Digital Image Processing Gonzalez 3d Edition

Over the last decade, significant progress has been made in 3D imaging research. As a result, 3D imaging methods and techniques are being employed for various applications, including 3D television, intelligent robotics, medical imaging, and stereovision. Depth Map and 3D Imaging Applications: Algorithms and Technologies present various 3D algorithms developed in the recent years and to investigate the application of 3D methods in various domains. Containing five sections, this book offers perspectives on 3D imaging algorithms, 3D shape recovery, stereoscopic vision and autostereoscopic vision, 3D vision for robotic applications, and 3D imaging applications. This book is an important resource for professionals, scientists, researchers, academics, and software engineers in image/video processing and computer vision. Constitutes the refereed proceedings of the 14th International Workshop on Combinatorial Image Analysis, IWCIA 2011, held in Madrid, Spain, in May 2011. This title presents the papers that are organized in topical sections such as combinatorial problems in the discrete plane and space related to image analysis; tilings and patterns; and, more.

This book comprises a large selection of papers presented at the second European Scientific Computing and Automation meeting (SCA 90 (Europe)) which was held in June 1990 in Maastricht, The Netherlands. The increasing use of computers for making measurements, interpreting data, and filing results brings a new unity to science. SCA concentrates on common computer-based tools which are useful in several disciplines. Practical problems in laboratory automation, robotics and information management with LIMS are covered in depth. The process of designing and acquiring a LIMS is described and standards for data transfer between instruments, between LIMS and instruments and between different LIMS are discussed. The applications of statistics and expert systems are covered in several chapters. Strategies for drug design are discussed with various practical examples. Finally the display of scientific results as images and computer-based animations is demonstrated by several examples with their color illustrations. The book should be of interest to those managing R&D projects, doing research in laboratories, acquiring or planning LIMS, designing instruments and laboratory automation systems and those involved in data analysis of scientific results. This book presents an interdisciplinary selection of cutting-edge research on RGB-D based computer vision. Features: discusses the calibration of color and depth cameras, the reduction of noise on depth maps and methods for capturing human performance in 3D; reviews a selection of applications which use RGB-D information to reconstruct human figures, evaluate energy consumption and obtain accurate action classification; presents an approach for 3D object retrieval and for the reconstruction of gas flow from multiple Kinect cameras; describes an RGB-D computer vision system designed to assist the visually impaired and another for smart-environment sensing to assist elderly and disabled people; examines the effective features that characterize static hand poses and introduces a unified framework to enforce both temporal and spatial constraints for hand parsing; proposes a new classifier architecture for real-time hand pose recognition and a novel hand segmentation and gesture recognition system. It is becoming increasingly clear that the two-dimensional layout of devices on computer chips hinders the development of high-performance computer systems. Three-

dimensional structures will be needed to provide the performance required to implement computationally intensive tasks. 3-D Nanoelectronic Computer Architecture and Implementation reviews the state of the art in nanoelectronic device design and fabrication and discusses the architectural aspects of 3-D designs, including the possible use of molecular wiring and carbon nanotube interconnections. This is a valuable reference for those involved in the design and development of nanoelectronic devices and technology.

An examination of the various types of human-modeled technology, Advances in Applied Human Modeling and Simulation not only covers the type of models available, but how they can be applied to solve specific problems. These models provide a representation of some human aspects that can be inserted into simulations or virtual environments and facilitate prediction of safety, satisfaction, usability, performance, and sustainability. Topics include: Anthropometry and human functional data Biomechanics, occupational safety, comfort and discomfort Biometric authentications Driving safety and human performance Enhancing human capabilities through aids or training Fuzzy systems and neural computing Human behavior and risk assessment modeling Integrating software with humans and systems International cooperation in education and engineering research Intelligent agents in decision training Intelligent data and text mining Machine learning and human factors Modeling physical aspects of work Monitoring systems and human decision Psychophysiological indicators of emotion Resilience engineering and human reliability Scenario-based performance in distributed enterprises Special populations Sustainability, earth sciences and engineering System-of-systems architecting and engineering Verification and validation Virtual interactive design and assessment The math and science provides a foundation for visualizations that can facilitate decision making by technical experts, management or those responsible for public policy. In considering a systems perspective and decisions that affect performance, these models provide opportunities for an expanded role of engineers and HF/E specialists to meet technical challenges worldwide. They can also be used to improve time-to-market, increase safety and ultimately the effectiveness of an organization. The book focuses on applications of these newly developed models and predictive capabilities useful to human factors and ergonomics engineers, cognitive engineers, human computer interaction engineers, human performance modeling engineers, and students in related fields.

