistical Analysis (Predictive Analytics, Data Visualization, Data Analytics, Business Analytics, Decision Analysis, Big Data, Statistical Analysis) Complete Mathematics For Cambridge Secondary 1- Evaluation Pack: For Cambridge Checkpoint and beyond Classification and Regression Trees (Wadsworth Statistics/Probability) Machine Learning: For Beginners: Definitive Guide for Neural Networks, Algorithms, Random Forests and Decision Trees Made Simple (Machine Learning, Book 1)