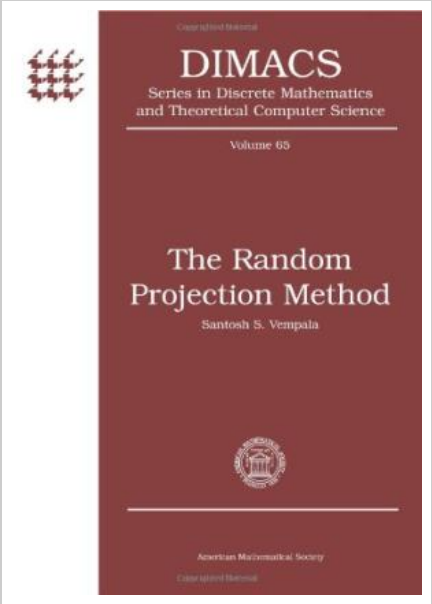

The Random Projection Method

By Santosh S. Vempala

American Mathematical Society. Paperback. Book Condition: new. BRAND NEW, The Random Projection Method, Santosh S. Vempala, Random projection is a simple geometric technique for reducing the dimensionality of a set of points in Euclidean space while preserving pairwise distances approximately. The technique plays a key role in several breakthrough developments in the field of algorithms. In other cases, it provides elegant alternative proofs. The book begins with an elementary description of the technique and its basic properties. Then it develops the method in the context of applications, which are divided into three groups. The first group consists of combinatorial optimization problems such as maxcut, graph coloring, minimum multicut, graph bandwidth and VLSI layout.Presented in this context is the theory of Euclidean embeddings of graphs. The next group is machine learning problems, specifically, learning intersections of halfspaces and learning large margin hypotheses. The projection method is further refined for the latter application. The last set consists of problems inspired by information retrieval, namely, nearest neighbor search, geometric clustering and efficient low-rank approximation. Motivated by the first two applications, an extension of random projection to the hypercube is developed here. Throughout the book, random projection is used as a way to understand,...

Reviews

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