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KEY=SYMPOSIUM, - ARIANA FARRELL

Advances in Visual Computing

6th International Symposium, ISVC 2010, Las Vegas, NV, USA, November 29-December 1, 2010, Proceedings

Springer Science & Business Media The three volume set LNCS 6453, LNCS 6454, and LNCS 6455 constitutes the refereed proceedings of the 6th International Symposium on Visual Computing, ISVC 2010, held in Las Vegas, NV, USA, in November/December 2010. The 93 revised full papers and 73 poster papers presented together with 44 full and 6 poster papers of 7 special tracks were carefully reviewed and selected from more than 300 submissions. The papers of part I (LNCS 6453) are organized in computational bioimaging, computer graphics, behavior detection and modeling, low-level color image processing, feature extraction and matching, visualization, motion and tracking, unconstrained biometrics: advances and trends, 3D mapping, modeling and surface reconstruction, and virtual reality. Part II (LNCS 6454) comprises topics such as calibration, pose estimation, and reconstruction, segmentation, stereo, registration, medical imaging, low cost virtual reality: expanding horizons, best practices in teaching visual computing, applications, and video analysis and event recognition. Part III (LNCS 6455) mainly contains papers of the poster session and concludes with contributions addressing visualization, as well as motion and tracking.

Advances in Visual Computing

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Advances in Visual Computing

6th International Symposium, ISVC 2010, Las Vegas, NV, USA, November 29 - December 1, 2010, Proceedings, Part III

Springer It is with great pleasure that we present the proceedings of the 6th International Symposium on Visual Computing (ISVC 2010), which was held in Las Vegas, Nevada. ISVC provides a common umbrella for the four main areas of visual computing including vision, graphics, visualization, and virtual reality. The goal is to provide a forum for researchers, scientists, engineers, and practitioners throughout the world to present their latest research findings, ideas, developments, and applications in the broader area of visual computing. This year, the program consisted of 14 oral sessions, one poster session, 7 special tracks, and 6 keynote presentations. The response to the call for papers was very good; we received over 300 submissions for the main symposium from which we accepted 93 papers for oral presentation and 73 papers for poster presentation. Special track papers were solicited separately through the Organizing and Program Committees of each track. A total of 44 papers were accepted for oral presentation and 6 papers for poster presentation in the special tracks.

Eye Tracking and Visualization

Foundations, Techniques, and Applications. ETVIS 2015

Springer This book discusses research, methods, and recent developments in the interdisciplinary field that spans research in visualization, eye tracking, human-computer interaction, and psychology. It presents extended versions of papers from the First Workshop on Eye Tracking and Visualization (ETVIS), which was organized as a workshop of the IEEE VIS Conference 2015. Topics include visualization and visual analytics of eye-tracking data, metrics and cognitive models, eye-tracking experiments in the context of visualization interfaces, and eye tracking in 3D and immersive environments. The extended ETVIS papers are complemented by a chapter offering an overview of visualization approaches for analyzing eye-tracking data and a chapter that discusses electrooculography (EOG) as an alternative of acquiring information about eye movements. Covering scientific visualization, information visualization, and visual analytics, this book is a valuable resource for eye-tracking researchers within the visualization community.

Advances in Visual Computing

7th International Symposium, ISVC 2011, Las Vegas, NV, USA, September 26-28, 2011. Proceedings, Part II

Springer The two volume set LNCS 6938 and LNCS 6939 constitutes the refereed proceedings of the 7th International Symposium on Visual Computing, ISVC 2011, held in Las Vegas, NV, USA, in September 2011. The 68 revised full papers and 46 poster papers presented together with 30 papers in the special tracks were carefully reviewed and selected from more than 240 submissions. The papers of part I (LNCS 6938) are organized in computational bioimaging, computer graphics, motion and tracking, segmentation, visualization; mapping modeling and surface reconstruction, biomedical imaging, computer graphics, interactive visualization in novel and heterogeneous display environments, object detection and recognition. Part II (LNCS 6939) comprises topics such as immersive visualization, applications, object detection and recognition, virtual reality, and best practices in teaching visual computing.