Advancements in digital technology continue to expand the image science field through the tools and techniques utilized to process two-dimensional images and videos. Image Processing: Concepts, Methodologies, Tools, and Applications presents a collection of research on this multidisciplinary field and the operation of multi-dimensional signals with systems that range from simple digital circuits to computers. This reference source is essential for researchers, academics, and students in the computer science, computer vision, and electrical engineering fields.

This book constitutes the proceedings of the 7th International Workshop on Computational Topology in Image Context, CTIC 2019, held in Málaga, Spain, in January 2019. The 14 papers presented in this volume were carefully reviewed and selected from 21 submissions. Papers deal with theoretical issues but most of them put the attention on the applicability of concepts and algorithms. These were designed to deal with objects and images, but also with the speech signal. The final application

must be for instance in the medical domain or in the robotics one.

Automatic personal authentication using biometric information is becoming more essential in applications of public security, access control, forensics, banking, etc. Many kinds of biometric authentication techniques have been developed based on different biometric characteristics. However, most of the physical biometric recognition techniques are based on two dimensional (2D) images, despite the fact that human characteristics are three dimensional (3D) surfaces. Recently, 3D techniques have been applied to biometric applications such as 3D face, 3D palmprint, 3D fingerprint, and 3D ear recognition. This book introduces four typical 3D imaging methods, and presents some case studies in the field of 3D biometrics. This book also includes many efficient 3D feature extraction, matching, and fusion algorithms. These 3D imaging methods and their applications are given as follows: - Single view imaging with line structured-light: 3D ear identification - Single view imaging with multi-line structured-light: 3D palmprint authentication - Single view imaging using only 3D camera: 3D hand verification - Multi-view imaging: 3D fingerprint recognition 3D Biometrics: Systems and Applications is a comprehensive introduction to both theoretical issues and practical implementation in 3D biometric authentication. It will serve as a textbook or as a useful reference for graduate students and researchers in the fields of computer science, electrical engineering, systems science, and information technology. Researchers and practitioners in industry and R&D laboratories working on security system design, biometrics, immigration, law enforcement, control, and pattern recognition will also find much of interest in this book.

Handbook of Medical Image Processing and AnalysisElsevier

This book gathers selected papers presented at the conference "Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology," one of the first initiatives devoted to the problems of 3D imaging in all contemporary scientific and application areas. The aim of the conference was to establish a platform for experts to combine their efforts and share their ideas in the related areas in order to promote and accelerate future development. This second volume discusses algorithms and applications, focusing mainly on the following topics: 3D printing technologies; naked, dynamic and auxiliary 3D displays; VR/AR/MR devices; VR camera technologies; microprocessors for 3D data processing; advanced 3D computing systems; 3D data-storage technologies; 3D data networks and technologies; 3D data intelligent processing; 3D data cryptography and security; 3D visual quality estimation and measurement; and 3D decision support and information systems.
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This important text/reference presents the first dedicated review of techniques for contactless 3D fingerprint identification, including novel and previously unpublished research. The text provides a systematic introduction to 3D fingerprint identification, covering the latest advancements in contactless 2D and 3D sensing technologies, and detailed discussions on each key aspect in the development of an effective 3D fingerprint identification system. Topics and features: introduces the key concepts and trends in the acquisition and identification of fingerprint images, and a range of 3D fingerprint imaging techniques; proposes a low-cost method for online 3D fingerprint image acquisition, and an efficient 3D fingerprint imaging approach using coloured photometric stereo; describes pre-processing operations on point cloud 3D fingerprint data, and explains the specialized operations for reconstructing 3D fingerprints from live finger scans; examines the representation of minutiae in 3D space, providing details on recovering these features from point cloud data, and on matching such 3D minutiae templates; reviews various 3D fingerprint matching methods, including binary surface code-based approaches and a tetrahedron-based matching approach; discusses the

uniqueness of 3D fingerprints, evaluating the benefits of employing 3D fingerprint identification over conventional 2D fingerprint techniques. This unique work is a must-read for all researchers seeking to make further advances in this area, towards the exciting opportunities afforded by contactless 3D fingerprint identification for improving the hygiene, user convenience, and matching accuracy of fingerprint biometric technologies.

