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Nota di contenuto	Introduction to biomimetics, modeling, and analysis -- High Performance Computing and its application in computational biomimetics -- Bio-inspired computing and associated algorithms -- Cloud computing infrastructure, platforms, and software for scientific research -- Expansion of AI and ML breakthroughs in research with shift to edge computing in remote environments -- Role of distributed computing in biology research field and its challenges -- HPC based high-speed networks, ARM Processor architecture and their configurations -- High-Performance Computing based operating systems, software dependencies and IoT Integration -- GPU and ASIC as boost for HPC in biomimetics -- Biomimetic modeling and analysis

using modern architecture frameworks like CUDA -- Unsteady flow topology around an insect-inspired flapping wing pico aerial vehicle -- Machine Learning based Dynamic Mode Decomposition of vector flow field around mosquito-inspired flapping wing -- Application of Cuckoo Search Algorithm in bio-inspired computing using HPC platform -- Application of Machine Learning and Deep Learning in High Performance Computing -- The future of high performance computing and some challenges – Editor’s Summary.

Sommario/riassunto

This book gives a complete overview of current developments in the implementation of high performance computing (HPC) in various biomimetic technologies. The book presents various topics that are subdivided into the following parts: A) biomimetic models and mechanics; B) locomotion and computational methods; C) distributed computing and its evolution; D) distributed and parallel computing architecture; E) high performance computing and biomimetics; F) big data, management, and visualization; and G) future of high performance computing in biomimetics. This book presents diverse computational technologies to model and replicate biologically inspired design for the purpose of solving complex human problems. The content of this book is presented in a simple and lucid style which can also be used by professionals, non-professionals, scientists, and students who are interested in the research area of high performance computing applications in the development of biomimetics technologies.