Social Signal Processing

Cambridge University Press This book provides comprehensive, authoritative surveys covering the modeling, automatic detection, analysis, and synthesis of nonverbal social signals.

Iris Biometrics

From Segmentation to Template Security

Springer Science & Business Media *Iris Biometrics: From Segmentation to Template Security* provides critical analysis, challenges and solutions on recent iris biometric research topics, including image segmentation, image compression, watermarking, advanced comparators, template protection and more. Open source software is also provided on a dedicated website which includes feature extraction, segmentation and matching schemes applied in this book to foster scientific exchange. Current state-of-the-art approaches accompanied by comprehensive experimental evaluations are presented as well. This book has been designed as a secondary text book or reference for researchers and advanced-level students in computer science and electrical engineering. Professionals working in this related field will also find this book useful as a reference.

Beyond Representation

Philosophy and Poetic Imagination

Cambridge University Press The essays in this volume explore the ways in which traditional philosophical problems about self-knowledge, self-identity, and value have migrated into literature since the Romantic and Idealist periods. How do so-called literary works take up these problems in a new way? What conception of the subject is involved in this literary practice? How are the lines of demarcation between philosophy and literature problematized. The contributors examine these issues with reference both to Romantic and Idealist writers and to some of their subsequent literary and philosophical inheritors and revisers. Their essays offer a philosophical understanding of the roots and nature of contemporary literary and philosophical practice, and elaborate powerful and influential, but rarely decisively articulated, conceptions of the human subject and of value.

Computer Information Systems and Industrial Management

18th International Conference, CISIM 2019, Belgrade, Serbia, September 19–21, 2019, Proceedings

Springer Nature This book constitutes the proceedings of the 18th International Conference on Computer Information Systems and Industrial Management Applications, CISIM 2019, held in Belgrade, Serbia, in September 2019. The 43 full papers presented together with 3 abstracts of keynotes were carefully reviewed and selected from 70 submissions. The main topics covered by the chapters in this book are biometrics, security systems, multimedia, classification and clustering, industrial management. Besides these, the reader will find interesting papers on computer information systems as applied to wireless networks, computer graphics, and intelligent systems. The papers are organized in the following topical sections: biometrics and pattern recognition applications; computer information systems; industrial management and other applications; machine learning and high performance computing; modelling and optimization; various aspects of computer security.

Mobile Computing, Applications, and Services

5th International Conference, MobiCase 2013, Paris, France, November 7-8, 2013, Revised Selected Papers

Springer This book constitutes the thoroughly refereed post-conference proceedings of the 5th International Conference on Mobile Computing, Applications, and Services (MobiCASE 2013) held in Paris, France, in November 2013. The 13 full, 5 short and 9 poster papers were carefully reviewed and selected from 64 submissions, and are presented together with 3 papers from the Workshop on Near Field Communication for Mobile Applications (NFS). The conference papers are covering mobile applications development, mobile social networking, novel user experience and interfaces, mobile services and platforms such as Android, iOS, BlackBerry OS, Windows phone, Bada, mobile software engineering and mobile Web, mobile payments and M2M infrastructure, mobile services such as novel hardware additions, energy aware services or tools, NFC-based services, authentication services.

Proceedings of 2nd International Conference on Communication, Computing and Networking

ICCCN 2018, NITTTR Chandigarh, India

Springer The book provides insights from the 2nd International Conference on Communication, Computing and Networking organized by the Department of Computer Science and Engineering, National Institute of Technical Teachers Training and Research, Chandigarh, India on March 29-30, 2018. The book includes contributions in which researchers, engineers, and academicians as well as industrial professionals from around the globe presented their research findings and development activities in the field of Computing Technologies, Wireless Networks, Information Security, Image Processing and Data Science. The book provides opportunities for the readers to explore the literature, identify gaps in the existing works and propose new ideas for research.