Presents recent significant and rapid development in the field of 2D and 3D image analysis 2D and 3D Image Analysis by Moments, is a unique compendium of moment-based image analysis which includes traditional methods and also reflects the latest development of the field. The book presents a survey of 2D and 3D moment invariants with respect to similarity and affine spatial transformations and to image blurring and smoothing by various filters. The book comprehensively describes the mathematical background and theorems about the invariants but a large part is also devoted to practical usage of moments. Applications from various fields of computer vision, remote sensing, medical imaging, image retrieval, watermarking, and forensic analysis are demonstrated. Attention is also paid to efficient algorithms of moment computation. Key features: Presents a systematic overview of moment-based features used in 2D and 3D image analysis. Demonstrates invariant properties of moments with respect to various spatial and intensity transformations. Reviews and compares several orthogonal polynomials and respective moments. Describes efficient numerical algorithms for moment computation. It is a "classroom ready" textbook with a self-contained introduction to classifier design. The accompanying website contains around 300 lecture slides, Matlab codes, complete lists of the invariants, test images, and other supplementary material. 2D and 3D Image Analysis by Moments, is ideal for mathematicians, computer scientists, engineers, software developers, and Ph.D students involved in image analysis and recognition. Due to the addition of two introductory chapters on classifier design, the book may also serve as a self-contained textbook for graduate university courses on object recognition. This scholarly set of well-harmonized volumes provides indispensable and complete coverage of the exciting and evolving subject of medical imaging systems. Leading experts on the international scene tackle the latest cutting-edge techniques and technologies in an in-depth but eminently clear and readable approach. Complementing and intersecting one another, each volume offers a comprehensive treatment of substantive importance to the subject areas. The chapters, in turn, address topics in a self-contained manner with authoritative introductions, useful summaries, and detailed reference lists. Extensively well-illustrated with figures throughout, the five volumes as a whole achieve a unique depth and breath of coverage. As a cohesive whole or independent of one another, the volumes may be acquired as a set or individually.

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The Handbook of Medical Image Processing and Analysis is a comprehensive compilation of concepts and techniques used for processing and analyzing medical images after they have been generated or digitized. The Handbook is organized into six sections that relate to the main functions: enhancement, segmentation, quantification, registration, visualization, and compression, storage and communication. The second

edition is extensively revised and updated throughout, reflecting new technology and research, and includes new chapters on: higher order statistics for tissue segmentation; tumor growth modeling in oncological image analysis; analysis of cell nuclear features in fluorescence microscopy images; imaging and communication in medical and public health informatics; and dynamic mammogram retrieval from web-based image libraries. For those looking to explore advanced concepts and access essential information, this second edition of Handbook of Medical Image Processing and Analysis is an invaluable resource. It remains the most complete single volume reference for biomedical engineers, researchers, professionals and those working in medical imaging and medical image processing. Dr. Isaac N. Bankman is the supervisor of a group that specializes on imaging, laser and sensor systems, modeling, algorithms and testing at the Johns Hopkins University Applied Physics Laboratory. He received his BSc degree in Electrical Engineering from Bogazici University, Turkey, in 1977, the MSc degree in Electronics from University of Wales, Britain, in 1979, and a PhD in Biomedical Engineering from the Israel Institute of Technology, Israel, in 1985. He is a member of SPIE. Includes contributions from internationally renowned authors from leading institutions NEW! 35 of 56 chapters have been revised and updated. Additionally, five new chapters have been added on important topics incluling Nonlinear 3D Boundary Detection, Adaptive Algorithms for Cancer Cytological Diagnosis, Dynamic Mammogram Retrieval from Web-Based Image Libraries, Imaging and Communication in Health Informatics and Tumor Growth Modeling in Oncological Image Analysis. Provides a complete collection of algorithms in computer processing of medical images Contains over 60 pages of stunning, four-color images

This book constitutes the refereed proceedings of the 13th International Conference on Discrete Geometry for Computer Imagery, DGCI 2006, held in Szeged, Hungary in October 2006. The 28 revised full papers and 27 revised poster papers presented together with two invited papers were carefully reviewed and selected from 99 submissions.

