Record Nr.	UNINA9910484321203321
Titolo	How uncertainty-related ideas can provide theoretical explanation for empirical dependencies / / Martine Ceberio and Vladik Kreinovich (editors)
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-65324-2
Descrizione fisica	1 online resource (152 pages) : illustrations
Collana	Studies in Systems, Decision and Control ; ; v.306
Disciplina	003.54
Soggetti	Justification (Theory of knowledge) Uncertainty (Information theory) Incertesa (Teoria de la informació) Justificació (Teoria del coneixement) Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro Preface Contents Status Quo Bias Actually Helps Decision Makers to Take Nonlinearity into Account: An Explanation 1 Formulation of the Problem 2 Analysis of the Problem and the Resulting Explanation References A Natural Explanation for the Minimum Entropy Production Principle 1 Formulation of the Problem 2 How Complex Problems Are Solved: Reminder and Related Analysis 3 How This Analysis Helps Explain the Minimum Entropy Production Principle References Why Class-D Audio Amplifiers Work Well: A Theoretical Explanation 1 Formulation of the Problem 2 Why Pulses 3 Why the Pulse's Duration Should Linearly Depend on the Amplitude of the Input Signal Reference How Can We Explain Different Number Systems? 1 Formulation of the Problem 2 Which Bases Appear if We Consider Divisibility by All Small Numbers from 1 to Some k 3 What if We Can Skip One Number 4 What if We Can Skip Two Numbers 5 What if We Can Skip Three or More Numbers References Why Immediate Repetition Is Good for Short-Time Learning Results but Bad for Long-Time Learning:

1.

Explanation Based on Decision Theory -- 1 Formulation of the Problem: How to Explain Recent Observations Comparing Long-Term Results of Immediate and Delayed Repetition -- 2 Main Idea Behind Our Explanation: Using Decision Theory -- 3 So When Do We Learn: Analysis of the Problem and the Resulting Explanation -- References --Absence of Remotely Triggered Large Earthquakes: A Geometric Explanation -- 1 Formulation of the Problem -- 2 Geometric Explanation -- References -- Why Gamma Distribution of Seismic Inter-Event Times: A Theoretical Explanation -- 1 Formulation of the Problem -- 2 Our Explanation -- References -- Quantum Computing as a Particular Case of Computing with Tensors -- 1 Why Tensors -- 2 Tensors in Physics: A Brief Reminder.

3 From Tensors in Physics to Computing with Tensors -- 4 Modern Algorithm for Multiplying Large Matrices -- 5 Quantum Computing as Computing with Tensors -- 6 New Idea: Tensors to Describe Constraints -- 7 Computing with Tensors Can Also Help Physics -- 8 Remaining Open Problem -- References -- A ``Fuzzy" Like Button Can Decrease Echo Chamber Effect -- 1 Formulation of the Problem -- 2 Proposed Solution -- References -- Intuitive Idea of Implication Versus Formal Definition: How to Define the Corresponding Degree -- 1 Formulation of the Problem -- 2 How to Define the Degree of Implication: A Seemingly Reasonable Idea and Its Limitations -- 3 Towards a New Definition of Degree of Implication -- References --Dimension Compactification-A Possible Explanation for Superclusters and for Empirical Evidence Usually Interpreted as Dark Matter -- 1 Main Idea -- 2 Geometric Consequences of the Main Idea -- 3 Towards Physical Consequences of the Main Idea -- 4 Physical Consequences of the Main Idea -- 5 Observable Predictions of Our New Idea -- 6 Natural Open Questions -- References -- Fundamental Properties of Pair-Wise Interactions Naturally Lead to Quarks and Quark Confinement: A Theorem Motivated by Neural Universal Approximation Results -- 1 Formulation of the Problem -- 2 Definitions and the Main Result -- 3 Proof -- 4 Physical Interpretation of the Result -- References -- Linear Neural Networks Revisited: From PageRank to Family Happiness -- 1 Linear Neural Networks: A Brief Reminder -- 2 Linear Neural Networks: A Precise Description -- 3 Linear Neural Networks: From the General Case to the Simplest Case -- 4 First Application: PageRank Algorithm as an Example of a Linear Neural Network -- 5 Second Application: Family Dynamics -- References -- Why 3 Basic Colors? Why 4 Basic Tastes? -- 1 Introduction -- 2 Why 3 Basic Colors? -- 3 Why 4 Basic Tastes?.

References -- What Segments Are the Best in Representing Contours? -- 1 Introduction to the Problem -- 2 Motivations of the Proposed Mathematical Definitions -- 3 Definitions and the Main Result -- 4 Proofs -- References -- Strength of Lime Stabilized Pavement Materials: Possible Theoretical Explanation of Empirical Dependencies -- 1 Formulation of the Problem -- 2 Our Explanation -- References --Towards a Theoretical Explanation of How Pavement Condition Index Deteriorates over Time -- 1 Formulation of the Problem -- 2 General Invariances -- 3 First Attempt: Let Us Directly Apply Invariance Ideas to Our Problem -- 4 Let Us Now Apply Invariance Ideas Indirectly --References -- A Recent Result About Random Metric Spaces Explains Why All of Us Have Similar Learning Potential -- 1 Formulation of the Problem -- 2 Our Explanation -- References -- Finitely Generated Sets of Fuzzy Values: If ``And" Is Exact, Then ``Or" Is Almost Always Approximate, and Vice Versa-A Theorem -- 1 Formulation of the Problem -- 2 Definitions and the Main Result -- 3 How General Is This Result? -- 4 What if We Allow Unlimited Number of ``And"-Operations

and Negations: Case Study References Fuzzy Logic Explains the
Usual Choice of Logical Operations in 2-Valued Logic 1 Formulation
of the Problem 2 Our Explanation 3 Auxiliary Result: Why the
Usual Quantifiers? References.