1. Record Nr. UNINA9910137016603321

Autore	Gesztesy Fritz
Titolo	The Callias Index Formula Revisited / / by Fritz Gesztesy, Marcus Waurick
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-29977-8
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (IX, 192 p. 1 illus.)
Collana	Lecture Notes in Mathematics, , 0075-8434 ; ; 2157
Disciplina	515.7
Soggetti	Differential equations, Partial Operator theory Functional analysis Partial Differential Equations Operator Theory Functional Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction.-Notational Conventions -- Functional Analytic -- On Schatten–von Neumann Classes and Trace Class -- Pointwise Estimates for Integral Kernels -- Dirac-Type -- Derivation of the Trace Formula – The Trace Class Result -- Derivation of the Trace Formula – Diagonal Estimates -- The Case n = 3 -- The Index Theorem and Some Consequences -- Perturbation Theory for the Helmholtz Equation -- The Proof of Theorem 10.2: The Smooth Case -- The Proof of Theorem 10.2: The General Case -- A Particular Class of Non-Fredholm Operators L and Their Generalized Witten Index -- A: Construction of the Euclidean Dirac Algebra -- B: A Counterexample to [22, Lemma 5] -- References -- Index.
Sommario/riassunto	These lecture notes aim at providing a purely analytical and accessible proof of the Callias index formula. In various branches of mathematics (particularly, linear and nonlinear partial differential operators, singular integral operators, etc.) and theoretical physics (e.g., nonrelativistic and relativistic quantum mechanics, condensed matter physics, and quantum field theory), there is much interest in computing Fredholm

	indices of certain linear partial differential operators. In the late 1970’s, Constantine Callias found a formula for the Fredholm index of a particular first-order differential operator (intimately connected to a supersymmetric Dirac-type operator) additively perturbed by a potential, shedding additional light on the Fedosov-Hörmander Index Theorem. As a byproduct of our proof we also offer a glimpse at special non-Fredholm situations employing a generalized Witten index.

2. Record Nr. UNINA9910855366003321

Autore	Araujo Joao
Titolo	Research Challenges in Information Science : 18th International Conference, RCIS 2024, Guimarães, Portugal, May 14–17, 2024, Proceedings, Part I / / edited by João Araújo, Jose Luis de la Vara, Maribel Yasmina Santos, Saïd Assar
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	9783031594656 3031594657
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (441 pages)
Collana	Lecture Notes in Business Information Processing, , 1865-1356 ; ; 513
Altri autori (Persone)	de la VaraJose Luis SantosMaribel Yasmina AssarSaid
Disciplina	005.3
Soggetti	Information technology - Management Database management Software engineering Machine learning Information storage and retrieval systems Computer Application in Administrative Data Processing Business Process Management Database Management Software Engineering Machine Learning Information Storage and Retrieval
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

