Real Time Image And Video Processing From Research To Reality Synthesis Lectures On Image Video And Multimedia Processing

The two-volume proceedings LNCS 7087 + LNCS 7088 constitute the proceedings of the 5th Pacific Rim Symposium on Image and Video Technology, PSIVT 2011, held in Gwangju, Korea, in November 2011. The total of 71 revised papers was carefully reviewed and selected from 168 submissions. The topics covered are: image/video coding and transmission; image/video processing and analysis; imaging and graphics hardware and visualization; image/video retrieval and scene understanding; biomedical image processing and analysis; biometrics and image forensics; and computer vision applications.

Intelligent computing refers greatly to artificial intelligence with the aim at making computer to act as a human. This newly developed area of real-time intelligent computing integrates the aspect of dynamic environments with the human intelligence. This book presents a comprehensive practical and easy to read account which describes current state-of-the art in designing and implementing real-time intelligent computing to robotics, alert systems, IoT, remote access control, multi-agent systems, networking, mobile smart systems, crowd sourcing, broadband systems, cloud computing, streaming data and many other applications areas. The solutions discussed in this book will encourage the researchers and IT professional to put the methods into their practice.

Discusses the theoretical implications of the cinematographic image based on Henri Bergson's theories

200Ts Vision of Vision One of my formative childhood experiences was in 1968 stepping into the Uptown Theater on Connecticut Avenue in Washington, DC, one of the few movie theaters nationwide that projected in large-screen cinerama. I was there at the urging of a friend, who said I simply must see the remarkable film whose run had started the previous week. "You won't understand it," he said, "but that doesn't matter. " All I knew was that the film was about science fiction and had great special eflPects. So I sat in the front row of the balcony, munched my popcorn, sat back, and experienced what was widely touted as "the ultimate trip:" 2001: A Space Odyssey. My friend was right: I didn't understand it. . . but in some senses that didn't matter. (Even today, after seeing the film 40 times, I continue to discover its many subtle secrets.) I just had the sense that I had experienced a creation of the highest aesthetic order: unique, fresh, awe inspiring. Here was a film so distinctive that the first half hour had no words whatsoever; the last half hour had no words either; and nearly all the words in between were banal and irrelevant to the plot - quips about security through Voiceprint identification, how to make a phonecall from a space station, government pension plans, and so on.

Multimedia stands as one of the most challenging and exciting aspects of the information era. Although there are books available that deal with various facets of multimedia, the field has urgently needed a comprehensive look at recent developments in the systems, processing, and applications of image and video data in a multimedia environment.

As modern technologies continue to develop and evolve, the ability of users to interface with new systems becomes a paramount concern. Research into new ways for humans to make use of advanced computers and other such technologies is necessary to fully realize the potential of 21st century tools. Human-Computer Interaction: Concepts, Methodologies, Tools, and Applications gathers research on user interfaces for advanced technologies and how these interfaces can facilitate new developments in the fields of robotics, assistive technologies, and computational intelligence. This four-volume reference contains cutting-edge research for computer scientists; faculty and students of robotics, digital science, and networked communications; and clinicians invested in assistive technologies. This seminal reference work includes chapters on topics pertaining to system usability, interactive design, mobile interfaces, virtual worlds, and more.

The objective of the 2014 International Conference on Computer, Network Security and Communication Engineering (CNSCE2014) is to provide a platform for all researchers in the field of Computer, Network Security and Communication Engineering to share the most advanced knowledge from both academic and industrial world, to communicate with each other about their experience and most up-to-date research achievements, and to discuss issues and future prospects in these fields. As an international conference mixed with academia and industry, CNSCE2014 provides attendees not only the free exchange of ideas and challenges faced by these two key stakeholders and encourage future collaboration between members of these groups but also a good opportunity to make friends with scholars around the word. As the first session of the international conference on CNSCE, it covers topics related to Computer, Network Security and Communication Engineering. CNSCE2014 has attracted many scholars, researchers and practitioners in these fields from various countries. They take this chance to get together, sharing their latest research achievements with each other. It has also achieved great success by its unique characteristics and strong academic atmosphere as well as its authority.

