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| Autore | Dubhashi Devdatt |
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| Altri autori (Persone) | PanconesiAlessandro |
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| Soggetti | Random variables<br>Distribution (Probability theory)<br>Limit theorems (Probability theory)<br>Algorithms |
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| Nota di contenuto | Chernoff-Hoeffding bounds -- Applications of the Chernoff-Hoeffding bounds -- Chernoff-Hoeffding bounds in dependent settings -- Interlude : probabilistic recurrences -- Martingales and the method of bounded differences -- The simple method of bounded differences in action -- The method of averaged bounded differences -- The method of bounded variances -- Interlude : the infamous upper tail -- Isoperimetric inequalities and concentration -- Talagrand's isoperimetric inequality -- Isoperimetric inequalities and concentration via transportation cost inequalities -- Quadratic transportation cost and Talagrand's inequality -- Log-Sobolev inequalities and |

concentration -- Appendix A : summary of the most useful bounds.

Sommario/riassunto

Randomized algorithms have become a central part of the algorithms curriculum, based on their increasingly widespread use in modern applications. This book presents a coherent and unified treatment of probabilistic techniques for obtaining high probability estimates on the performance of randomized algorithms. It covers the basic toolkit from the Chernoff-Hoeffding bounds to more sophisticated techniques like martingales and isoperimetric inequalities, as well as some recent developments like Talagrand's inequality, transportation cost inequalities and log-Sobolev inequalities. Along the way, variations on the basic theme are examined, such as Chernoff-Hoeffding bounds in dependent settings. The authors emphasise comparative study of the different methods, highlighting respective strengths and weaknesses in concrete example applications. The exposition is tailored to discrete settings sufficient for the analysis of algorithms, avoiding unnecessary measure-theoretic details, thus making the book accessible to computer scientists as well as probabilists and discrete mathematicians.