Nota di contenuto

Intro -- Preface -- Organization -- Abstracts of Keynote Talks -- Information Science Research with Large Language Models: Between Science and Fiction -- The Power of Information Systems Shaping the Future of the Automotive Industry -- BPM in the Era of AI and Generative AI: Opportunities and Challenges -- Contents - Part I -- Contents - Part II -- Data and Information Management -- Unified Models and Framework for Querying Distributed Data Across Polystores -- 1 Introduction -- 2 Motivating Example -- 3 Our Proposed Framework -- 3.1 Problem Statement -- 3.2 An Overview of the Framework -- 4 Experiments -- 4.1 Datasets -- 4.2 Developed Framework Modules -- 4.3 Experimental Setup and Protocol -- 4.4 Evaluation of Our Framework Adaptability -- 4.5 Evaluation of Our Framework with Data Volume -- 5 Related Work -- 6 Conclusion -- References -- Enabling Interdisciplinary Research in Open Science: Open Science Data Network -- 1 Introduction -- 2 Related Works -- 3 Open Science and Information Exchange -- 3.1 Formal Notation -- 3.2 Interoperability and Information Exchange -- 3.3 Open Science Information Exchange Quantitative Assessment -- 4 Proposition: The Open Science Data Network -- 4.1 Information Exchange and Interoperability in OSDN -- 4.2 Scalability - Robustness of OSDN -- 5 Experiments -- 5.1 OSDN Network POC -- 5.2 Use Case - An Agronomic Research Project -- 6 Conclusion -- References -- TD-CRESTS: Top-Down Chunk Retrieval Based on Entity, Section, and Topic Selection -- 1 Introduction -- 2 Related Work -- 3 Our Proposal -- 3.1 Contexts Preparation -- 3.2 Text Chunk Retrieval -- 4 Results and Discussion -- 4.1 Experimental Setup -- 4.2 Datasets -- 4.3 Metrics -- 4.4 Experiments -- 5 Conclusion -- References -- Conceptual Modelling and Ontologies -- An Ontology-Driven Solution for Capturing Spatial and Temporal Dynamics in Smart Agriculture. 1 Introduction -- 2 State of the Art -- 3 AGROTS Ontology -- 4 Creating the Knowledge Base -- 5 Ontology Evaluation -- 5.1 Validation Step -- 5.2 Verification Step -- 6 System Architecture -- 7 Conclusions and Future Improvements -- References -- A Knowledge Graph-Based Decision Support System for Resilient Supply Chain Networks -- 1 Introduction -- 2 Related Work -- 3 Methodology -- 4 Challenge of Designing Resilient Supply Chain Networks -- 5 Knowledge Graph Schema for Resilient Supply Chain Networks -- 6 Implementation of the Knowledge Graph Schema for RASSA -- 6.1 Instances -- 6.2 Automatic Reasoning for Manufacturing Risk -- 6.3 Automatic Reasoning for Supply Risk -- 6.4 Automatic Reasoning for Total Risk Propagated Per Supply Chain Node -- 6.5 Automatic Reasoning for Value at Risk -- 7 Findings and Discussion -- 8 Conclusion and Outlook -- References -- A Conceptual Model of Digital Immune System to Increase the Resilience of Technology Ecosystems -- 1 Introduction -- 2 Approach -- 3 Background and Requirements Towards Digital Immune System -- 3.1 ISO 22301: 2019 -- 3.2 ISO/IEC 27001:2022 -- 3.3 The NIST Cybersecurity Framework -- 3.4 European Union Initiatives -- 4 Challenges of IT Resilience, Business Continuity and Managing Techniques -- 4.1 Challenges of IT Resilience and Business Continuity -- 4.2 The Techniques for Monitoring and Managing the Resilience -- 5 Framework and Evaluation -- 5.1 Framework for the Evaluation of Digital Immune System -- 5.2 Case Study -- 6 Discussion and Conclusion -- References -- Requirements and Architecture -- Dealing with Emotional Requirements for Software Ecosystems: Findings and Lessons Learned in the PHArA-ON Project -- 1 Introduction -- 2 The PHArA-ON Project -- 3 A Process for Engineering Emotional Requirements.

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Security -- 1 Introduction -- 2 Research Method -- 3 Identifying Best Practices for Constructing the US4USec Model via an SLR -- 4 Deriving Key Requirements for Constructing the US4USec Model -- 5 Constructing the US4USec Model -- 6 Evaluating the US4USec Model -- 7 Threats to Validity -- 8 Conclusion and Future Work -- References -- Do Cialdini's Persuasion Principles Still Influence Trust and Risk-Taking When Social Engineering is Knowingly Possible? -- 1 Introduction -- 2 Methodology -- 2.1 Recruitment and Data Collection -- 2.2 Measures -- 2.3 Data Analysis -- 3 Results -- 3.1 Descriptive Statistics -- 3.2 Impact of Cialdini's Persuasion Principles on App Installation and Trust -- 3.3 Security Attitude Vs. Risk Taking and Trust Under Cialdini's Principles -- 4 Discussion -- 5 Conclusion -- References -- Classifying Healthcare and Social Organizations in Cybersecurity Profiles -- 1 Introduction -- 2 Background -- 2.1 Definitions -- 2.2 Prior Studies -- 2.3 Cybersecurity Measures -- 3 Methodology -- 3.1 Data Collection -- 3.2 Classification Approach for RQ1 -- 3.3 ANOVA Approach for RQ2 -- 4 Results -- 4.1 Classification of Healthcare and Social Organizations (RQ1) -- 4.2 Differences Between the Cybersecurity Profiles (RQ2) -- 5 Discussion -- 5.1 Scientific Contributions -- 5.2 Practical Implications -- 5.3 Research Limitation and Future Research Directions -- 6 Conclusion -- References -- Sustainability -- A Reference Architecture for Digital Product Passports at Batch Level to Support Manufacturing Supply Chains -- 1 Introduction -- 2 Towards Sustainable Manufacturing Supply Chains -- 3 Component-Based Digital Product Passport -- 3.1 Architectural Analysis of Manufacturing Supply Chain.
3.2 DPP Information Model and Requirements.

Sommario/riassunto

This book constitutes the proceedings of the 18th International Conference on Research Challenges in Information Sciences, RCIS 2024, which took place in Guimarães, Portugal, during May 2024. The scope of RCIS is summarized by the thematic areas of information systems and their engineering. The 25 full papers, 12 Forum and 5 Doctoral Consortium papers included in these proceedings were carefully reviewed and selected from 100 submissions. They were organized in topical sections as follows: Part I: Data and information management; conceptual modelling and ontologies; requirements and architecture; business process management; data and process science; security; sustainability; evaluation and experience studies Part II: Forum papers; doctoral consortium papers.