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KEY=INFORMATION - TRISTIN LEVY

HIGH-LEVEL INFORMATION FUSION MANAGEMENT AND SYSTEMS DESIGN

Artech House High-level information fusion is the ability of a fusion system to capture awareness and complex relations, reason over past and future events, utilize direct sensing exploitations and tacit reports, and discern the usefulness and intention of results to meet system-level goals. This authoritative book serves a practical reference for developers, designers, and users of data fusion services that must relate the most recent theory to real-world applications. This unique volume provides alternative methods to represent and model various situations and describes design component implementations of fusion systems. Designers find expert guidance in applying current theories, selecting algorithms and software components, and measuring expected performance of high-level fusion systems.

INFORMATION FUSION AND ANALYTICS FOR BIG DATA AND IOT

Artech House The Internet of Things (IoT) and Big Data are hot topics in the world of intelligence operations and information gathering. This first-of-its-kind volume

reveals the benefits of addressing these topics with the integration of Fusion of Information and Analytics Technologies (FIAT). The book explains how FIAT is materialized into decision support systems that are capable of supporting the prognosis, diagnosis, and prescriptive tasks within complex systems and organizations. This unique resource offers keen insight into how complex systems emerge from the interrelation of social and cognitive information, cyber and physical worlds, and the various models of decision-making and situational awareness. Practitioners also discover the central notions of analytics and information fusion. Moreover the book introduces propos such as integration through a FIAT computational model and applications at the systems level. This book concludes with a list of prospective research activities that can contribute towards the required FIAT integration for critical application domains such as: energy, health, transport and defense and security.

CONTEXT-ENHANCED INFORMATION FUSION

BOOSTING REAL-WORLD PERFORMANCE WITH DOMAIN KNOWLEDGE

Springer 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.

ADVANCES AND APPLICATIONS OF DSMT FOR INFORMATION FUSION, VOL. IV

COLLECTED WORKS

Infinite Study The fourth volume on Advances and Applications of Dezert-Smarandache Theory (DSmT) for information fusion collects theoretical and applied contributions of researchers working in different fields of applications and in mathematics. The contributions (see List of Articles published in this book, at the end of the volume) have been published or presented after disseminating the third volume (2009, http://fs.gallup.unm.edu/DSmT-book3.pdf) ininternational conferences, seminars, workshops and journals.

FUSION METHODOLOGIES IN CRISIS MANAGEMENT

HIGHER LEVEL FUSION AND DECISION MAKING

Springer The book emphasizes a contemporary view on the role of higher level fusion in designing crisis management systems, and provide the formal foundations, architecture and implementation strategies required for building dynamic current and future situational pictures, challenges of, and the state of the art computational approaches to designing such processes. This book integrates recent advances in decision theory with those in fusion methodology to define an end-to-end framework for decision support in crisis management. The text discusses modern fusion and decision support methods for dealing with heterogeneous and often unreliable, low fidelity, contradictory, and redundant data and information, as well as rare, unknown, unconventional or even unimaginable critical situations. Also the book examines the role of context in situation management, cognitive aspects of decision making and situation management, approaches to domain representation, visualization, as well as the role and exploitation of the social media. The editors include examples and case studies from the field of disaster management.

HIGH-LEVEL DATA FUSION

Artech House The book explores object and situation fusion processes with an appropriate handling of uncertainties, and applies cutting-edge artificial intelligence and emerging technologies like particle filtering, spatiotemporal clustering, net-centricity, agent formalism, and distributed fusion together with essential Level 1 techniques and Level 1/2 interactions.

MEETING SECURITY CHALLENGES THROUGH DATA ANALYTICS AND DECISION SUPPORT

IOS Press The sheer quantity of widely diverse data which now results from multiple sources presents a problem for decision-makers and analysts, who are finding it impossible to cope with the ever-increasing flow of material. This has potentially serious consequences for the quality of decisions and operational processes in areas such as counterterrorism and security. This book presents the papers delivered at the NATO Advanced Research Workshop (ARW) 'Meeting Security Challenges through Data Analytics and Decision Support', held in Aghveran, Armenia, in June 2015. The aim of the conference was to promote and enhance cooperation and dialogue between NATO and Partner countries on the subject of effective decision support for security applications. The attendance of many leading scientists from a variety of backgrounds and disciplines provided the opportunity to improve mutual understanding, as well as cognizance of the specific requirements and issues of Cyber Physical Social Systems (CPPS) and the technical advances pertinent to all collaborative human-centric information support systems in a variety of applications. The book is divided into 3 sections: counter terrorism: methodology and applications; maritime and border security; and cyber security, and will be of interest to all those involved in decision-making processes based on the analysis of big data.

