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Sommario/riassunto	This open access book surveys the progress in addressing selected challenges related to the growth of big data in combination with increasingly complicated hardware. It emerged from a research program established by the German Research Foundation (DFG) as priority program SPP 1736 on Algorithmics for Big Data where researchers from theoretical computer science worked together with application experts in order to tackle problems in domains such as networking, genomics research, and information retrieval. Such domains are unthinkable without substantial hardware and software support, and these systems acquire, process, exchange, and store data at an exponential rate. The chapters of this volume summarize the results of projects realized within the program and survey-related work. This is an open access book.