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Titolo	Exploring the DataFlow Supercomputing Paradigm : Example Algorithms for Selected Applications / / edited by Veljko Milutinovic, Milos Kotlar
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Soggetti	Computer networks Telecommunication Big data Computer science Computer input-output equipment Computer Communication Networks Communications Engineering, Networks Big Data Theory of Computation Input/Output and Data Communications
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Nota di contenuto	Part I: Theoretical Issues -- A Method for Big-Graph Partitioning Using a Skeleton Graph -- On Cloud-Supported Web-Based Integrated Development Environments for Programming DataFlow Architectures -- Part II: Applications in Mathematics -- Minimization and Maximization of Functions: Golden Section Search in One Dimension -- Matrix-Based Algorithms for DataFlow Computer Architecture: An Overview and Comparison -- Application of Maxeler DataFlow Supercomputing to Spherical Code Design -- Part III: Applications in Image Understanding, Biomedicine, Physics Simulation, and Business -- Face Recognition Using Maxeler DataFlow -- Biomedical Image Processing Using Maxeler DataFlow Engines -- An Overview of Selected DataFlow Applications in

Physics Simulations -- Bitcoin Mining Using Maxeler DataFlow Computers.

Sommario/riassunto

This useful text/reference describes the implementation of a varied selection of algorithms in the DataFlow paradigm, highlighting the exciting potential of DataFlow computing for applications in such areas as image understanding, biomedicine, physics simulation, and business. The mapping of additional algorithms onto the DataFlow architecture is also covered in the following Springer titles from the same team: DataFlow Supercomputing Essentials: Research, Development and Education, DataFlow Supercomputing Essentials: Algorithms, Applications and Implementations, and Guide to DataFlow Supercomputing. Topics and Features: Introduces a novel method of graph partitioning for large graphs involving the construction of a skeleton graph Describes a cloud-supported web-based integrated development environment that can develop and run programs without DataFlow hardware owned by the user Showcases a new approach forthe calculation of the extrema of functions in one dimension, by implementing the Golden Section Search algorithm Reviews algorithms for a DataFlow architecture that uses matrices and vectors as the underlying data structure Presents an algorithm for spherical code design, based on the variable repulsion force method Discusses the implementation of a face recognition application, using the DataFlow paradigm Proposes a method for region of interest-based image segmentation of mammogram images on high-performance reconfigurable DataFlow computers Surveys a diverse range of DataFlow applications in physics simulations, and investigates a DataFlow implementation of a Bitcoin mining algorithm This unique volume will prove a valuable reference for researchers and programmers of DataFlow computing, and supercomputing in general. Graduate and advanced undergraduate students will also find that the book serves as an ideal supplementary text for courses on Data Mining, Microprocessor Systems, and VLSI Systems.