RELATIONAL CALCULUS FOR ACTIONABLE KNOWLEDGE

Springer Nature This book focuses on one of the major challenges of the newly created scientific domain known as data science: turning data into actionable knowledge in order to exploit increasing data volumes and deal with their inherent complexity. Actionable knowledge has been qualitatively and intensively studied in management, business, and the social sciences but in computer science and engineering, its connection has only recently been established to data mining and its evolution, 'Knowledge Discovery and Data Mining' (KDD). Data mining seeks to extract interesting patterns from data, but, until now, the patterns discovered from data have not always been 'actionable' for decision-makers in Socio-Technical Organizations (STO). With the evolution of the Internet and connectivity, STOs have evolved into Cyber-Physical and Social Systems (CPSS) that are known to describe our world today. In such complex and dynamic environments, the conventional KDD process is insufficient, and additional processes are required to transform complex data into actionable knowledge. Readers are presented with advanced knowledge concepts and the analytics and information fusion (AIF) processes aimed at delivering actionable knowledge. The authors provide an understanding of the concept of 'relation' and its exploitation, relational calculus, as well as the formalization of specific dimensions of knowledge that achieve a semantic growth along the AIF processes. This book serves as an important technical presentation of relational calculus and its application to processing chains in order to generate actionable knowledge. It is ideal for graduate students, researchers, or industry professionals interested in decision science and knowledge engineering.

HIGH PERFORMANCE CLOUD AUDITING AND APPLICATIONS

Springer Science & Business Media This book mainly focuses on cloud security and high performance computing for cloud auditing. The book discusses emerging challenges and techniques developed for high performance semantic cloud auditing, and presents the state of the art in cloud auditing, computing and security techniques with focus on technical aspects and feasibility of auditing issues in federated cloud computing environments. In summer 2011, the United States Air Force Research Laboratory (AFRL) CyberBAT Cloud Security and Auditing Team initiated the exploration of the cloud security challenges and future cloud auditing research directions that are covered in this book. This work was supported by the United States government funds from the Air Force Office of Scientific Research (AFOSR), the AFOSR Summer Faculty Fellowship Program (SFFP), the Air Force Research Laboratory (AFRL) Visiting Faculty Research Program (VFRP), the National Science Foundation (NSF) and the National Institute of Health (NIH). All chapters were partially supported by the AFOSR Information Operations and Security Program extramural and intramural funds (AFOSR/RSL Program Manager: Dr. Robert Herklotz). Key Features: · Contains surveys of cyber threats and security issues in cloud computing and presents secure cloud architectures · Presents in-depth cloud auditing techniques, federated cloud security architectures, cloud access control models, and access assured information sharing technologies · Outlines a wide range of challenges and provides solutions to manage and control very large and complex

data sets

CONTEXT ASSUMPTIONS FOR THREAT ASSESSMENT SYSTEMS

Infinite Study Decision support systems enable users to quickly assess data, but they require significant resources to develop and are often relevant to limited domains. This chapter identifies the implicit assumptions that require contextual analysis for decision support systems to be effective for providing a relevant threat assessment.

ENGINEERING ARTIFICIALLY INTELLIGENT SYSTEMS

A SYSTEMS ENGINEERING APPROACH TO REALIZING SYNERGISTIC CAPABILITIES

Springer Nature Many current AI and machine learning algorithms and data and information fusion processes attempt in software to estimate situations in our complex world of nested feedback loops. Such algorithms and processes must gracefully and efficiently adapt to technical challenges such as data quality induced by these loops, and interdependencies that vary in complexity, space, and time. To realize effective and efficient designs of computational systems, a Systems Engineering perspective may provide a framework for identifying the interrelationships and patterns of change between components rather than static snapshots. We must study cascading interdependencies through this perspective to understand their behavior and to successfully adopt complex system-of-systems in society. This book derives in part from the presentations given at the AAAI 2021 Spring Symposium session on Leveraging Systems Engineering to Realize Synergistic AI / Machine Learning Capabilities. Its 16 chapters offer an emphasis on pragmatic aspects and address topics in systems engineering; AI, machine learning, and reasoning; data and information fusion; intelligent systems; autonomous systems; interdependence and teamwork; human-computer interaction; trust; and resilience.

