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Titolo	Accelerating Science and Engineering Discoveries Through Integrated Research Infrastructure for Experiment, Big Data, Modeling and Simulation : 22nd Smoky Mountains Computational Sciences and Engineering Conference, SMC 2022, Virtual Event, August 23–25, 2022, Revised Selected Papers // edited by Kothe Doug, Geist AI, Swaroop Pophale, Hong Liu, Suzanne Parete-Koon
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Collana	Communications in Computer and Information Science, , 1865-0937 ; ; 1690
Disciplina	929.605 004
Soggetti	Computer systems Artificial intelligence Image processing - Digital techniques Computer vision Social sciences - Data processing Application software Education - Data processing Computer System Implementation Artificial Intelligence Computer Imaging, Vision, Pattern Recognition and Graphics Computer Application in Social and Behavioral Sciences Computer and Information Systems Applications Computers and Education
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Foundational Methods Enabling Science in an Integrated Ecosystem -- Computational Workflow for Accelerated Molecular Design Using Quantum Chemical Simulations and Deep Learning Models -- Self-learning Data Foundation for Scientific AI -- Preconditioners for

batched iterative linear solvers on GPUs -- Mobility Aware Computation Offloading Model for Edge Computing -- Science and Engineering Applications Requiring and Motivating an Integrated Ecosystem -- Machine Learning for First Principles Calculations of Material Properties for Ferromagnetic Materials -- A Vision for Coupling Operation of US Fusion Facilities with HPC Systems and the Implications for Workflows and Data Management -- At-the-edge Data Processing for Low Latency High Throughput Machine Learning Algorithms -- Implementation of a framework for deploying AI inference engines in FPGAs -- Systems and Software Advances Enabling an Integrated Science and Engineering Ecosystem -- Calvera: A Platform for the Interpretation and Analysis of Neutron Scattering Data -- Virtual Infrastructure Twins: Software Testing Platforms for Computing and Instrument Ecosystems -- The INTERSECT Open Federated Architecture for the Laboratory of the Future -- Real-Time Edge Processing During Data Acquisition -- Towards a Software Development Framework for Interconnected Science Ecosystems -- Deploying Advanced Technologies for an Integrated Science and Engineering Ecosystem -- Adrastea: An Efficient FPGA Design Environment for Heterogenous Scientific Computing and Machine Learning -- Toward an Autonomous Workflow for Bragg Peak Detection at SNS -- Industrial experience deploying heterogeneous platforms for use in multi-modal power systems design workflows -- Self-Describing Digital Assets and their applications in an Integrated Science and Engineering Ecosystem -- Simulation Workflows in Minutes, at Scale for Next-Generation HPC -- Scientific Data Challenges -- Machine Learning approaches to High Throughput Phenotyping -- SMC 2022 Data Challenge: Summit Spelunkers Solution for Challenge 2 -- Usage Pattern Analysis for The Summit Login Nodes -- Finding Hidden Patterns in High Resolution Wind Flow Model Simulations -- Investigating Relationships in Environmental and Community Health: Correlations Of Environment, Urban Morphology, And Socio-Economic Factors In The Los Angeles Metropolitan Statistical Area -- Patterns and Predictions: Generative Adversarial Networks for Neighborhood Generation.

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### Sommario/riassunto

This book constitutes the refereed proceedings of the 22nd Smoky Mountains Computational Sciences and Engineering Conference on Accelerating Science and Engineering Discoveries Through Integrated Research Infrastructure for Experiment, Big Data, Modeling and Simulation, SMC 2022, held virtually, during August 23–25, 2022. The 24 full papers included in this book were carefully reviewed and selected from 74 submissions. They were organized in topical sections as follows: foundational methods enabling science in an integrated ecosystem; science and engineering applications requiring and motivating an integrated ecosystem; systems and software advances enabling an integrated science and engineering ecosystem; deploying advanced technologies for an integrated science and engineering ecosystem; and scientific data challenges.

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