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Nota di contenuto	Part I: Machine Learning: Novel Methods and Applications -- Use of Symmetric Kernels for Convolutional Neural Networks -- Neural Network User Authentication by Geometry of the Auricle -- Race from Pixels: Evolving Neural Network Controller for Vision-Based Car Driving -- Application of Neuro-Controller Models for Adaptive Control -- Forecasting of Forest Fires in Portugal Using Parallel Calculations and Machine Learning -- A New Non-Euclidean Proximal Method for Equilibrium Problems -- Part II: Data Analysis Using Fuzzy Mathematics, Soft Computing, Computing With Words -- Perceptual Computing Based Method for Assessing Functional State of Aviation Enterprise Employees -- Multi-Criteria Decision Making and Soft Computing for the Selection of Specialized IoT Platform -- How Intelligence Community Interprets Imprecise Evaluative Linguistic Expressions, and How to Justify This Empirical-Based Interpretation -- How to Explain Empirical Distribution of Software Defects by Severity -- Part III: Applications of Data Science to Economics. Applied Data Science Systems -- Tobacco Spending in Georgia: Machine Learning

Approach -- Explaining Wages in Ukraine: Experience or Education? -- On the Nash Equilibrium in Stochastic Games of Capital Accumulation on a Graph -- Indoor and Outdoor Air Quality Monitoring on the Base of Intelligent Sensors for Smart City -- Assessment of Sustainable Development Goals Achieving With Use of NEXUS Approach in the Framework of GEOEssential ERA-PLANET Project -- An Efficient Remote Disaster Management Technique Using IoT for Expeditious Medical Supplies to Affected Area: An Architectural Study and Implementation -- Part IV: Knowledge Engineering Methods. Ontology Engineering. Intelligent Educational Systems -- Method of Activity of Ontology-Based Intelligent Agent for Evaluating Initial Stages of the Software Lifecycle -- Ontological Representation of Legal Information and an Idea of Crowdsourcing for Its Filling -- Methods for Automated Generation of Scripts Hierarchies from Examples and Diagnosis of Behavior -- Development of the Mathematical Model of the Informational Resource of a Distance Learning System -- Use of Information Technologies to Improve Access to Information in E-Learning Systems -- Multi-Agent Approach Towards Creating an Adaptive Learning Environment -- Part V: Intelligent Search and Information Analysis in Local and Global Networks -- Usage of Decision Support Systems in Information Operations Recognition -- How Click-Fraud Shapes Traffic: A Case Study -- The Model of Words Cumulative Influence in a Text -- Mathematical and Computer Models of Message Distribution in Social Networks Based on the Space Modification of Fermi-Pasta-Ulam Approach -- Social Network Structure as a Predictor of Social Behavior: The Case of Protest in the 2016 US Presidential Election -- Internet Data Analysis to Evaluate the Optimal Placement of New Facilities -- Part VI: Novel Theoretical and Practical Applications of Data Science -- Algebra of Clusterizable Relations -- Constructive Proofs of Heterogeneous Equalities in Cubical Type Theory -- Improved Method of Determining the Alternative Set of Numbers in Residue Number System -- Method of an Optimal Nonlinear Extrapolation of a Noisy Random Sequence on the Basis of the Apparatus of Canonical Expansions -- Regularization of Hidden Markov Models Embedded into Reproducing Kernel Hilbert Space -- Application of Probabilistic-Algebraic Simulation for Processing and Analysis of Large Amounts of Data -- Multiblock ADMM with Nesterov Acceleration -- Input Information in the Approximate Calculation of Two-Dimensional Integral from Highly Oscillating Functions (Irregular Case) -- A New Approach to Data Compression.

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## Sommario/riassunto

This book constitutes the proceedings of the XVIII International Conference on Data Science and Intelligent Analysis of Information (ICDSIAI'2018), held in Kiev, Ukraine on June 4-7, 2018. The conference series, which dates back to 2001 when it was known as the Workshop on Intelligent Analysis of Information, was renamed in 2008 to reflect the broadening of its scope and the composition of its organizers and participants. ICDSIAI'2018 brought together a large number of participants from numerous countries in Europe, Asia and the USA. The papers presented addressed novel theoretical developments in methods, algorithms and implementations for the broadly perceived areas of big data mining and intelligent analysis of data and information, representation and processing of uncertainty and fuzziness, including contributions on a range of applications in the fields of decision-making and decision support, economics, education, ecology, law, and various areas of technology. The book is dedicated to the memory of the conference founder, the late Professor Tetiana Taran, an outstanding scientist in the field of artificial intelligence whose research record, vision and personality have greatly contributed

to the development of Ukrainian artificial intelligence and computer science.

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