DEEP LEARNING FOR RADAR AND COMMUNICATIONS AUTOMATIC TARGET RECOGNITION

Artech House This authoritative resource presents a comprehensive illustration of modern Artificial Intelligence / Machine Learning (AI/ML) technology for radio frequency (RF) data exploitation. It identifies technical challenges, benefits, and directions of deep learning (DL) based object classification using radar data, including synthetic aperture radar (SAR) and high range resolution (HRR) radar. The performance of AI/ML algorithms is provided from an overview of machine learning (ML) theory that includes history, background primer, and examples. Radar data issues of collection, application, and examples for SAR/HRR data and communication signals analysis are discussed. In addition, this book presents practical considerations of deploying such techniques, including performance evaluation, energy-efficient computing, and the future unresolved issues.

SENSOR MANAGEMENT IN ISR

Artech House This innovative resource is the first book that partitions the intelligence, surveillance and reconnaissance (ISR) sensor management process into partitioned functions that can be studied and optimized independently of each other through defined conceptual interfaces. The book explains the difference between situation information and sensor information and how to compute both. The information-based sensor management (IBSM) approach to real-time orchestrated resource management (ORM) of intelligence, surveillance, and reconnaissance (ISR) assets in the physical, cyber, and social domains are detailed. The integrating concept of mission value through use of goal lattice (GL) methodology is explored. Approaches to implementing real-time sensor management (SM) systems by applying advanced information-based approaches that consider contextual situation and optimization of diverse sensor capabilities for information-based objectives are also covered. These methods have applications in physical intelligence, surveillance, and reconnaissance (ISR), as well as in cyber, and social domains. Based on 30 years of research in developing a mission-valued approach to maximizing the transfer of information from real, cyber, and social environments into a mission-valued, probabilistic representation of that environment on which decision makers can formulate actions, this is the only book that addresses real-time management of ISR from a first principles approach (information theory), and how information theory can be applied to the design and development of ISR systems.

DATA SCIENCE IN PRACTICE

Springer This book approaches big data, artificial intelligence, machine learning, and business intelligence through the lens of Data Science. We have grown accustomed to seeing these terms mentioned time and time again in the mainstream media. However, our understanding of what they actually mean often remains limited. This book provides a general overview of the terms and approaches used broadly in data science, and provides detailed information on the underlying theories, models, and application scenarios. Divided into three main parts, it addresses what data science is; how and where it is used; and how it can be implemented using modern open source software. The book offers an essential guide to modern data science for all students, practitioners, developers and managers seeking a deeper understanding of how various aspects of data science work, and of how they can be employed to gain a competitive advantage.

COGNITIVE ELECTRONIC WARFARE: AN ARTIFICIAL INTELLIGENCE APPROACH

Artech House This comprehensive book gives an overview of how cognitive systems and artificial intelligence (AI) can be used in electronic warfare (EW). Readers will learn how EW systems respond more quickly and effectively to battlefield conditions where sophisticated radars and spectrum congestion put a high priority on EW systems that can characterize and classify novel waveforms, discern intent, and devise and test countermeasures. Specific techniques are covered for optimizing a cognitive EW system as well as evaluating its ability to learn new information in real

time. The book presents AI for electronic support (ES), including characterization, classification, patterns of life, and intent recognition. Optimization techniques, including temporal tradeoffs and distributed optimization challenges are also discussed. The issues concerning real-time in-mission machine learning and suggests some approaches to address this important challenge are presented and described. The book covers electronic battle management, data management, and knowledge sharing. Evaluation approaches, including how to show that a machine learning system can learn how to handle novel environments, are also discussed. Written by experts with first-hand experience in AI-based EW, this is the first book on in-mission real-time learning and optimization.