Advanced Applications of Rapid Prototyping Technology in Modern Engineering

BoD - Books on Demand Rapid prototyping (RP) technology has been widely known and appreciated due to its flexible and customized manufacturing capabilities. The widely studied RP techniques include stereolithography apparatus (SLA), selective laser sintering (SLS), three-dimensional printing (3DP), fused deposition modeling (FDM), 3D plotting, solid ground curing (SGC), multiphase jet solidification (MJS), laminated object manufacturing (LOM). Different techniques are associated with different materials and/or processing principles and thus are devoted to specific applications. RP technology has no longer been only for prototype building rather has been extended for real industrial manufacturing solutions. Today, the RP technology has contributed to almost all engineering areas that include mechanical, materials, industrial, aerospace, electrical and most recently biomedical engineering. This book aims to present the advanced development of RP technologies in various engineering areas as the solutions to the real world engineering problems.

The Handbook of Multimodal-Multisensor Interfaces, Volume 1

Foundations, User Modeling, and Common Modality Combinations

Morgan & Claypool The Handbook of Multimodal-Multisensor Interfaces provides the first authoritative resource on what has become the dominant paradigm for new computer interfaces— user input involving new media (speech, multi-touch, gestures, writing) embedded in multimodal-multisensor interfaces. These interfaces support smart phones, wearables, in-vehicle and robotic applications, and many other areas that are now highly competitive commercially. This edited collection is written by international experts and pioneers in the field. It provides a textbook, reference, and technology roadmap for professionals working in this and related areas. This first volume of the handbook presents relevant theory and neuroscience foundations for guiding the development of high-performance systems. Additional chapters discuss approaches to user modeling and interface designs that support user choice, that synergistically combine modalities with sensors, and that blend multimodal input and output. This volume also highlights an in-depth look at the most common multimodal-multisensor combinations—for example, touch and pen input, haptic and non-speech audio output, and speech-centric systems that co-process either gestures, pen input, gaze, or visible lip movements. A common theme throughout these chapters is supporting mobility and individual differences among users. These handbook chapters provide walk-through examples of system design and processing, information on tools and practical resources for developing and evaluating new systems, and terminology and tutorial support for mastering this emerging field. In the final section of this volume, experts exchange views on a timely and controversial challenge topic, and how they believe multimodal-multisensor interfaces should be designed in the future to most effectively advance human performance.

Software Visualization

Visualizing the Structure, Behaviour, and Evolution of Software

Springer Science & Business Media Here is an ideal textbook on software visualization, written especially for students and teachers in computer science. It provides a broad and systematic overview of the area including many pointers to tools available today. Topics covered include static program visualization, algorithm animation, visual debugging, as well as the visualization of the evolution of software. The author's presentation emphasizes common principles and provides different examples mostly taken from seminal work. In addition, each chapter is followed by a list of exercises including both pen-and-paper exercises as well as programming tasks.

Statistical Shape and Deformation Analysis Methods, Implementation and Applications

Academic Press *Statistical Shape and Deformation Analysis: Methods, Implementation and Applications* contributes enormously to solving different problems in patient care and physical anthropology, ranging from improved automatic registration and segmentation in medical image computing to the study of genetics, evolution and comparative form in physical anthropology and biology. This book gives a clear description of the concepts, methods, algorithms and techniques developed over the last three decades that is followed by examples of their implementation using open source software. Applications of statistical shape and deformation analysis are given for a wide variety of fields, including biometry, anthropology, medical image analysis and clinical practice. Presents an accessible introduction to the basic concepts, methods, algorithms and techniques in statistical shape and deformation analysis Includes implementation examples using open source software Covers real-life applications of statistical shape and deformation analysis methods

Skeletonization

Theory, Methods and Applications

Academic Press *Skeletonization: Theory, Methods and Applications* is a comprehensive reference on skeletonization, written by the world's leading researchers in the field. The book presents theory, methods, algorithms and their evaluation, together with applications. Skeletonization is used in many image processing and computer vision applications such as shape recognition and analysis, shape decomposition and character recognition, as well as medical imaging for pulmonary, cardiac, mammographic applications. Part I includes theories and methods unique to skeletonization. Part II includes novel applications including skeleton-based characterization of human trabecular bone micro-architecture, image registration and correspondence establishment in anatomical structures, skeleton-based fast, fully automated generation of vessel tree structure for clinical evaluation of blood vessel systems. Offers a complete picture of skeletonization and its application to image processing, computer vision, pattern recognition and biomedical engineering Provides an in-depth presentation on various topics of skeletonization, including principles, theory, methods, algorithms, evaluation and real-life applications Discusses distance-analysis, geometry, topology, scale and symmetry-analysis in the context of object understanding and analysis using medial axis and skeletonization

