

Context-Enhanced Information Fusion

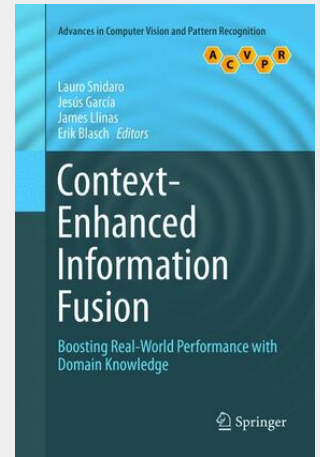
Boosting Real-World Performance with Domain Knowledge

This text 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 approaches that integrate research from different communities, emphasizing the benefit of combining different techniques to overcome the limitations of a single perspective. Features: introduces the terminology and core elements in information fusion and context; presents key themes for context-enhanced information fusion; discusses design issues in developing context-aware fusion systems; provides mathematical grounds for modeling the contextual influences in representative fusion problems; describes the fusion of hard and soft data; reviews a diverse range of applications.

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- 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).



123,04 €

114,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783319804644

Medium: Buch

ISBN: 978-3-319-80464-4

Verlag: Springer International Publishing

Erscheinungstermin: 30.05.2018

Sprache(n): Englisch

Auflage: Softcover Nachdruck of the original 1. Auflage 2016

Serie: Advances in Computer Vision and Pattern Recognition

Produktform: Kartoniert

Gewicht: 12077 g

Seiten: 703

Format (B x H): 155 x 235 mm