DATA FUSION FOR SITUATION MONITORING, INCIDENT DETECTION, ALERT AND RESPONSE MANAGEMENT

IOS Press Data Fusion is a very broad interdisciplinary technology domain. It provides techniques and methods for; integrating information from multiple sources and using the complementarities of these detections to derive maximum information about the phenomenon being observed; analyzing and deriving the meaning of these observations and predicting possible consequences of the observed state of the environment; selecting the best course of action; and controlling the actions. Here, the focus is on the more mature phase of data fusion, namely the detection and identification / classification of phenomena being observed and exploitation of the related methods for Security-Related Civil Science and Technology (SST) applications. It is necessary to; expand on the data fusion methodology pertinent to Situation Monitoring, Incident Detection, Alert and Response Management; discuss some related Cognitive Engineering and visualization issues; provide an insight into the architectures and methodologies for building a data fusion system; discuss fusion approaches to image exploitation with emphasis on security applications; discuss novel distributed tracking approaches as a necessary step of situation monitoring and incident detection; and provide examples of real situations, in which data fusion can enhance incident detection, prevention and response capability. In order to give a logical presentation of the data fusion material, first the general concepts are highlighted (Fusion Methodology, Human Computer Interactions and Systems and Architectures), closing with several applications (Data Fusion for Imagery, Tracking and Sensor Fusion and Applications and Opportunities for Fusion).

HARBOUR PROTECTION THROUGH DATA FUSION TECHNOLOGIES

Springer Science & Business Media An Advanced Research Workshop (ARW) “Data Fusion Technologies for Harbour Protection” was held in Tallinn, Estonia 27 June–1 July, 2005. This workshop was organized by request of the NATO Security Through Science Programme and the Defence Investment Division. An ARW is one of many types of funded group support mechanisms established by the NATO Science Committee to contribute to the critical assessment of existing knowledge on new important topics, to identify directions for future research, and to promote close working relationships between scientists from different countries and with different professional experiences. The NATO Science Committee was approved at a meeting

of the Heads of Government of the Alliance in December 1957, subsequent to the 1956 recommendation of “Three Wise Men” – Foreign Ministers Lange (Norway), Martino (Italy) and Pearson (Canada) on Non-Military Cooperation in NATO. The NATO Science Committee established the NATO Science Programme in 1958 to encourage and support scientific collaboration between individual scientists and to foster scientific development in its member states. In 1999, following the end of the Cold War, the Science Programme was transformed so that support is now devoted to collaboration between Partner-country and NATO-country scientists or to contributing towards research support in Partner countries. Since 2004, the Science Programme was further modified to focus exclusively on NATO Priority Research Topics (i. e. Defence Against Terrorism or Countering Other Threats to Security) and also preferably on a Partner country priority area.

INFORMATION SYSTEMS AND MANAGEMENT IN MEDIA AND ENTERTAINMENT INDUSTRIES

Springer This book defines an agenda for research in information management and systems for media and entertainment industries. It highlights their particular needs in production, distribution, and consumption. Chapters are written by practitioners and researchers from around the world, who examine business information management and systems in the larger context of media and entertainment industries. Human, management, technological, and content creation aspects are covered in order to provide a unique viewpoint. With great interdisciplinary scope, the book provides a roadmap of research challenges and a structured approach for future development across areas such as social media, eCommerce, and eBusiness. Chapters address the tremendous challenges in organization, leadership, customer behavior, and technology that face the entertainment and media industries every day, including the transformation of the analog media world into its digital counterpart. Professionals or researchers involved with IT systems management, information policies, technology development or content creation will find this book an essential resource. It is also a valuable tool for academics or advanced-level students studying digital media or information systems.

HUMAN SYSTEMS INTEGRATION TO ENHANCE MARITIME DOMAIN AWARENESS FOR PORT/HARBOUR SECURITY

IOS Press The multidisciplinary Advanced Research Workshp (ARW) entitled "Human Systems Integration to Enhance Maritime Domain Awareness for Port/Harbour Security" brought together experts in the domains of Harbour/Port Security and Human Factors, as well as Knowledge Management, Knowledge Exploitation and Decision Support Technologies from the NATO, NATO Partner and Mediterranean Dialogue Countries, who presented and discussed various aspects of the problems of enhancing Maritime Domain Awareness in Harbours/Ports through application of Human-System Integration and advanced technologies. Presentations by domain, human factors and technology experts were devoted to enhance understanding of the problems, approaches, methodology and technical language used in various disciplines related to designing harbour security systems and integration of human

factors in such systems. This volume comprises contributions by these lecturers and investigative reports by the working groups of the process, organizations and technology requirements to meet challenges of the seaport infrastructure security.