High Performance Visualization

Enabling Extreme-Scale Scientific Insight

CRC Press Visualization and analysis tools, techniques, and algorithms have undergone a rapid evolution in recent decades to accommodate explosive growth in data size and complexity and to exploit emerging multi- and many-core computational platforms. High Performance Visualization: Enabling Extreme-Scale Scientific Insight focuses on the subset of scientific visualization concerned with algorithm design, implementation, and optimization for use on today's largest computational platforms. The book collects some of the most seminal work in the field, including algorithms and implementations running at the highest levels of concurrency and used by scientific researchers worldwide. After introducing the fundamental concepts of parallel visualization, the book explores approaches to accelerate visualization and analysis operations on high performance computing platforms. Looking to the future and anticipating changes to computational platforms in the transition from the petascale to exascale regime, it presents the main research challenges and describes several contemporary, high performance visualization implementations. Reflecting major concepts in high performance visualization, this book unifies a large and diverse body of computer science research, development, and practical applications. It describes the state of the art at the intersection of scientific visualization, large data, and high performance computing trends, giving readers the foundation to apply the concepts and carry out future research in this area.

Background Modeling and Foreground Detection for Video Surveillance

CRC Press Background modeling and foreground detection are important steps in video processing used to detect robustly moving objects in challenging environments. This requires effective methods for dealing with dynamic backgrounds and illumination changes as well as algorithms that must meet real-time and low memory requirements. Incorporating both established and new ideas, Background Modeling and Foreground Detection for Video Surveillance provides a complete overview of the concepts, algorithms, and applications related to background modeling and foreground detection. Leaders in the field address a wide range of challenges, including camera jitter and background subtraction. The book presents the top methods and algorithms for detecting moving objects in video surveillance. It covers statistical models, clustering models, neural networks, and fuzzy models. It also addresses sensors, hardware, and implementation issues and discusses the resources and datasets required for evaluating and comparing background subtraction algorithms. The datasets and codes used in the text, along with links to software demonstrations, are available on the book's website. A one-stop resource on up-to-date models, algorithms, implementations, and benchmarking techniques, this book helps researchers and industry developers understand how to apply background models and foreground detection methods to video surveillance and related areas, such as optical motion capture, multimedia applications, teleconferencing, video editing, and human-computer interfaces. It can also be used in graduate courses on computer vision, image processing, real-time architecture, machine learning, or data mining.

Advances in Biometrics

Third International Conferences, ICB 2009, Alghero, Italy, June 2-5, 2009, Proceedings

Springer Science & Business Media This book constitutes the refereed proceedings of the Third International Conference on Biometrics, ICB 2009, held in Alghero, Italy, June 2-5, 2009. The 36 revised full papers and 93 revised poster papers presented were carefully reviewed and selected from 250 submissions. Biometric criteria covered by the papers are assigned to face, speech, fingerprint and palmprint, multibiometrics and security, gait, iris, and other biometrics. In addition there are 4 papers on challenges and competitions that currently are under way, thus presenting an overview on the evaluation of biometrics.

