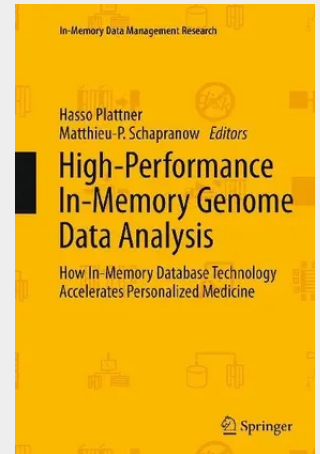


High-Performance In-Memory Genome Data Analysis

How In-Memory Database Technology Accelerates Personalized Medicine

Recent achievements in hardware and software developments have enabled the introduction of a revolutionary technology: in-memory data management. This technology supports the flexible and extremely fast analysis of massive amounts of data, such as diagnoses, therapies, and human genome data. This book shares the latest research results of applying in-memory data management to personalized medicine, changing it from computational possibility to clinical reality. The authors provide details on innovative approaches to enabling the processing, combination, and analysis of relevant data in real-time. The book bridges the gap between medical experts, such as physicians, clinicians, and biological researchers, and technology experts, such as software developers, database specialists, and statisticians. Topics covered in this book include - amongst others - modeling of genome data processing and analysis pipelines, high-throughput data processing, exchange of sensitive data and protection of intellectual property. Beyond that, it shares insights on research prototypes for the analysis of patient cohorts, topology analysis of biological pathways, and combined search in structured and unstructured medical data, and outlines completely new processes that have now become possible due to interactive data analyses.

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