INFORMATION QUALITY IN INFORMATION FUSION AND DECISION MAKING

Springer This book presents a contemporary view of the role of information quality in information fusion and decision making, and provides a formal foundation and the implementation strategies required for dealing with insufficient information quality in building fusion systems for decision making. Information fusion is the process of gathering, processing, and combining large amounts of information from multiple and diverse sources, including physical sensors to human intelligence reports and social media. That data and information may be unreliable, of low fidelity, insufficient resolution, contradictory, fake and/or redundant. Sources may provide unverified reports obtained from other sources resulting in correlations and biases. The success of the fusion processing depends on how well knowledge produced by the processing chain represents reality, which in turn depends on how adequate data are, how good and adequate are the models used, and how accurate, appropriate or applicable prior and contextual knowledge is. By offering contributions by leading experts, this book provides an unparalleled understanding of the problem of information quality in information fusion and decision-making for researchers and professionals in the field.

MULTISENSOR DATA FUSION

FROM ALGORITHMS AND ARCHITECTURAL DESIGN TO APPLICATIONS

CRC Press Multisensor Data Fusion: From Algorithms and Architectural Design to Applications covers the contemporary theory and practice of multisensor data fusion, from fundamental concepts to cutting-edge techniques drawn from a broad array of disciplines. Featuring contributions from the world’s leading data fusion researchers and academicians, this authoritative book: Presents state-of-the-art advances in the design of multisensor data fusion algorithms, addressing issues related to the nature, location, and computational ability of the sensors Describes new materials and achievements in optimal fusion and multisensor filters Discusses the advantages and challenges associated with multisensor data fusion, from extended spatial and temporal coverage to imperfection and diversity in sensor technologies Explores the topology, communication structure, computational resources, fusion level, goals, and optimization of multisensor data fusion system architectures Showcases applications of multisensor data fusion in fields such as medicine, transportation's traffic, defense, and navigation Multisensor Data Fusion: From Algorithms and Architectural Design to Applications is a robust collection of modern multisensor data fusion methodologies. The book instills a deeper understanding of the basics of multisensor data fusion as well as a practical knowledge of the problems that can be faced during its execution.

PREDICTION AND RECOGNITION OF PIRACY EFFORTS USING COLLABORATIVE HUMAN-CENTRIC INFORMATION SYSTEMS

IOS Press Maritime piracy is the cause of widespread international concern, and the number of pirate attacks has increased substantially in recent years. Many commercial vessels are inherently vulnerable to attack because of their size and relative slowness, and technological improvements have resulted in smaller crews on large vessels, whilst the absence of enforcement agencies in international waters has served only to make pirates more daring. Collaborative human-centric information support systems can significantly improve the ability of every nation to predict and prevent pirate attacks, or to recognize the nature and size of an

HUMAN INTERFACE AND THE MANAGEMENT OF INFORMATION. INFORMATION AND KNOWLEDGE IN CONTEXT

17TH INTERNATIONAL CONFERENCE, HCI INTERNATIONAL 2015, LOS ANGELES, CA, USA, AUGUST 2-7, 2015, PROCEEDINGS, PART II

Springer The two-volume set LNCS 9172 and 9173 constitutes the refereed proceedings of the Human Interface and the Management of Information thematic track, held as part of the 17th International Conference on Human-Computer Interaction, HCII 2015, held in Los Angeles, CA, USA, in August 2015, jointly with 15 other thematically similar conferences. The total of 1462 papers and 246 posters presented at the HCII 2015 conferences were carefully reviewed and selected from 4843 submissions. These papers address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The papers accepted for presentation thoroughly cover the entire field of human-computer interaction, addressing major advances in knowledge and effective use of computers in a variety of application areas. This volume contains papers addressing the following major topics: context modelling and situational awareness; decision-support systems; information and interaction for driving; information and interaction for learning and education; information and interaction for culture and art; supporting work and collaboration; information and interaction for safety, security and reliability; information and interaction for novel advanced environments.