Aerial Manipulation

Springer This text is a thorough treatment of the rapidly growing area of aerial manipulation. It details all the design steps required for the modeling and control of unmanned aerial vehicles (UAV) equipped with robotic manipulators. Starting with the physical basics of rigid-body kinematics, the book gives an in-depth presentation of local and global coordinates, together with the representation of orientation and motion in fixed- and moving-coordinate systems. Coverage of the kinematics and dynamics of unmanned aerial vehicles is developed in a succession of popular UAV configurations for multirotor systems. Such an arrangement, supported by frequent examples and end-of-chapter exercises, leads the reader from simple to more complex UAV configurations. Propulsion-system aerodynamics, essential in UAV design, is analyzed through blade-element and momentum theories, analysis which is followed by a description of drag and ground-aerodynamic effects. The central part of the book is dedicated to aerial-manipulator kinematics, dynamics, and control. Based on foundations laid in the opening chapters, this portion of the book is a structured presentation of Newton-Euler dynamic modeling that results in forward and backward equations in both fixed- and moving-coordinate systems. The Lagrange-Euler approach is applied to expand the model further, providing formalisms to model the variable moment of inertia later used to analyze the dynamics of aerial manipulators in contact with the environment. Using knowledge from sensor data, insights are presented into the ways in which linear, robust, and adaptive control techniques can be applied in aerial manipulation so as to tackle the real-world problems faced by scholars and engineers in the design and implementation of aerial robotics systems. The book is completed by path and trajectory planning with vision-based examples for tracking and manipulation.

The Flower of the Dragon

The Breakdown of the U.S. Army in Vietnam

Dictionary Learning in Visual Computing

Springer Nature The last few years have witnessed fast development on dictionary learning approaches for a set of visual computing tasks, largely due to their utilization in developing new techniques based on sparse representation. Compared with conventional techniques employing manually defined dictionaries, such as Fourier Transform and Wavelet Transform, dictionary learning aims at obtaining a dictionary adaptively from the data so as to support optimal sparse representation of the data. In contrast to conventional clustering algorithms like K-means, where a data point is associated with only one cluster center, in a dictionary-based representation, a data point can be associated with a small set of dictionary atoms. Thus, dictionary learning provides a more flexible representation of data and may have the potential to capture more relevant features from the original feature space of the data. One of the early algorithms for dictionary learning is K-SVD. In recent years, many variations/extensions of K-SVD and other new algorithms have been proposed, with some aiming at adding discriminative capability to the dictionary, and some attempting to model the relationship of multiple dictionaries. One prominent application of dictionary learning is in the general field of visual computing, where long-standing challenges have seen promising new solutions based on sparse representation with learned dictionaries. With a timely review of recent advances of dictionary learning in visual computing, covering the most recent literature with an emphasis on papers after 2008, this book provides a systematic presentation of the general methodologies, specific algorithms, and examples of applications for those who wish to have a quick start on this subject.

Towards Smart World

Homes to Cities Using Internet of Things

CRC Press *Towards Smart World: Homes to Cities Using Internet of Things* provides an overview of basic concepts from the rising of machines and communication to IoT for making cities smart, real-time applications domains, related technologies, and their possible solutions for handling relevant challenges. This book highlights the utilization of IoT for making cities smart and its underlying technologies in real-time application areas such as emergency departments, intelligent traffic systems, indoor and outdoor securities, automotive industries, environmental monitoring, business entrepreneurship, facial recognition, and motion-based object detection. Features The book covers the challenging issues related to sensors, detection, and tracking of moving objects, and solutions to handle relevant challenges. It contains the most recent research analysis in the domain of communications, signal processing, and computing sciences for facilitating smart homes, buildings, environmental conditions, and cities. It presents the readers with practical approaches and future direction for using IoT in smart cities and discusses how it deals with human dynamics, the ecosystem, and social objects and their relation. It describes the latest technological advances in IoT and visual surveillance with their implementations. This book is an ideal resource for IT professionals, researchers, undergraduate or postgraduate students, practitioners, and technology developers who are interested in gaining deeper knowledge and implementing IoT for smart cities, real-time applications areas, and technologies, and a possible set of solutions to handle relevant challenges. Dr. Lavanya Sharma is an Assistant Professor in the Amity Institute of Information Technology at Amity University UP, Noida, India. She has been a recipient of several prestigious awards during her academic career. She is an active nationally recognized researcher who has published numerous papers in her field.

Shape Recognition

Intellect Books This text reviews current research in natural and synthetic neural networks, as well as reviews in modeling, analysis, design, and development of neural networks in software and hardware areas.

