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Soggetti	Algorithms Computer engineering Computer networks Artificial intelligence Application software Coding theory Information theory Computer Engineering and Networks Artificial Intelligence Computer and Information Systems Applications Coding and Information Theory
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Invited Papers -- First-order System Least Squares Finite-elements for Singularly Perturbed Reaction-diffusion Equations -- Big Data Analysis: Theory and Applications -- Control and Optimization of Dynamical Systems -- Solutions to the Hamilton-Jacobi Equation for Bolza Problems with State Constraints and Discontinuous Time Dependent Data -- Optimal Control Problem of a Metronomic Chemotherapy -- Asymptotic Behaviour of Controllability Gramians and Convexity of Small-time Reachable Sets -- On the Regularity of Mayer-type Affine Optimal Control Problems -- Meshfree and Particle Methods -- Mesh-

hardened Finite Element Analysis through a Generalized Moving Least-Squares Approximation of Variational Problems -- An Adaptive LOOCV-based Algorithm for Solving Elliptic PDEs via RBF Collocation -- Adaptive Refinement Techniques for RBF-PU Collocation -- Fractional Diffusion Problems: Numerical Methods, Algorithms and Applications -- A Second Order Time Accurate Finite Volume Scheme for the Time-Fractional Diffusion Wave Equation on General Nonconforming Meshes -- Identification of a Time-dependent Right-Hand Side of an Unsteady Equation with a Fractional Power of an Elliptic Operator -- Pore Scale Flow and Transport Simulation -- Computational Identification of Adsorption and Desorption Parameters for Pore Scale Transport in Random Porous Media -- Weighted Time-Semidiscretization Quasilinearization Method for Solving Rihards' Equation -- Tensors Based Algorithms and Structures in Optimization and Applications -- On the Problem of Decoupling Multivariate Polynomials -- Model Order Reduction Algorithms in the Design of Electric Machines -- Discrete Vortices and Their Generalizations for Scattering Problems -- Nonnegative Tensor Train Factorizations and Some Applications -- Low Rank Structures in Solving Electromagnetic Problems -- Tensors in Modelling Multi-particle Interactions -- Tensorisation in the Solution of Smoluchowski Type Equations -- On Tensor-Train Ranks of Tensorized Polynomials -- Global Optimization Algorithms Using Tensor Trains -- Application of the Global Optimization Methods for Solving the Parameter Estimation Problem in Mathematical Immunology -- HPC and Big Data: Algorithms and Applications -- Statistical Moments of the Vertical Distribution of Air Pollution over Bulgaria -- Distributed Deep Learning on Heterogeneous Computing Resources Using Gossip Communication -- Process Analysis of Atmospheric Composition Fields in Urban Area (Sofia City) -- Modeling of PM10 Air Pollution in Urban Environment Using MARS -- Application of Orthogonal Polynomials and Special Matrices to Orthogonal Arrays -- Performance Effects of Running Container-Based Open-MPI Cluster in Public Cloud -- Impact of Data Assimilation on Short-term Precipitation Forecasts Using WRF-ARW Model -- Large-Scale Models: Numerical Methods, Parallel Computations and Applications -- An Introduction and Summary of Use of Optimal Control Methods for PDE's -- Parallel BURA Based Numerical Solution of Fractional Laplacian with Pure Neumann Boundary Conditions -- Bias Correcting of Selected ETCCDI Climate Indices for Projected Future Climate -- Project for an Open Source GIS Tool for Visualization of Flood Risk Analysis after Mining Dam Failures -- Open Source GIS for Civil Protection Response in Cases of Wildland Fires or Flood Events -- PDE-Constrained Optimization: Matrix Structures and Preconditioners -- One Approach of Solving Tasks in the Presence of Free Surface Using a Multiprocessor Computing Systems -- In Silico Study on the Structure of Novel Natural Bioactive Peptides -- Sensitivity of the Simulated Heat Risk in Southeastern Europe to the RegCM Model Configuration — Preliminary Results -- Large-scale Prediction of the ARS Family Inhibitors of the Oncogenic KRASG12C Mutant -- Identification of Heat Conductivity in (2+1)D Equation as a Function of Time -- Numerical Calculation of Deformations of Composite Material with Fiber Inclusions -- On the Impact of Reordering in a Hierarchical Semi-separable Compression Solver for Fractional Diffusion Problems -- Computer Simulation of a Saline Enhanced Radio-frequency Hepatic Ablation Process -- Studying the Influence of Climate Changes on European Ozone Levels -- Monte Carlo Algorithms: Innovative Applications in Conjunctions with Other Methods -- A Revised Wigner Function Approach for Stationary Quantum Transport -- Techniques for Statistical Enhancement in a 2D Multi-Subband Ensemble Monte Carlo