ENVIRONMENTAL INFORMATION SYSTEMS

Springer Science & Business Media Environmental information systems (EIS) are concerned with the management of data about the soil, the water, the air, and the species in the world around us. This first textbook on the topic gives a conceptual framework for EIS by structuring the data flow into 4 phases: data capture, storage, analysis, and metadata management. This flow corresponds to a complex aggregation process gradually transforming the incoming raw data into concise documents suitable for high-level decision support. All relevant concepts are covered, including statistical classification, data fusion, uncertainty management, knowledge based systems, GIS, spatial databases, multidimensional access methods, object-oriented databases, simulation models, and Internet-based information management. Several case studies present EIS in practice.

RESOURCE MANAGEMENT FOR BIG DATA PLATFORMS

ALGORITHMS, MODELLING, AND HIGH-PERFORMANCE COMPUTING TECHNIQUES

Springer Serving as a flagship driver towards advance research in the area of Big Data platforms and applications, this book provides a platform for the dissemination of advanced topics of theory, research efforts and analysis, and implementation oriented on methods, techniques and performance evaluation. In 23 chapters, several important formulations of the architecture design, optimization techniques, advanced analytics methods, biological, medical and social media applications are presented. These chapters discuss the research of members from the ICT COST Action IC1406 High-Performance Modelling and Simulation for Big Data Applications (cHiPSet). This volume is ideal as a reference for students, researchers and industry practitioners working in or interested in joining interdisciplinary works in the areas of intelligent decision systems using emergent distributed computing paradigms. It will also allow newcomers to grasp the key concerns and their potential solutions.

POSSIBILITY THEORY FOR THE DESIGN OF INFORMATION FUSION SYSTEMS

Springer Nature This practical guidebook describes the basic concepts, the mathematical developments, and the engineering methodologies for exploiting possibility theory for the computer-based design of an information fusion system where the goal is decision support for industries in smart ICT (information and communications technologies). This exploitation of possibility theory improves upon probability theory, complements Dempster-Shafer theory, and fills an important gap in this era of Big Data and Internet of Things. The book discusses fundamental possibilistic concepts: distribution, necessity measure, possibility measure, joint distribution, conditioning, distances, similarity measures, possibilistic decisions, fuzzy sets, fuzzy measures and integrals, and finally, the interrelated theories of uncertainty..uncertainty. These topics form an essential tour of the mathematical tools needed for the latter chapters of the book. These chapters present applications related to decision-making and pattern recognition schemes, and finally, a concluding chapter on the use of possibility theory in the overall challenging design of an information fusion system. This book will appeal to researchers and professionals in the field of information fusion and analytics, information and knowledge processing, smart ICT, and decision support systems.

OPEN INFORMATION MANAGEMENT: APPLICATIONS OF INTERCONNECTIVITY AND COLLABORATION

APPLICATIONS OF INTERCONNECTIVITY AND COLLABORATION

IGI Global Discusses the impact of emerging trends in information technology towards solutions capable of managing information within open, principally unbounded, operational environments.

PROCEEDINGS ON 25TH INTERNATIONAL JOINT CONFERENCE ON INDUSTRIAL ENGINEERING AND OPERATIONS MANAGEMENT – IJCIEOM

THE NEXT GENERATION OF PRODUCTION AND SERVICE SYSTEMS

Springer Nature This book presents the conference proceedings of the 25th edition of the International Joint Conference on Industrial Engineering and Operations Management. The conference is organized by 6 institutions (from different countries and continents) that gather a large number of members in the field of operational management, industrial engineering and engineering management. This edition of the conference had the title: THE NEXT GENERATION OF PRODUCTION AND SERVICE SYSTEMS in order to emphasis unpredictable and very changeable future. This conference is aimed to enhance connection between academia and industry and to gather researchers and practitioners specializing in operation management, industrial engineering, engineering management and other related disciplines from around the world.

FUSION ...