Knox's Words

A Study of the Words of Sri Lankan Origin Or Association First Used in English Literature by Robert Knox and Recorded in the Oxford English Dictionary

Applications of Computational Intelligence in Biology

Current Trends and Open Problems

Springer Computational Intelligence (CI) has been a tremendously active area of - search for the past decade or so. There are many successful applications of CI in many sub elds of biology, including bioinformatics, computational - nomics, protein structure prediction, or neuronal systems modeling and an- ysis. However, there still are many open problems in biology that are in d- perate need of advanced and e cient computational methodologies to deal with tremendous amounts of data that those problems are plagued by. - fortunately, biology researchers are very often unaware of the abundance of computational techniques that they could put to use to help them analyze and understand the data underlying their research inquiries. On the other hand, computational intelligence practitioners are often unfamiliar with the part- ular problems that their new, state-of-the-art algorithms could be successfully applied for. The separation between the two worlds is partially caused by the use of di erent languages in these two spheres of science, but also by the relatively small number of publications devoted solely to the purpose of fac- itating the exchange of new computational algorithms and methodologies on one hand, and the needs of the biology realm on the other. The purpose of this book is to provide a medium for such an exchange of expertise and concerns. In order to achieve the goal, we have solicited cont- butions from both computational intelligence as well as biology researchers.

Modeling, Control, State Estimation and Path Planning Methods for Autonomous Multirotor Aerial Robots

Foundations and Trends (R) in Robotics Autonomous aerial systems have recently been at the forefront of robotics research, and currently enjoy a continuously expanding range of applications wherein they are actively utilized. Commonly these are called drones, but this survey of the current state-of-the-art also considers "Micro Aerial Vehicles" in order to emphasize the increasingly advanced levels of autonomy and the small scale of such systems. This monograph provides researchers, engineers and students with a comprehensive overview of core modeling, control, estimation, and planning concepts and approaches for micro aerial robots of the rotorcraft class. A comprehensive description of a set of methods that enable automated flight control, state estimation in GPS-denied environments, as well as path planning techniques for autonomous exploration is also provided, and serves as a holistic point of reference for those interested in the field of unmanned aerial systems. This monograph will be a valuable starting point for researchers and developers working in the exciting area of aerial robots of the rotorcraft class, or drones.

Advances in Visual Computing

Third International Symposium, ISVC 2007, Lake Tahoe, NV, USA, November 26-28, 2007, Proceedings, Part I

Springer The two volume set LNCS 4841 and LNCS 4842 constitutes the refereed proceedings of the Third International Symposium on Visual Computing, ISVC 2007, held in Lake Tahoe, NV, USA, in November 2007. The 77 revised full papers and 42 poster papers presented together with 32 full and five poster papers of six special tracks were carefully reviewed and selected. The papers cover the four main areas of visual computing: vision, graphics, visualization, and virtual reality.

Biometrics and ID Management

COST 2101 European Workshop, BioID 2011, Brandenburg (Havel), March 8-10, 2011, Proceedings

Springer This book constitutes the thoroughly refereed proceedings of the COST 2101 International Workshop, BioID 2011, held in Brandenburg (Havel), Germany, in March 2011. The 25 revised full papers presented were carefully reviewed and selected from numerous submissions and are completed by an introduction on COST. The papers are organized in topical main sections on theory and systems, handwriting authentication, speaker authentication, face recognition, multibiometric authentication, and on biometrics and forensics.

Oliver Stone's Platoon & Salvador

Vintage Provides the screenplays to Oliver Stone's movies about a young soldier's experiences in Vietnam and an alcoholic reporter covering the violence in El Salvador

Robot Operating System (ROS)

The Complete Reference (Volume 2)

Springer This second volume is a continuation of the successful first volume of this Springer book, and as well as addressing broader topics it puts a particular focus on unmanned aerial vehicles (UAVs) with Robot Operating System (ROS). Consisting of three types of chapters: tutorials, cases studies, and research papers, it provides comprehensive additional material on ROS and the aspects of developing robotics systems, algorithms, frameworks, and applications with ROS. ROS is being increasingly integrated in almost all kinds of robots and is becoming the de-facto standard for developing applications and systems for robotics. Although the research community is actively developing applications with ROS and extending its features, amount of literature references is not representative of the huge amount of work being done. The book includes 19 chapters organized into six parts: Part 1 presents the control of UAVs with ROS, while in Part 2, three chapters deal with control of mobile robots. Part 3 provides recent work toward integrating ROS with Internet, cloud and distributed systems. Part 4 offers five case studies of service robots and field experiments. Part 5 presents signal-processing tools for perception and sensing, and lastly, Part 6 introduces advanced simulation frameworks. The diversity of topics in the book makes it a unique and valuable reference resource for ROS users, researchers, learners and developers.