In recent years 3D geo-information has become an important research area due to the increased complexity of tasks in many geo-scientific applications, such as sustainable urban planning and development, civil engineering, risk and disaster management and environmental monitoring. Moreover, a paradigm of cross-application merging and integrating of 3D data is observed. The problems and challenges facing today's 3D software, generally application-oriented, focus almost exclusively on 3D data transportability issues – the ability to use data originally developed in one modelling/visualisation system in other and vice versa. Tools for elaborated 3D analysis, simulation and prediction are either missing or, when available, dedicated to specific tasks. In order to respond to this increased demand, a new type of system has to be developed. A fully developed 3D geo-information system should be able to manage 3D geometry and topology, to integrate 3D geometry and thematic information, to analyze both spatial and topological relationships, and to present the data in a suitable form. In addition to the simple geometry types like point line and polygon, a large variety of parametric representations, freeform curves and surfaces or sweep shapes have to be supported. Approaches for seamless conversion between 3D raster and 3D vector representations should be available, they should allow analysis of a representation most suitable for a specific application.

This text provides a comprehensive, state-of-the-art review of the application of image analysis focusing on the techniques which can be used in every biology and medical laboratory to automate procedures of cell analysis and to create statistics very useful for a comprehension of cell growth dynamics and the effects of drugs on them. This textbook will serve as a very useful resource for physicians and researchers dealing with, and interested in, cell analysis. It will provide a concise yet comprehensive summary of the current status of the field that will help guide patient management and stimulate investigative efforts. All chapters are written by experts in their fields and include the most up-to-date scientific and clinical information. Advanced Imaging Techniques in Clinical Pathology will be of great value to clinical pathologists, biologists, biology researchers, and those working in the clinical and biological laboratory arena.?

Special emphasis on teaching the CT technologists getting started in MDCT

As the most natural and convenient means of conveying or transmitting information, images play a vital role in our daily lives. Image processing is now of paramount importance in the computer vision research community, and proper processing of two-dimensional (2D) real-life images plays a key role in many real-life applications as well as commercial developments. Intelligent Multidimensional Data and Image Processing is a vital research publication that contains an in-depth exploration of image processing techniques used in various applications, including how to handle noise removal, object segmentation, object extraction, and the determination of the nearest object classification and its associated confidence level. Featuring coverage on a broad range of topics such as object detection, machine vision, and image conversion, this book provides critical research for scientists, computer engineers, professionals, researchers, and academicians seeking current research on solutions for new challenges in 2D and 3D image processing.

This book is an essential guide to the implementation of image processing and computer vision techniques, with tutorial introductions and sample code in Matlab. Algorithms are presented and fully explained to enable complete understanding of the methods and techniques demonstrated. As one reviewer noted, "The main strength of the proposed book is the exemplar code of the algorithms." Fully updated with the latest developments in feature extraction, including expanded tutorials and new techniques, this new edition contains extensive new material on Haar wavelets, Viola-Jones, bilateral filtering, SURF, PCA-SIFT, moving object detection and tracking, development of symmetry operators, LBP texture analysis, Adaboost, and a new appendix on color models. Coverage of distance measures, feature detectors, wavelets, level sets and texture tutorials has been extended. Named a 2012 Notable Computer Book for Computing Methodologies by Computing Reviews Essential reading for engineers and students working in this cutting-edge field Ideal module text and background reference for courses in image processing and computer vision The only currently available text to concentrate on feature extraction with working implementation and worked through derivation

This book constitutes the refereed proceedings of the 16th IAPR International Conference on Discrete Geometry for Computer Imagery, DGCI 2011, held in Nancy, France, in April 2011. The 20 revised full papers and 20 revised poster papers presented together with 3 invited lectures were carefully reviewed and selected from

numerous submissions. The papers are organized in topical sections on models for discrete geometry, discrete and combinatorial topology, geometric transforms, discrete shape representation, recognition and analysis, discrete tomography, morphological analysis, as well as discrete and combinatorial tools for image segmentation and analysis.