Thoroughly revised, this third edition focuses on modern techniques used to generate synthetic three-dimensional images in a fraction of a second. With the advent of programmable shaders, a wide variety of new algorithms have arisen and evolved over the past few years. This edition discusses current, practical rendering methods used in games and other applications. It also presents a solid theoretical framework and relevant mathematics for the field of interactive computer graphics, all in an approachable style. The authors have made the figures used in the book available for download for fair use.:Download Figures. Reviews Rendering has been a required reference for professional graphics practitioners for nearly a decade. This latest edition is as relevant as ever, covering topics from essential mathematical foundations to advanced techniques used by today's cutting edge games. -- Gabe Newell, President, Valve, May 2008 Rendering ... has been completely revised and revamped for its updated third edition, which focuses on modern techniques used to generate three-dimensional images in a fraction of the time

old processes took. From practical rendering for games to math and details for better interactive applications, it's not to be missed. -- The Bookwatch, November 2008 You'll get brilliantly lucid explanations of concepts like vertex morphing and variance shadow mapping—as well as a new respect for the incredible craftsmanship that goes into today's PC games. -- Logan Decker, PC Gamer Magazine , February 2009

Here is the second of a two-volume set (LNCS 8021 and 8022) that constitutes the refereed proceedings of the 5th International Conference on Virtual, Augmented and Mixed Reality, VAMR 2013, held as part of the 15th International Conference on Human-Computer Interaction, HCII 2013, held in Las Vegas, USA in July 2013, jointly with 12 other thematically similar conferences. The total of 1666 papers and 303 posters presented at the HCII 2013 conferences was carefully reviewed and selected from 5210 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. The total of 88 contributions included in the VAMR proceedings were carefully reviewed and selected for inclusion in this two-volume set. The papers included in this volume are organized in the following topical sections: healthcare and medical applications; virtual and augmented environments for learning and education; business, industrial and military applications; culture and entertainment applications.

Technological advancements have created novel applications for image and video processing. With these developments, real-world processing problems can be solved more easily. The Handbook of Research on Advanced Concepts in Real-Time Image and Video Processing is a pivotal reference source for the latest research findings on the design, realization, and deployment of image and video processing systems meant for real-time environments. Featuring extensive coverage on relevant areas such as feature detection, reconfigurable computing, and stream processing, this publication is an ideal resource for academics, researchers, graduate students, and technology developers.

Control Engineering and Information Systems contains the papers presented at the 2014 International Conference on Control Engineering and Information Systems (ICCEIS 2014, Yueyang, Hunan, China, 20-22 June 2014). All major aspects of the theory and applications of control engineering and information systems are addressed, including: – Intelligent systems – Teaching cases – Pattern recognition – Industry application – Machine learning – Systems science and systems engineering – Data mining – Optimization – Business process management – Evolution of public sector ICT – IS economics – IS security and privacy – Personal data markets – Wireless ad hoc and sensor networks – Database and system security – Application of spatial information system – Other related areas Control Engineering and Information Systems provides a valuable source of information for scholars, researchers and academics in control engineering and information systems.

Diminished Reality is a new fascinating technology that removes real-world content from live video streams. This sensational live video manipulation actually removes real objects and generates a coherent video stream in real-time. Viewers cannot detect modified content. Existing approaches are restricted to moving objects and static or almost static cameras and do not allow real-time manipulation of video content. Jan Herling presents a new and innovative approach for real-time object removal with arbitrary camera movements.

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.

System Simulation Techniques with MATLAB and Simulinkcomprehensively explains how to use MATLAB and Simulink to performdynamic systems simulation tasks for engineering andnon-engineering applications. This book begins with covering the fundamentals of MATLABprogramming and applications, and the solutions to differentmathematical problems in simulation. The fundamentals of Simulinkmodelling and simulation are then presented, followed by coverageof intermediate level modelling skills and more advanced techniquesin Simulink modelling and applications. Finally the modelling and simulation of engineering andnon-engineering systems are presented. The areas covered includeelectrical, electronic systems, mechanical systems, pharmacokineticsystems, video and image processing systems and discrete eventsystems. Hardware-in-the-loop simulation and real-timeapplication are also discussed. Key features: Progressive building of simulation skills using Simulink, frombasics through to advanced levels, with illustrations andexamples Wide coverage of simulation topics of applications fromengineering to non-engineering systems Dedicated chapter on hardware-in-the-loop simulation and realtime control End of chapter exercises A companion website hosting a solution manual and powerpointslides System Simulation Techniques with MATLAB and Simulink isa suitable textbook for senior undergraduate/postgraduate coursescovering modelling and simulation, and is also an ideal referencefor researchers and practitioners in industry.