The Handbook of Multimodal-Multisensor Interfaces, Volume 2

Signal Processing, Architectures, and Detection of Emotion and Cognition

Morgan & Claypool The Handbook of Multimodal-Multisensor Interfaces provides the first authoritative resource on what has become the dominant paradigm for new computer interfaces: user input involving new media (speech, multi-touch, hand and body gestures, facial expressions, writing) embedded in multimodal-multisensor interfaces that often include biosignals. This edited collection is written by international experts and pioneers in the field. It provides a textbook, reference, and technology roadmap for professionals working in this and related areas. This second volume of the handbook begins with multimodal signal processing, architectures, and machine learning. It includes recent deep learning approaches for processing multisensorial and multimodal user data and interaction, as well as context-sensitivity. A further highlight is processing of information about users' states and traits, an exciting emerging capability in next-generation user interfaces. These chapters discuss real-time multimodal analysis of emotion and social signals from various modalities, and perception of affective expression by users. Further chapters discuss multimodal processing of cognitive state using behavioral and physiological signals to detect cognitive load, domain expertise, deception, and depression. This collection of chapters provides walk-through examples of system design and processing, information on tools and practical resources for developing and evaluating new systems, and terminology and tutorial support for mastering this rapidly expanding field. In the final section of this volume, experts exchange views on the timely and controversial challenge topic of multimodal deep learning. The discussion focuses on how multimodal-multisensor interfaces are most likely to advance human performance during the next decade.

3D Face Processing

Modeling, Analysis and Synthesis

Springer Science & Business Media 3D Face Processing: Modeling, Analysis and Synthesis introduces the frontiers of 3D face processing techniques. It reviews existing 3D face processing techniques, including techniques for 3D face geometry modeling; 3D face motion modeling; and 3D face motion tracking and animation. Then it discusses a unified framework for face modeling, analysis and synthesis. In this framework, the authors present new methods for modeling complex natural facial motion, as well as face appearance variations due to illumination and subtle motion. Then the authors apply the framework to face tracking, expression recognition and face avatar for HCI interface. They conclude this book with comments on future work in the 3D face processing framework. 3D Face Processing: Modeling, Analysis and Synthesis will interest those working in face processing for intelligent human computer interaction and video surveillance. It contains a comprehensive survey on existing face processing techniques, which can serve as a reference for students and researchers. It also covers in-depth discussion on face motion analysis and synthesis algorithms, which will benefit more advanced graduate students and researchers.

Mathematical Tools for Data Mining

Set Theory, Partial Orders, Combinatorics

Springer Science & Business Media This volume was born from the experience of the authors as researchers and educators, which suggests that many students of data mining are handicapped in their research by the lack of a formal, systematic education in its mathematics. The data mining literature contains many excellent titles that address the needs of users with a variety of interests ranging from decision making to pattern investigation in biological data. However, these books do not deal with the mathematical tools that are currently needed by data mining researchers and doctoral students. We felt it timely to produce a book that integrates the mathematics of data mining with its applications. We emphasize that this book is about mathematical tools for data mining and not about data mining itself; despite this, a substantial amount of applications of mathematical concepts in data mining are presented. The book is intended as a reference for the working data miner. In our opinion, three areas of mathematics are vital for data mining: set theory, including partially ordered sets and combinatorics; linear algebra, with its many applications in principal component analysis and neural networks; and probability theory, which plays a foundational role in statistics, machine learning and data mining. This volume is dedicated to the study of set-theoretical foundations of data mining. Two further volumes are contemplated that will cover linear algebra and probability theory. The first part of this book, dedicated to set theory, begins with a study of functions and relations. Applications of these fundamental concepts to such issues as equivalences and partitions are discussed. Also, we prepare the ground for the following volumes by discussing indicator functions, fields and σ -fields, and other concepts.

