1. Record Nr. UNINA9911034954203321

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Titolo	Current Problems of Applied Mathematics and Computer Systems : CPAMCS 2024 / / edited by Irina Samoylenko, Anatoly Alikhanov, Dmitrii Kaplun, Pavel Lyakhov, Aslan Apekov
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-032-01831-5
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (751 pages)
Collana	Lecture Notes in Networks and Systems, , 2367-3389 ; ; 1585
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Disciplina	620
Soggetti	Engineering mathematics Engineering - Data processing Mathematical and Computational Engineering Applications Data Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I: Numerical Methods in Scientific Computing -- Research of dynamics of the ekranoplan movement -- Bending oscillations of the vertical rack -- Stability of finite-difference schemes for the fractional differential equation of fluid filtration in porous media -- Implicit Time Approximations for Hyperbolic Equations -- Numerical modeling of gas transportation systems -- Lyapunov Stability Analysis for Systems of Nonlinear Ordinary Differential Equations Based on Additive Transformations of the Finite Difference Formula -- Differential approach to detecting wake vortices by lidar remote sensing data -- Resolving implicitness in semi-implicit numerical integration schemes using fixed-point iterations -- Operator-difference approximations on two-dimensional merged Voronoi-Delaunay grids -- Stability analysis of an L2 type numerical scheme for the Steklov nonlocal boundary value problems in time-fractional diffusion equations -- Part II: Information and Computation Systems for Distributed Environments -- The algorithm of load distribution between computing resources of the

data processing center -- Residue number system division based on inverse conversion and Akushsky core function -- Comparative analysis of dipfakes detection methods -- Application of redundant residue number system for fault tolerance of computing systems -- AI-Powered Disaster Management System Using Satellite Imagery: a Survey -- Homomorphic data encryption system based on residue number system -- Comparative analysis of parameters of attacks and incidents on cyber-physical systems -- Unmanned automated system control platform -- Neural network algorithm for solving the differential equation of interindustry balance -- Statistical modeling of mechanical properties of blast-compacted soils -- Part III: High performance computing and artificial intelligence -- The method of ensembling neural networks for pattern recognition -- Video analysis of an unmanned aerial vehicle in low signal conditions -- Modified U-Net for the segmentation of sunflower leaf from photographs -- Design and software implementation of the Windows desktop application "Bioeconomic diagnostics of health care" -- Can a single neuron model be used as an accurate time-series classifier? -- Characterization of a Desktop Grid performance -- Non-coherent chaotic communication system based on return map quantification -- Improving the balance of RNS by using the metric of finding optimal sets of Low-Cost and 2k + 1 modules -- Implementation of a 2n-1 binary adder based on cellular automata technology -- Model of RF fingerprinting of wireless devices based on signal correlation -- Part IV: Current problems of mathematical education -- Use of computer systems in mathematical modeling -- The application of mathematical methods in digital image processing -- Methodological system of professionally oriented teaching of mathematics to students of the medical university -- Part V: Mathematical modeling of nonlinear physical phenomena -- Internal inertial-gravity waves in a polytropic atmosphere -- Using the OpenFOAM Package for Modeling Turbulent Gas Flow in a Shaped Pipe -- Mathematical model of pulse wave -- Automodel solutions of complex nonlinear partial differential equation, possessing Lax pair -- Soliton solutions to perturbation of the Korteweg-de Vries equation -- Channel model analysis for maritime wireless broadband communication systems for coastal autonomous and remote navigation -- Development of an algorithm for converting quaternion’s in solving problems without crew navigation -- Dynamic Stochastic Modeling of Competitive Interaction Between Two Firms of Car Manufacturers -- Mathematical modeling spread of viral diseases -- Robust control methods of universal multipurpose towed complexes -- In-Depth Analysis of the Stress-Strain State of the Three-Section Floating Dock PD-190 "MOSOR" Project Under Dynamic Loads -- Scattering data of a nonlinear partial differential equation with a Lax pair with a Dirac scattering operator of the first kind -- Iterative solutions of the incompressible fluid flow in a lid-driven cavity at large Reynolds numbers -- Modeling of the Interfacial Energy of Plumbum Faces at the Boundary with Organic Liquids.

Sommario/riassunto

This book based on the best papers accepted for presentation during the International Conference on Current Problems of Applied Mathematics and Computer Systems (CPAMCS-2024), Russia. This book includes research focused on contemporary mathematical challenges and their resolutions within scientific computing, data analysis and modular computing. This book presents original studies on numerical methods in scientific computing, optimization problem-solving, function approximation techniques, among other topics. Furthermore, it encompasses research contributions in data analysis and modular computing, highlighting advancements in deep learning, neural

networks, mathematical statistics, machine learning techniques, residue number systems and artificial intelligence. Additionally, this book addresses critical issues in mathematical education. This book intends for professionals engaged in scientific computing, parallel computing, computer technology, machine learning, information security, and mathematics education.