Real-time Image and Video ProcessingFrom Research to RealityMorgan & Claypool Publishers

The historical roots, key practitioners, and artistic, theoretical, and technological trends in the incorporation of new media into the performing arts. The past decade has seen an extraordinarily intense period of experimentation with computer technology within the performing arts. Digital media has been increasingly incorporated into live theater and dance, and new forms of interactive performance have emerged in participatory installations, on CD-ROM, and on the Web. In Digital Performance, Steve Dixon traces the evolution of these practices, presents detailed accounts of key practitioners and performances, and

analyzes the theoretical, artistic, and technological contexts of this form of new media art. Dixon finds precursors to today's digital performances in past forms of theatrical technology that range from the deus ex machina of classical Greek drama to Wagner's Gesamtkunstwerk (concept of the total artwork), and draws parallels between contemporary work and the theories and practices of Constructivism, Dada, Surrealism, Expressionism, Futurism, and multimedia pioneers of the twentieth century. For a theoretical perspective on digital performance, Dixon draws on the work of Philip Auslander, Walter Benjamin, Roland Barthes, Jean Baudrillard, and others. To document and analyze contemporary digital performance practice, Dixon considers changes in the representation of the body, space, and time. He considers virtual bodies, avatars, and digital doubles, as well as performances by artists including Stelarc, Robert Lepage, Merce Cunningham, Laurie Anderson, Blast Theory, and Eduardo Kac. He investigates new media's novel approaches to creating theatrical spectacle, including virtual reality and robot performance work, telematic performances in which remote locations are linked in real time, Webcams, and online drama communities, and considers the "extratemporal" illusion created by some technological theater works. Finally, he defines categories of interactivity, from navigational to participatory and collaborative. Dixon challenges dominant theoretical approaches to digital performance—including what he calls postmodernism's denial of the new—and offers a series of boldly original arguments in their place.

The research reports presented in this volume focus on the implications of the T9000 microprocessor, which offers new elements in transputing and parallel programming. Subjects discussed include genetic algorithms, image analysis, neural networks, robotics and parallel architectures.

Nowadays, the technological advances allow developing many applications in different fields. In the book Colorimetry and Image Processing, two important fields are presented: colorimetry and image processing. Colorimetry is observed by a visual interactive programming learning system, an approach based on color analysis of Habanero chili pepper, an approach based on scene image segmentation centered on mathematical morphology, other systems based on the simulations of the dichromatic color appearance, and, finally, an approach based on the color reconstruction in order to enhancement its using super-resolution methods. On the other hand, image processing is shown by pansharpening algorithms for hyperspectral images, an approach based on the analysis of the low-resolution satellite images and ground-based sky camera for estimating the cloud motion, a hybrid super-resolution framework that combines desirable features of TV and PM models, a study of the real-time video analysis used for anthropometric measurements on agricultural tools and machines, and finally, an approach based on the threshold optimization iterative algorithm using the ground truth data and assessing the accuracy of a range of threshold values through the corresponding Kappa coefficient of concordance.

This textbook presents the fundamental concepts and methods for understanding and working with images and video in an unique, easy-to-read style which ensures the material is accessible to a wide audience. Exploring more than just the basics of image processing, the text provides a specific focus on the practical design and implementation of real systems for processing video data. Features: includes more than 100 exercises, as well as C-code snippets of the key algorithms; covers topics on image acquisition, color images, point processing, neighborhood processing, morphology, BLOB analysis, segmentation in video, tracking, geometric transformation, and visual effects; requires only a minimal understanding of mathematics; presents two chapters dedicated to applications; provides a guide to defining suitable values for parameters in video and image processing systems, and to conversion between the RGB color representation and the HIS, HSV and YUV/YCbCr color representations.

