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   Titolo   Context-Enhanced Information Fusion : Boosting Real-World
                        Performance with Domain Knowledge / / edited by Lauro Snidaro, Jesús
                        García, James Llinas, Erik Blasch

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   Descrizione fisica   1 online resource (XVIII, 703 p. 242 illus., 229 illus. in color.)

   Collana   Advances in Computer Vision and Pattern Recognition, , 2191-6586

   Disciplina   910.285

   Soggetti   Pattern recognition
                        Application software
                        Artificial intelligence
                        Computer simulation
                        Pattern Recognition
                        Information Systems Applications (incl. Internet)
                        Artificial Intelligence
                        Simulation and Modeling

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di bibliografia   Includes bibliographical references at the end of each chapters and
                        index.

   Nota di contenuto   Part I: Foundations -- Context and Fusion: Definitions, Terminology --
                        Part II: Concepts of Context for Fusion -- Formalization of "Context" for
                        Information Fusion -- Context as an Uncertain Source -- Contextual
                        Tracking Approaches in Information Fusion -- Context Assumptions for
                        Threat Assessment Systems -- Context-Aware Knowledge Fusion for
                        Decision Support -- Part III: Systems Philosophy of Contextual Fusion
                        -- System-Level Use of Contextual Information -- Architectural
                        Aspects for Context Exploitation in Information Fusion -- Middleware
                        for Exchange and validation of context data and information --
                        Modeling User Behaviors to Enable Context-Aware Proactive Decision
                        Support -- Part IV: Mathematical Characterization of Context --
                        Supervising the Fusion Process by Context Analysis for Target Tracking
                        -- Context Exploitation for Target Tracking -- Contextual Tracking in

Surface Applications: Algorithms and Design Examples -- Context Relevance for Text Analysis and Enhancement for Soft Information Fusion -- Algorithms for Context Learning and Information Representation for Multi-Sensor Teams -- Part V: Context in Hard/Soft Fusion -- Context for Dynamic and Multi-Level Fusion -- Multi-Level Fusion of Hard and Soft Information for Intelligence -- Context-Based Fusion of Physical and Human Data for Level 5 Information Fusion -- Context Understanding from Query-Based Streaming Video -- Part VI: Applications of Context Approaches to Fusion -- The Role of Context in Multiple Sensor Systems for Public Security -- Entity Association Using Context for Wide-Area Motion Imagery Target Tracking -- Ground Target Tracking Applications: Design Examples for Military and Civil Domains -- Context-Based Situation Recognition in Computer Vision Systems -- Data Fusion Enhanced with Context Information for Road Safety Application -- Context in Robotics and Information Fusion.

| Sommario/riassunto | This interdisciplinary text/reference reviews the fundamental theory and latest methods for including contextual information in fusion process design and implementation. Chapters are contributed by the foremost international experts, spanning numerous developments and applications. The book highlights high- and low-level information fusion problems, performance evaluation under highly demanding conditions, and design principles. A particular focus is placed on holistic approaches that integrate research from different communities, emphasizing the benefit of combining different techniques to overcome the limitations of a single perspective or approach. Topics and features: · Introduces the essential terminology and core elements in information fusion and context, conveyed with the support of the JDL/DFIG data fusion model · Presents key themes for context-enhanced information fusion, including topics derived from target tracking, decision support and threat assessment · Discusses design issues in developing context-aware fusion systems, proposing several architectures optimized for context access and discovery · Provides mathematical grounds for modeling the contextual influences in representative fusion problems, such as sensor quality assessment, target tracking, robotics, and text analysis · Describes the fusion of device-generated (hard) data with human-generated (soft) data · Reviews a diverse range of applications where the exploitation of contextual information in the fusion process boosts system performance This authoritative volume will be of great use to researchers, academics, and practitioners pursuing applications where information fusion offers a solution. The broad coverage will appeal to those involved in a variety of disciplines, from machine learning and data mining, to machine vision, decision support systems, and systems engineering. Dr. Lauro Snidaro is an Assistant Professor in the Department of Mathematics and Computer Science at the University of Udine, Italy. Dr. Jesús García is an Associate Professor in the Computer Science and Engineering Department at the Carlos III University of Madrid, Spain. Dr. James Llinas is an Emeritus Professor in the Department of Industrial and Systems Engineering, and in the Department of Electrical Engineering, at the State University of New York at Buffalo, NY, USA. Dr. Erik Blasch is a Principal Scientist at the Air Force Research Laboratory Information Directorate (AFRL/RIEA) in Rome, NY, USA. The editors and contributors have all been leading experts within the international society of information fusion (www.isif.org). |