This book presents innovative and high-quality research on the implementation of conceptual frameworks, strategies, techniques, methodologies, informatics platforms and models for developing advanced knowledge-based systems and their application in different fields, including Agriculture, Education, Automotive, Electrical Industry, Business Services, Food Manufacturing, Energy Services, Medicine and others. Knowledge-based technologies employ artificial intelligence methods to heuristically address problems that cannot be solved by means of formal techniques. These technologies draw on standard and novel approaches from various disciplines within Computer Science, including Knowledge Engineering, Natural Language Processing, Decision Support Systems, Artificial Intelligence, Databases, Software Engineering, etc. As a combination of different fields of Artificial Intelligence, the area of Knowledge-Based Systems applies knowledge representation, case-based reasoning, neural networks, Semantic Web and TICs used in different domains. The book offers a valuable resource for PhD students, Master's and undergraduate students of Information Technology (IT)-related degrees such as Computer Science, Information Systems and Electronic Engineering.

Recent years have seen an exponential increase in video and multimedia traffic transported over the Internet and broadband access networks. This timely resource addresses the key challenge facing many service providers today: effective bandwidth management for supporting high-quality video delivery. Written by a recognized expert in the field, this practical book describes ways to optimize video transmission over emerging broadband networks. Moreover, the book explores new wireless access networks that can enable video connectivity both inside and outside the residential premise.

The visualization of human anatomy for diagnostic, therapeutic, and educational pur poses has long been a challenge for scientists and artists. In vivo medical imaging could not be introduced until the discovery of X-rays by Wilhelm Conrad ROntgen in 1895. With the early medical imaging techniques which are still in use today, the three-dimensional reality of the human body can only be visualized in two-dimensional projections or cross-sections. Recently, biomedical engineering and computer science have begun to offer the potential of producing natural three-dimensional views of the human anatomy of living subjects. For a broad application of such technology, many scientific and engineering problems still have to be solved. In order to stimulate progress, the NATO Advanced Research Workshop in Travemiinde, West Germany, from June 25 to 29 was organized. It brought together approximately 50 experts in 3D-medical imaging from allover the world. Among the list of topics image acquisition was addressed first, since its quality decisively influences the quality of the 3D-images. For 3D-image generation - in distinction to 2D imaging - a decision has to be made as to which objects contained in the data set are to be visualized. Therefore special emphasis was laid on methods of object definition. For the final visualization of the segmented objects a large variety of visualization algorithms have been proposed in the

past. The meeting assessed these techniques.

Segmentation and landmarking of computed tomographic (CT) images of pediatric patients are important and useful in computer-aided diagnosis (CAD), treatment planning, and objective analysis of normal as well as pathological regions. Identification and segmentation of organs and tissues in the presence of tumors are difficult. Automatic segmentation of the primary tumor mass in neuroblastoma could facilitate reproducible and objective analysis of the tumor's tissue composition, shape, and size. However, due to the heterogeneous tissue composition of the neuroblastic tumor, ranging from low-attenuation necrosis to high-attenuation calcification, segmentation of the tumor mass is a challenging problem. In this context, methods are described in this book for identification and segmentation of several abdominal and thoracic landmarks to assist in the segmentation of neuroblastic tumors in pediatric CT images. Methods to identify and segment automatically the peripheral artifacts and tissues, the rib structure, the vertebral column, the spinal canal, the diaphragm, and the pelvic surface are described. Techniques are also presented to evaluate quantitatively the results of segmentation of the vertebral column, the spinal canal, the diaphragm, and the pelvic girdle by comparing with the results of independent manual segmentation performed by a radiologist. The use of the landmarks and removal of several tissues and organs are shown to assist in limiting the scope of the tumor segmentation process to the abdomen, to lead to the reduction of the false-positive error, and to improve the result of segmentation of neuroblastic tumors. Table of Contents: Introduction to Medical Image Analysis / Image Segmentation / Experimental Design and Database / Ribs, Vertebral Column, and Spinal Canal / Delineation of the Diaphragm / Delineation of the Pelvic Girdle / Application of Landmarking / Concluding Remarks