Real-Time Image and Video Processing presents an overview of the guidelines and strategies for transitioning an image or video processing algorithm from a research environment into a real-time constrained environment. Such guidelines and strategies are scattered in the literature of various disciplines including image processing, computer engineering, and software engineering, and thus have not previously appeared in one place. By bringing these strategies into one place, the book is intended to serve the greater community of researchers, practicing engineers, industrial professionals, who are interested in taking an image or video processing algorithm from a research environment to an actual real-time implementation on a resource constrained hardware platform. These strategies consist of algorithm simplifications, hardware architectures, and software methods. Throughout the book, carefully selected, representative examples from the literature are presented to illustrate the discussed concepts. After reading the book, readers will have a strong understanding of the wide variety of techniques and tools involved in designing a real-time image or video processing system.

Application-Driven Architecture Synthesis describes the state of the art of architectural synthesis for complex real-time processing. In order to deal with the stringent timing requirements and the intricacies of complex real-time signal and data processing, target architecture styles and target application domains have been adopted to make the synthesis approach feasible. These approaches are also heavily application-driven, which is illustrated by many realistic demonstrations, used as examples in the book. The focus is on domains where application-specific solutions are attractive, such as significant parts of audio, telecom, instrumentation, speech, robotics, medical and automotive processing, image and video processing, TV, multi-media, radar, sonar. Application-Driven Architecture Synthesis is of interest to both academics and senior design engineers and CAD managers in industry. It provides an excellent overview of what capabilities to expect from future practical design tools, and includes an extensive bibliography.

This volume includes extended and revised versions of a set of selected papers from the International Conference on Electric and Electronics (EEIC 2011) , held on June 20-22 , 2011, which is jointly organized by Nanchang University, Springer, and IEEE IAS Nanchang Chapter. The objective of EEIC 2011 Volume 1 is to provide a major interdisciplinary forum for the presentation of new approaches from Electronics and Signal Processing, to foster integration of the latest developments in scientific research. 133 related topic papers were selected into this volume. All the papers were reviewed by 2 program committee members and selected by the volume editor Prof. Wensong Hu. We hope every participant can have a good opportunity to exchange their research ideas and results and to discuss the state of the art in the areas of the Electronics and Signal Processing.

Recent developments in computer visualisation mean that it is now possible to combine computer-generated image sequences with real video, in real time, for broadcast quality production. This will not only revolutionise the broadcast industry, by making "electronic film sets" possible for example, but also has important implications for related fields such as virtual reality, multi-media, industrial vision, and medical image processing. This volume contains papers from the European Workshop on Combined Real and Synthetic Image Processing for Broadcast and Video Production, held in Hamburg, 23-24 November 1994. The papers cover three main aspects of research: hardware, image analysis, and image synthesis, and include several key contributions from the EU RACE II supported MONA LISA (MOdelling NAturaL Images for Synthesis and Animation) project. The resulting volume gives a comprehensive overview of this important area of research, and will be of interest to practitioners, researchers, and postgraduate students.

This book constitutes the refereed proceedings of the 17th International Conference on Advanced Concepts for Intelligent Vision Systems, ACIVS 2016, held in Lecce, Italy, in October 2016. The 64 revised full papers presented in this volume were carefully selected from 137 submissions. They deal with classical low-level image processing techniques; image and video compression; 3D; security and forensics; and evaluation methodologies.

M-health can be defined as the 'emerging mobile communications and network technologies for healthcare systems.' This book paves the path toward understanding the future of m-health technologies and services and also introducing the impact of mobility on existing e-health and commercial telemedical systems. M-Health: Emerging Mobile Health Systems presents a new and forward-looking source of

information that explores the present and future trends in the applications of current and emerging wireless communication and network technologies for different healthcare scenaria. It also provides a discovery path on the synergies between the 2.5G and 3G systems and other relevant computing and information technologies and how they prescribe the way for the next generation of m-health services. The book contains 47 chapters, arranged in five thematic sections: Introduction to Mobile M-health Systems, Smart Mobile Applications for Health Professionals, Signal, Image, and Video Compression for M-health Applications, Emergency Health Care Systems and Services, Echography Systems and Services, and Remote and Home Monitoring. This book is intended for all those working in the field of information technologies in biomedicine, as well as for people working in future applications of wireless communications and wireless telemedical systems. It provides different levels of material to researchers, computing engineers, and medical practitioners interested in emerging e-health systems. This book will be a useful reference for all the readers in this important and growing field of research, and will contribute to the roadmap of future m-health systems and improve the development of effective healthcare delivery systems.

