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Sommario/riassunto	We live in the era of "Big Data": Petabytes of digital information are generated daily, and need to be processed and analyzed for interesting patterns and trends. Besides volume, a defining characteristic of Big Data is its velocity; that is, data is instantiated in the form of continuous, high-speed data streams that arrive at rapid rates, and need to be processed and analyzed on a continuous (24x7) basis. Such data streams pose very difficult challenges for conventional data-management architectures, which are built primarily on the concept of persistent, static data collections. This volume focuses on the theory and practice of data stream management, and the novel challenges this

emerging domain poses for data-management algorithms, systems, and applications. The collection of chapters, contributed by authorities in the field, offers a comprehensive introduction to both the algorithmic/theoretical foundations of data streams, as well as the streaming systems and applications built in different domains. A short introductory chapter provides a brief summary of some basic data streaming concepts and models, and discusses the key elements of a generic stream query processing architecture. Subsequently, Part I focuses on basic streaming algorithms for some key analytics functions (e.g., quantiles, norms, join aggregates, heavy hitters) over streaming data. Part II then examines important techniques for basic stream mining tasks (e.g., clustering, classification, frequent itemsets). Part III discusses a number of advanced topics on stream processing algorithms, and Part IV focuses on system and language aspects of data stream processing with surveys of influential system prototypes and language designs. Part V then presents some representative applications of streaming techniques in different domains (e.g., network management, financial analytics). Finally, the volume concludes with an overview of current data streaming products and new application domains (e.g. cloud computing, big data analytics, and complex event processing), and a discussion of future directions in this exciting field. The book provides a comprehensive overview of core concepts and technological foundations, as well as various systems and applications, and is of particular interest to students, lecturers and researchers in the area of data stream management. .