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Soggetti	Computer science Artificial intelligence Computer engineering Computer networks Software engineering Computer science - Mathematics Theory of Computation Artificial Intelligence Computer Engineering and Networks Software Engineering Mathematics of Computing
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Nota di contenuto	(Credible) Multiscale Modelling and Simulation -- Novel Hierarchical Decision Tree Frameworks Introducing Tree Method Bagging-Stump Integration and Height Optimization -- Modelling Heat Conduction between Two Contacting Particles in Vacuum Insulation Panels Made with Granular Porous Media -- Multiscale Parallel Simulation of Malignant Pleural Mesothelioma via Adaptive Domain Partitioning – an Efficiency Analysis Study -- Node-level Performance of Adaptive Resolution in Is1 mardyn -- A Multiscale Modeling Framework for Organizational Resilience: Integrating Agent-Based, Discrete Event, and System Dynamics Approaches -- mUQSA - An Online Service for

Uncertainty Quantification and Sensitivity Analysis -- FUMEPLOT: a Prototype Tool for Automated Visualisation of Uncertainties in Ensemble Modelling Outputs -- AI-enhanced Agent-based Modelling Approach for Forced Displacement Predictions -- Numerical Algorithms and Computer Arithmetic for Computational Science -- On Floating Point Approximation of the Reciprocal Cube Root Function -- Fourier Error Analysis of Caputo Derivative Approximations based on Lagrange Interpolation over Uniform Mesh -- Time and Energy Consumption of Multithreaded Matrix Factorization using Various Compilers Optimizations -- Quantum Computing -- Modeling the Cyclic Bandwidth Problem in QUBO for Quantum Annealing -- Optimization Framework for Reducing Mid-circuit Measurements and Resets -- Quantum-Classical Dual Kernel SVMs for Power Quality Classification -- Quantum-aware Transformer Model for State Classification -- Hyperspectral Image Segmentation with a Machine Learning Model Trained using Quantum Annealer -- Classification of the Polish Handwritten Letters by the use of Quantum Convolutional Neural Network -- Retrieval-Augmented Generation -- AggTruth: Contextual Hallucination Detection using Aggregated Attention Scores in LLMs -- CiteVerifier: How Good Are Citation Verifiers and How to Use Them? -- From Statement of Facts to Statutory Provisions -- Efficient Retrieval of Relevant Legislation -- PoliChat: Retrieval Augmented Generation on University Documents and Regulations -- Simulations of Flow and Transport: Modeling, Algorithms and Computation -- Isogeometric Galerkin-characteristic Analysis for Miscible Flows in Porous Media -- An Unconditionally Stable Parallel Splitting Algorithm for the Coupled Stokes-Parabolic Equation Based on the Three-Field Biot Model -- A Thermodynamically Consistent Model for Compressible Fluid Flow in Fractured Porous Elastic Media -- DarcyLite Modules for Property-preserving Transport Solvers -- Natural Convection in Periodically Heated Porous-fluid System under Local Thermal Non-equilibrium Conditions: A Numerical Study for Enhanced Thermal Management -- Development of a Library for Far-field Sonic Boom Prediction in OpenFOAM -- Numerical Analysis of Dolphin Kick in Competitive Swimming with Free Surface Effects -- DNS of Bubble Dynamics in the Wobbling Regime using the Unstructured Conservative Level-Set Method.

## Sommario/riassunto

The 6-volume set constitutes the workshop proceedings of the 25th International Conference on Computational Science, ICCS 2025, which took place in Singapore, Singapore, during July 7–9, 2025. The 137 full papers and 32 short papers presented in these proceedings were carefully reviewed and selected from 322 submissions. The papers are organized in the following topical sections: Volume I: Advances in high-performance computational earth sciences: numerical methods, frameworks & applications; artificial intelligence approaches for network analysis; artificial intelligence and high-performance computing for advanced simulations; and biomedical and bioinformatics challenges for computer science. Volume II: Computational health; computational modeling and artificial intelligence for social systems; and computational optimization, modelling and simulation. Volume III: Computational science and AI for addressing complex and dynamic societal challenges equitably; computer graphics, image processing and artificial intelligence; computing and data science for materials discovery and design; and large language models and intelligent decision-making within the digital economy. Volume IV: Machine learning and data assimilation for dynamical systems; and multi-criteria decision-making: methods, applications, and innovations. Volume V: (Credible) Multiscale

modelling and simulation; numerical algorithms and computer arithmetic for computational science; quantum computing; retrieval-augmented generation; and simulations of flow and transport: modeling, algorithms and computation. Volume VI: Smart systems: bringing together computer vision, sensor networks and artificial intelligence; solving problems with uncertainty; and teaching computational science.

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