PROCEEDINGS OF THE ... INTERNATIONAL CONFERENCE ON INFORMATION FUSION

HANDBOOK OF MULTISENSOR DATA FUSION

THEORY AND PRACTICE, SECOND EDITION

CRC Press In the years since the bestselling first edition, fusion research and applications have adapted to service-oriented architectures and pushed the boundaries of situational modeling in human behavior, expanding into fields such as chemical and biological sensing, crisis management, and intelligent buildings. Handbook of Multisensor Data Fusion: Theory and Practice, Second Edition represents the most current concepts and theory as information fusion expands into the realm of network-centric architectures. It reflects new developments in distributed and detection fusion, situation and impact awareness in complex applications, and human cognitive concepts. With contributions from the world’s leading fusion experts, this second edition expands to 31 chapters covering the fundamental theory and cutting-edge developments that are driving this field. New to the Second Edition— · Applications in electromagnetic systems and chemical and biological sensors · Army command and combat identification techniques · Techniques for automated reasoning · Advances in Kalman filtering · Fusion in a network centric environment · Service-oriented architecture concepts · Intelligent agents for improved decision making · Commercial off-the-shelf (COTS) software tools From basic information to state-of-the-art theories, this second edition continues to be a unique, comprehensive, and up-to-date resource for data fusion systems designers.

MULTISENSOR, MULTISOURCE INFORMATION FUSION-- ARCHITECTURES, ALGORITHMS, AND APPLICATIONS ...

SENSOR INTEGRATION, MANAGEMENT AND DATA FUSION CONCEPTS IN A NAVAL COMMAND AND CONTROL PERSPECTIVE

The aim of this document is to present a framework for addressing sensor integration, management, and data fusion (three distinct aspects of the co-ordinated use of sensor assets to support naval operations) in the perspective of their relationship to command & control. After an introduction on data fusion, chapter 2 discusses the use of sensing techniques to tackle the problem of perception in military systems. Chapter 3 discusses multi-sensor data fusion in the context of the overall data fusion domain. The data fusion hierarchy is described, where each succeeding level of processing deals with a higher level of abstraction. How to best manage, co-ordinate, and organize the use of sensing resources in a multi-sensor system in a manner that improves the process of data fusion synergistically, and ultimately that of perception, defines the sensor management problem discussed in chapter 4. Sensor integration, a complementary concept to sensor management and data fusion, is briefly described in chapter 5. This concept is essentially concerned with two main aspects: maximization of each individual sensor output through synergistic co-operation with other members of the sensor suite, and combat system management to avoid or at least minimize inadvertent interference of one sensor system by another. Finally, chapter 6 introduces concepts related to shipboard command & control information systems and the warfare areas (such as anti-air and anti-surface warfare) and raises issues related to conflict management in the optimization of the various levels of the shipboard combat system decision tree. A tentative definition of a set of integration rules or guidelines is provided for any low level integration to be in line with the decisions made at higher levels.

INTELLIGENT DATA MINING AND FUSION SYSTEMS IN AGRICULTURE

Academic Press Intelligent Data Mining and Fusion Systems in Agriculture presents methods of computational intelligence and data fusion that have applications in agriculture for the non-destructive testing of agricultural products and crop condition monitoring. Sections cover the combination of sensors with artificial intelligence architectures in precision agriculture, including algorithms, bio-inspired hierarchical neural maps, and novelty detection algorithms capable of detecting sudden changes in different conditions. This book offers advanced students and entry-level professionals in agricultural science and engineering, geography and geoinformation science an in-depth overview of the connection between decision-making in agricultural operations and the decision support features offered by advanced computational intelligence algorithms. Covers crop protection, automation in agriculture, artificial intelligence in agriculture, sensing and Internet of Things (IoTs) in agriculture Addresses AI use in weed management, disease detection, yield prediction and crop production Utilizes case studies to provide real-world insights and direction

SENSOR AND DATA FUSION

A TOOL FOR INFORMATION ASSESSMENT AND DECISION MAKING

SPIE Press This book illustrates the benefits of sensor fusion by considering the characteristics of infrared, microwave, and millimeter-wave sensors, including the influence of the atmosphere on their performance. Applications that benefit from this technology include: vehicular traffic management, remote sensing, target classification and tracking- weather forecasting- military and homeland defense. Covering data fusion algorithms in detail, Klein includes a summary of the information required to implement each of the algorithms discussed, and outlines system application scenarios that may limit sensor size but that require high resolution data.