Issues in Applied Computing / 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Computer-Assisted Tomography. The editors have built Issues in Applied Computing: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Computer-Assisted Tomography in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Applied Computing: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

This book constitutes the thoroughly refereed post-conference proceedings of six international workshops held in the framework of the 7th Pacific-Rim Symposium on Image and Video Technology, PSIVT 2015, during November 23-24, 2015, in Auckland, New Zealand. The 29 revised full papers presented were carefully selected from 58 submissions. Their topics diversely ranged from well-established areas to novel current trends: robot vision, RV 2015; 2D and 3D geometric properties from incomplete data, GPID 2015; vision meets graphics, VG 2015; passive and active electro-optical sensors for aerial and space imaging, EO4AS 2015; mathematical and computational methods in biomedical imaging and image analysis, MCBMIIA 2015; and video surveillance, VSWS 2015.

The fields of computer vision and image processing are constantly evolving as new research and applications in these areas emerge. Staying abreast of the most up-to-date developments in this field is necessary in order to promote further research and apply these developments in real-world settings. Computer Vision: Concepts, Methodologies, Tools, and Applications is an innovative reference source for the latest academic material on development of computers for gaining understanding about videos and digital images. Highlighting a range of topics, such as computational models, machine learning, and image processing, this multi-volume book is ideally designed for academicians, technology professionals, students, and researchers interested in uncovering the latest innovations in the field.

This book includes the papers presented in 2nd International Conference on Image Processing and Capsule Networks [ICIPCN 2021]. In this digital era, image processing plays a significant role in wide range of real-time applications like sensing, automation, health care, industries etc. Today, with many technological advances, many state-of-the-art techniques are integrated with image processing domain to enhance its adaptiveness, reliability, accuracy and efficiency. With the advent of intelligent technologies like machine learning especially deep learning, the imaging system can make decisions more and more accurately. Moreover, the application of deep learning will also help to identify the hidden information in volumetric images. Nevertheless, capsule network, a type of deep neural network, is revolutionizing the image processing domain; it is still in a research and development phase. In this perspective, this book includes the state-of-the-art research works that integrate intelligent techniques with image processing models, and also, it reports the recent advancements in image processing techniques. Also, this book includes the novel tools and techniques for deploying real-time image processing applications. The chapters will briefly discuss about the intelligent image processing technologies, which leverage an authoritative and detailed representation by delivering an enhanced image and video recognition and adaptive processing mechanisms, which may clearly define the image and the family of image processing techniques and applications that are closely related to the humanistic way of thinking.

Written by an expert in the game industry, Christer Ericson's new book is a comprehensive guide to the components of efficient real-time collision detection systems. The book provides the tools and know-how needed to implement industrial-strength collision detection for the highly detailed dynamic environments of applications such as 3D games, virtual reality applications, and physical simulators. Of the many topics covered, a key focus is on spatial and object partitioning through a wide variety of grids, trees, and sorting methods. The author also presents a large collection of intersection and distance tests for both simple and complex geometric shapes. Sections on vector and matrix algebra provide the background for advanced topics such as Voronoi regions, Minkowski sums, and linear and quadratic programming. Of utmost importance to programmers but rarely discussed in this much detail in other books are the chapters covering numerical and geometric robustness, both essential topics for collision detection systems. Also unique are the chapters discussing how graphics hardware can assist in collision detection computations and on advanced optimization for modern computer architectures. All in all, this comprehensive book will become the industry standard for years to come.

Quickly obtain solutions to common Java image processing problems, learn best practices, and understand everything OpenCV has to offer for image processing. You will work with a JVM image wrapper to make it very easy to run image transformation through pipelines and obtain instant visual feedback. This book makes heavy use of the Gorilla environment where code can be executed directly in the browser, and image transformation results can also be visualized directly in the browser. Java Image Processing Recipes includes recipes on more advanced image manipulation techniques, such as image smoothing, cartooning, sketching, and mastering masks to apply changes only to parts of the image. You'll see how OpenCV features provide instant solutions to problems such as edges detection and shape finding. Finally, the book contains practical recipes dealing with webcams and various video streams, giving you ready-made code with which to do real-time video analysis. What You Will Learn Create your personal real-time image manipulation environment Manipulate image characteristics with OpenCV Work with the Origami image wrapper Apply manipulations to webcams and video streams Who This Book Is For Developers that want to manipulate images and use other advanced imaging techniques, through code running in the JVM.