Dentistry is a branch of medicine with its own peculiarities and very diverse areas of action, which means that it can be considered as an interdisciplinary field. Currently the use of new techniques and technologies receives much attention. Biodental Engineering III contains contributions from 13 countries, which were presented at BIODENTAL 2014, the 3rd International Conference on Biodental Engineering (Póvoa do Varzim, Portugal, 22-23 June 2014). They provide a comprehensive coverage of the state-of-the art in this area, and address issues on a wide range of topics: – Aesthetics – Bioengineering – Biomaterials – Biomechanical disorders – Biomedical devices – Computational bio- imaging and visualization – Computational methods – Dental medicine – Experimental mechanics – Signal processing and analysis – Implantology – Minimally invasive devices and techniques – Orthodontics – Prosthesis and orthosis – Simulation – Software development – Telemedicine – Tissue engineering – Virtual reality Biodental Engineering III will be of interest to academics and others interested and/or involved in biodental engineering.

Ten years ago, the inaugural European Conference on Computer Vision was held in Antibes, France. Since then, ECCV has been held biennially under the auspices of the European Vision Society at venues around Europe. This year, the privilege of organizing ECCV 2000 falls to Ireland and it is a signal honour for us to host what has become one of the most important events in the calendar of the computer vision community. ECCV is a single-track conference comprising the highest quality, previously unpublished, contributed papers on new and original research in computer vision. This year, 266 papers were submitted and, following a rigorous double-blind

review process, with each paper being reviewed by three referees, 116 papers were selected by the Programme Committee for presentation at the conference. The venue for ECCV 2000 is the University of Dublin, Trinity College. - unded in 1592, it is Ireland's oldest university and has a proud tradition of scholarship in the Arts, Humanities, and Sciences, alike. The Trinity campus, set in the heart of Dublin, is an oasis of tranquility and its beautiful squares, elegant buildings, and tree-lined playing-elds provide the perfect setting for any conference.

"This book provides developers and scholars with an extensive collection of research articles in the expanding field of 3D reconstruction, investigating the concepts, methodologies, applications and recent developments in the field of 3D reconstruction"--

Computer vision encompasses the construction of integrated vision systems and the application of vision to problems of real-world importance. The process of creating 3D models is still rather difficult, requiring mechanical measurement of the camera positions or manual alignment of partial 3D views of a scene. However using algorithms, it is possible to take a collection of stereo-pair images of a scene and then automatically produce a photo-realistic, geometrically accurate digital 3D model. This book provides a comprehensive introduction to the methods, theories and algorithms of 3D computer vision. Almost every theoretical issue is underpinned with practical implementation or a working algorithm using pseudo-code and complete code written in C++ and MatLab®. There is the additional clarification of an accompanying website with downloadable software, case studies and exercises. Organised in three parts, Cyganek and Siebert give a brief history of vision research, and subsequently: present basic low-level image processing operations for image matching, including a separate chapter on image matching algorithms; explain scale-space vision, as well as space reconstruction and multiview integration; demonstrate a variety of practical applications for 3D surface imaging and analysis; provide concise appendices on topics such as the basics of projective geometry and tensor calculus for image processing, distortion and noise in images plus image warping procedures. An Introduction to 3D Computer Vision Algorithms and Techniques is a valuable reference for practitioners and programmers working in 3D computer vision, image processing and analysis as well as computer visualisation. It would also be of interest to advanced students and researchers in the fields of engineering, computer science, clinical photography, robotics, graphics and mathematics.