Isosurfaces

Geometry, Topology, and Algorithms

CRC Press Ever since Lorensen and Cline published their paper on the Marching Cubes algorithm, isosurfaces have been a standard technique for the visualization of 3D volumetric data. Yet there is no book exclusively devoted to isosurfaces. Isosurfaces: Geometry, Topology, and Algorithms represents the first book to focus on basic algorithms for isosurface construction. It also gives a rigorous mathematical perspective on some of the algorithms and results. In color throughout, the book covers the Marching Cubes algorithm and variants, dual contouring algorithms, multilinear interpolation, multiresolution isosurface extraction, isosurfaces in four dimensions, interval volumes, and contour trees. It also describes data structures for faster isosurface extraction as well as methods for selecting significant isovalues. For designers of visualization software, the book presents an organized overview of the various algorithms associated with isosurfaces. For graduate students, it provides a solid introduction to research in this area. For visualization researchers, the book serves as a reference to the vast literature on isosurfaces.

Motion in Games

4th International Conference, MIG 2011, Edinburgh, United Kingdom, November 13-15, 2011, Proceedings

Springer Science & Business Media This book constitutes the proceedings of the 4th International Workshop on Motion in Games, held in Edinburgh, UK, in November 2011. The 30 revised full papers presented together with 8 revised poster papers in this volume were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on character animation, motion synthesis, physically-based character motion, behavior animation, animation systems, crowd simulation, as well as path planning and navigation.

Fuzzy Classifier Design

Physica Fuzzy sets were first proposed by Lotfi Zadeh in his seminal paper [366] in 1965, and ever since have been a center of many discussions, fervently admired and condemned. Both proponents and opponents consider the arguments pointless because none of them would step back from their territory. And still, discussions burst out from a single sparkle like a conference paper or a message on some fuzzy-mail newsgroup. Here is an excerpt from an e-mail message posted in 1993 to fuzzy-mail@vexpert.dbai.tuwien.ac.at, by somebody who signed "Dave". . . . Why then the "logic" in "fuzzy logic"? I don't think anyone has successfully used fuzzy sets for logical inference, nor do I think anyone will. In my admittedly neophyte opinion, "fuzzy logic" is a misnomer, an oxymoron. (I would be delighted to be proven wrong on that. . . . I came to the fuzzy literature with an open mind (and open wallet), high hopes and keen interest. I am very much disillusioned with "fuzzy" per se, but I did happen across some extremely interesting things along the way. " Dave, thanks for the nice quote! Enthusiastic on the surface, are not many of us suspicious deep down? In some books and journals the word fuzzy is religiously avoided: fuzzy set theory is viewed as a second-hand cheap trick whose aim is nothing else but to devalue good classical theories and open up the way to lazy ignorants and newcomers.

High Spatial Resolution Remote Sensing

Data, Analysis, and Applications

CRC Press High spatial resolution data including those from satellite, manned aircraft, and unmanned aerial vehicle (UAV) platforms provide a novel data source for addressing environmental questions with an unprecedented level of detail. To effectively utilize information contained in high spatial resolution imagery, some key questions must be addressed, including: (1) what are the challenges of using new sensors and new platforms? (2) what are the cutting-edge methods for fine-level information extraction from high spatial resolution images? and (3) how can high spatial resolution data improve the quantification and characterization of physical-environmental or human patterns and processes? The chapters in this book provide a snapshot of cutting-edge high spatial resolution remote sensing image collection, preprocessing, processing, and applications. This book intends to provide a useful benchmark for the high spatial resolution remote sensing community and inspire more studies that would address important scientific and technical challenges in use of high spatial remote sensing.

Age Factors in Biometric Processing

IET Age Factors in Biometric Processing explores the implications of ageing on biometric technologies, and how such factors can be managed in practical situations.