Nanodevice Simulator -- Efficient Stochastic Algorithms for the Sensitivity Analysis Problem in the Air Pollution Modelling -- Kinetic Monte Carlo Analysis of the Operation and Reliability of Oxide Based RRAMs -- Multi-Subband Ensemble Monte Carlo Simulator for Nanodevices in the End of the Roadmap -- A Monte Carlo Evaluation of the Current and Low Frequency Current Noise at Spin-Dependent Hopping -- Efficient Stochastic Approaches for Multidimensional Integrals in Bayesian Statistics -- Parallel Multilevel Monte Carlo Algorithms for Elliptic PDEs with Random Coefficients -- Application of Metaheuristics to Large-Scale Problems -- Generalized Nets Model of Data Parallel Processing in Large Scale Wireless Sensor Networks -- Modeling Block Structured Project Scheduling with Resource Constraints -- Solving Combinatorial Puzzles with Parallel Evolutionary Algorithms -- Multi-Objective ACO Algorithm for WSN Layout: InterCriteria Analisys -- Reachable Sets of Nonlinear Control Systems: Estimation Approaches -- Jumping Average Filter Parameter Optimization for Pulsar Signal Detection -- Precision in High Dimensional Optimisation of Global Tasks with Unknown Solutions -- An Intuitionistic Fuzzy Approach to the Travelling Salesman Problem -- Alternatives for Neighborhood Function in Kohonen Maps -- Large Scale Machine Learning: Multiscale Algorithms and Performance Guarantees -- A Modified Gomory-Hu Algorithm with DWDM-oriented Technology -- Contributed Papers -- Adaptive Exponential Integrators for MCTDHF -- Convergence Analysis of a Finite Volume Gradient Scheme for a Linear Parabolic Equation Using Characteristic Methods -- Implementing a Mesh-Projection Schemes Using the Technology of Adaptive Mesh Refinement -- Valuation of European Options with Liquidity Shocks Switching by Fitted Finite Volume Method -- Space-Time Finite Element Methods for Parabolic Initial-Boundary Value Problems with Non-smooth Solutions -- MATLAB Implementation of Element-based Solvers -- The Approach to the Construction of Di_erence Schemes with a Consistent Approximation of the Stress-Strain State and the Energy Balance of the Medium in Cylindrical Geometry -- Two-layer Completely Conservative Di_erence Scheme of Gas Dynamics in Eulerian Variables with Adaptive Regularization of Solution -- Some Problems of Modeling the Impact on Gas Hydrates on the Basis of Splitting by Physical Processes.

Sommario/riassunto

This book constitutes revised papers from the 12th International Conference on Large-Scale Scientific Computing, LSSC 2019, held in Sozopol, Bulgaria, in June 2019. The 70 papers presented in this volume were carefully reviewed and selected from 81 submissions. The book also contains two invited talks. The papers were organized in topical sections named as follows: control and optimization of dynamical systems; meshfree and particle methods; fractional diffusion problems: numerical methods, algorithms and applications; pore scale flow and transport simulation; tensors based algorithms and structures in optimization and applications; HPC and big data: algorithms and applications; large-scale models: numerical methods, parallel computations and applications; monte carlo algorithms: innovative applications in conjunctions with other methods; application of metaheuristics to large-scale problems; large scale machine learning: multiscale algorithms and performance guarantees; and contributed papers. .