ADVANCES IN SAFETY MANAGEMENT AND HUMAN FACTORS

PROCEEDINGS OF THE AHFE 2016 INTERNATIONAL CONFERENCE ON SAFETY MANAGEMENT AND HUMAN FACTORS , JULY 27-31, 2016, WALT DISNEY WORLD®, FLORIDA, USA

Springer This book discusses the latest findings towards ensuring people’s safety, health, and welfare at work. It crosses different disciplines, such as work physiology, health informatics, workplace design, injury prevention, and occupational psychology. It presents new strategies for safety management, including accident prevention methods, such as performance testing and participatory ergonomics. The book, which is based on the AHFE 2016 International Conference on Safety Management and Human Factors, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, provides readers, including decision makers in government and public authorities, with a timely snapshot of the state of the art in the field of safety, health and welfare management. It also addresses agencies such as OSHA and NIOSH as well as other professionals dealing with occupational safety and health.

DEFENSE TRANSFORMATION AND NETWORK-CENTRIC SYSTEMS

INTEGRATED SYSTEM HEALTH MANAGEMENT

PERSPECTIVES ON SYSTEMS ENGINEERING TECHNIQUES

Academic Press ISHM is an innovative combination of technologies and methods that offers solutions to the reliability problems caused by increased complexities in design, manufacture, use conditions, and maintenance. Its key strength is in the successful integration of reliability (quantitative estimation of successful operation or failure), "diagnosibility" (ability to determine the fault source), and maintainability (how to maintain the performance of a system in operation). It draws on engineering issues such as advanced sensor monitoring, redundancy management, probabilistic reliability theory, artificial intelligence for diagnostics and prognostics, and formal validation methods, but also "quasi-technical" techniques and disciplines such as quality assurance, systems architecture and engineering, knowledge capture,

information fusion, testability and maintainability, and human factors. This groundbreaking book defines and explains this new discipline, providing frameworks and methodologies for implementation and further research. Each chapter includes experiments, numerical examples, simulations and case studies. It is the ideal guide to this crucial topic for professionals or researchers in aerospace systems, systems engineering, production engineering, and reliability engineering. Solves prognostic information selection and decision-level information fusion issues Presents integrated evaluation methodologies for complex aerospace system health conditions and software system reliability assessment Proposes a framework to perform fault diagnostics with a distributed intelligent agent system and a data mining approach for multistate systems Explains prognostic methods that combine both the qualitative system running state prognostics and the quantitative remaining useful life prediction

DISTRIBUTED DATA FUSION FOR NETWORK-CENTRIC OPERATIONS

CRC Press With the recent proliferation of service-oriented architectures (SOA), cloud computing technologies, and distributed-interconnected systems, distributed fusion is taking on a larger role in a variety of applications—from environmental monitoring and crisis management to intelligent buildings and defense. Drawing on the work of leading experts around the world, Distributed Data Fusion for Network-Centric Operations examines the state of the art of data fusion in a distributed sensing, communications, and computing environment. Get Insight into Designing and Implementing Data Fusion in a Distributed Network Addressing the entirety of information fusion, the contributors cover everything from signal and image processing, through estimation, to situation awareness. In particular, the work offers a timely look at the issues and solutions involving fusion within a distributed network enterprise. These include critical design problems, such as how to maintain a pedigree of agents or nodes that receive information, provide their contribution to the dataset, and pass to other network components. The book also tackles dynamic data sharing within a network-centric enterprise, distributed fusion effects on state estimation, graph-theoretic methods to optimize fusion performance, human engineering factors, and computer ontologies for higher levels of situation assessment. A comprehensive introduction to this emerging field and its challenges, the book explores how data fusion can be used within grid, distributed, and cloud computing architectures. Bringing together both theoretical and applied research perspectives, this is a valuable reference for fusion researchers and practitioners. It offers guidance and insight for those working on the complex issues of designing and implementing distributed, decentralized information fusion.

SENSOR AND DATA FUSION CONCEPTS AND APPLICATIONS

Society of Photo Optical First published in 1993, this Tutorial Text has been revised and updated to provide explanations and examples of data fusion algorithms in areas not covered in the first edition. These include Bayesian inference, artificial neural networks and fuzzy logic. All of the chapters in the first edition have been revised and updated and new material is included on the FASCODE and MODTRAN

atmospheric models, and EOSAEL, which analyzes physical processes that affect the performance of millimeter-wave and IR sensors.

SENSOR FUSION: ARCHITECTURES, ALGORITHMS, AND APPLICATIONS