Comprehensive, yet concise, 3D Printing for the Radiologist presents an overview of three-dimensional printing at the point of care. Focusing on opportunities and challenges in radiology practice, this up-to-date reference covers computer-aided design principles, quality assurance, training, and guidance for integrating 3D printing across radiology subspecialties. Practicing and trainee radiologists, surgeons, researchers, and imaging specialists will find this an indispensable resource for furthering their understanding of the current state and future outlooks for 3D printing in clinical medicine. Covers a wide range of topics, including basic principles of 3D printing, quality assurance, regulatory perspectives, and practical implementation in medical training and practice. Addresses the challenges associated with 3D printing integration in clinical settings, such as reimbursement, regulatory issues, and training. Features concise chapters from a team of multidisciplinary chapter authors, including

practicing radiologists, researchers, and engineers. Consolidates today's available information on this timely topic into a single, convenient, resource.

This book is a printed edition of the Special Issue "Remote Sensed Data and Processing Methodologies for 3D Virtual Reconstruction and Visualization of Complex Architectures" that was published in Remote Sensing

Online applications have been gaining wide acceptance among the general public. Companies like Amazon, Google, Yahoo! and NetFlicks have been doing extremely well over the last few years largely because of people becoming more comfortable and trusting of the Internet. The increasing acceptance of online products makes it increasingly important to address some of the scientific techniques involved in developing efficient 3D online systems.The topics discussed in this book broadly cover four categories: networking issues in online multimedia; joint texture-mesh simplification and view independent transmission; view dependent transmission and server-side rendering; content and background creation; and creating simple online games.

The migration of immersive media towards telecommunication applications is advancing rapidly. Impressive progress in the field of media compression, media representation, and the larger and ever increasing bandwidth available to the customer, will foster the introduction of these services in the future. One of the key components for the envisioned applications is the development from two-dimensional towards three-dimensional audio-visual communications. With contributions from key experts in the field, 3D Videocommunication: provides a complete overview of existing systems and technologies in 3D video communications and provides guidance on future trends and research; considers all aspects of the 3D videocommunication processing chain including video coding, signal processing and computer graphics; focuses on the current state-of-the-art and highlights the directions in which the technology is likely to move; discusses in detail the relevance of 3D videocommunication for telepresence systems and immersive media; and provides an exhaustive bibliography for further reading. Researchers and students interested in the field of 3D audio-visual communications will find 3D Videocommunication a valuable resource, covering a broad overview of the current state-of-the-art. Practical engineers from industry will also find it a useful tool in envisioning and building innovative applications.

The book provides a platform for dealing with the flaws and failings of the soft computing paradigm through different manifestations. The different chapters highlight the necessity of the hybrid soft computing methodology in general with emphasis on several application perspectives in particular. Typical examples include (a) Study of Economic Load Dispatch by Various Hybrid Optimization Techniques, (b) An Application of Color Magnetic Resonance Brain Image Segmentation by Para Optimus LG Activation Function, (c) Hybrid Rough-PSO Approach in Remote Sensing Imagery Analysis, (d) A Study and Analysis of Hybrid Intelligent Techniques for Breast Cancer Detection using Breast Thermograms, and (e) Hybridization of 2D-3D Images for Human Face Recognition. The elaborate findings of the chapters enhance the exhibition of the hybrid soft computing paradigm in the field of intelligent computing.

Color Image Processing: Methods and Applications embraces two decades of extraordinary growth in the technologies and applications for color image processing. The book offers comprehensive coverage of state-of-the-art systems, processing techniques, and emerging applications of digital color imaging. To elucidate the

significant progress in specialized areas, the editors invited renowned authorities to address specific research challenges and recent trends in their area of expertise. The book begins by focusing on color fundamentals, including color management, gamut mapping, and color constancy. The remaining chapters detail the latest techniques and approaches to contemporary and traditional color image processing and analysis for a broad spectrum of sophisticated applications, including: Vector and semantic processing Secure imaging Object recognition and feature detection Facial and retinal image analysis Digital camera image processing Spectral and superresolution imaging Image and video colorization Virtual restoration of artwork Video shot segmentation and surveillance Color Image Processing: Methods and Applications is a versatile resource that can be used as a graduate textbook or as stand-alone reference for the design and the implementation of various image and video processing tasks for cutting-edge applications. This book is part of the Digital Imaging and Computer Vision series.

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