

Emerging Trends In Image Processing Computer Vision And Pattern Recognition Emerging Trends In Computer Science And Applied Computing

The field of computational intelligence has grown tremendously over that past five years, thanks to evolving soft computing and artificial intelligent methodologies, tools and techniques for envisaging the essence of intelligence embedded in real life observations. Consequently, scientists have been able to explain and understand real life processes and practices which previously often remain unexplored by virtue of their underlying imprecision, uncertainties and redundancies, and the unavailability of appropriate methods for describing the incompleteness and vagueness of information represented. With the advent of the field of computational intelligence, researchers are now able to explore and unearth the intelligence, otherwise insurmountable, embedded in the systems under consideration. Computational Intelligence is now not limited to only specific computational fields, it has made inroads in signal processing, smart manufacturing, predictive control, robot navigation, smart cities, and sensor design to name a few. Recent Trends in Computational Intelligence Enabled Research: Theoretical Foundations and Applications explores the use of this computational paradigm across a wide range of applied domains which handle meaningful information. Chapters investigate a broad spectrum of the applications of computational intelligence across different platforms and disciplines, expanding our knowledge base of various research initiatives in this direction. This volume aims to bring together researchers, engineers, developers and practitioners from academia and industry working in all major areas and interdisciplinary areas of computational intelligence, communication systems, computer networks, and soft computing. Provides insights into the theory, algorithms, implementation, and application of computational intelligence techniques Covers a wide range of applications of deep learning across various domains which are researching the applications of computational intelligence Investigates novel techniques and reviews the state-of-the-art in the areas of machine learning, computer vision, soft computing techniques

Soft Computing Based Medical Image Analysis presents the foremost techniques of soft computing in medical image analysis and processing. It includes image enhancement, segmentation, classification-based soft computing, and their application in diagnostic imaging, as well as an extensive background for the development of intelligent systems based on soft computing used in medical image analysis and processing. The book introduces the theory and concepts of digital image analysis and processing based on soft computing with real-world medical imaging applications. Comparative studies for soft computing based medical imaging techniques and traditional approaches in medicine are addressed, providing flexible and sophisticated application-oriented solutions. Covers numerous soft computing approaches, including fuzzy logic, neural networks, evolutionary computing, rough sets and Swarm intelligence Presents transverse research in soft computing formation from various engineering and industrial sectors in the medical domain Highlights challenges and the future scope for soft computing based medical analysis and processing techniques

Emerging Trends in Image Processing, Computer Vision, and Pattern Recognition discusses the latest in trends in imaging science which at its core consists of three intertwined computer science fields, namely: Image Processing, Computer Vision, and Pattern Recognition. There is significant renewed interest in each of these three fields fueled by Big Data and Data Analytic initiatives including but not limited to; applications as diverse as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering. These three core topics discussed here provide a solid introduction to image processing along with low-level processing techniques, computer vision fundamentals along with examples of applied applications and pattern recognition algorithms and methodologies that will be of value to the image processing and computer vision research communities. Drawing upon the knowledge of recognized experts with years of practical experience and discussing new and novel applications Editors' Leonidas Deligiannidis and Hamid Arabnia cover; Many perspectives of image processing spanning from fundamental mathematical theory and sampling, to image representation and reconstruction, filtering in spatial and frequency domain, geometrical transformations, and image restoration and segmentation Key application techniques in computer vision some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication Pattern recognition algorithms including but not limited to; Supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms. How to use image processing and visualization to analyze big data. Discusses novel applications that can benefit from image processing, computer vision and pattern recognition such as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering. Covers key application techniques in computer vision from fundamentals to mid to high level processing some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication. Presents a number of pattern recognition algorithms and methodologies including but not limited to; supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms. Explains how to use image processing and visualization to analyze big data.

This book features a collection of extended versions of papers presented at OPTRONIX 2019, held at the University of Engineering & Management, Kolkata, India, on 18 – 20, March 2019. It includes research on the detection of skin disease, breast tumors, lung cancer and rotten fruit based on intelligent image processing applications, intelligent computing, neuro-fuzzy applications, soil moisture prediction, intelligent encryption and authentication, as well as image analysis and image analytics.

Though an individual can process a limitless amount of information, the human brain can only comprehend a small amount of data at a time. Using technology can improve the process and comprehension of information, but the technology must learn to behave more like a human brain to employ concepts like memory, learning, visualization ability, and decision making. Emerging Trends and Applications in Cognitive Computing is a fundamental scholarly source that provides empirical studies and theoretical analysis to show how learning methods can solve important application problems throughout various industries and explain how machine learning research is conducted. Including innovative research on topics such as deep neural networks, cyber-physical systems, and pattern recognition, this collection of research will benefit individuals such as IT professionals, academicians, students, researchers, and managers.

As one of the most important tasks in biomedical imaging, image segmentation provides the foundation for quantitative reasoning and diagnostic techniques. A large variety of different imaging techniques, each with its own physical principle and characteristics (e.g., noise modeling), often requires modality-specific algorithmic treatment. In recent years, substantial progress has been made to biomedical image segmentation. Biomedical image segmentation is characterized by several specific factors. This book presents an overview of the advanced segmentation algorithms and their applications.

Similar to the way in which computer vision and computer graphics act as the dual fields that connect image processing in modern computer science, the field of image processing can be considered a crucial middle road between the vision and graphics fields. Research Developments in Computer Vision and Image Processing: Methodologies and Applications brings together various research methodologies and trends in emerging areas of application of computer vision and image processing. This book is useful for students, researchers, scientists, and engineers interested in the research developments of this rapidly growing field.

Proceedings of the 2019 International Conference on Image Processing, Computer Vision, and Pattern Recognition (ICIP'19) held July 29th - August 1st, 2019 in Las Vegas, Nevada.

This book provides a comprehensive introduction to quantum image processing, which focuses on extending conventional image processing tasks to the quantum computing frameworks. It summarizes the available quantum image representations and their operations, reviews the

possible quantum image applications and their implementation, and discusses the open questions and future development trends. It offers a valuable reference resource for graduate students and researchers interested in this emerging interdisciplinary field.

This book constitutes the refereed proceedings of seven workshops held at the 18th International Conference on Image Analysis and Processing, ICIAP 2015, in Genoa, Italy, in September 2015: International Workshop on Recent Advances in Digital Security: Biometrics and Forensics, BioFor 2015; International Workshop on Color in Texture and Material Recognition, CTMR 2015; International Workshop on Medical Imaging in Rheumatology: Advanced applications for the analysis of inflammation and damage in the rheumatoid Joint, RHEUMA 2015; International Workshop on Image-Based Smart City Application, ISCA 2015; International Workshop on Multimedia Assisted Dietary Management, MADiMa 2015; International Workshop on Scene Background Modeling and Initialization, SBMI 2015; and International Workshop on Image and Video Processing for Quality of Multimedia Experience, QoEM 2015.

The latest trends in Information Technology represent a new intellectual paradigm for scientific exploration and visualization of scientific phenomena. The present treatise covers almost all the emerging technologies in the field. Academicians, engineers, industrialists, scientists and researchers engaged in teaching, research and development of Computer Science and Information Technology will find the book useful for their future academic and research work. The present treatise comprising 225 articles broadly covers the following topics exhaustively. 01. Advance Networking and Security/Wireless Networking/Cyber Laws 02. Advance Software Computing 03. Artificial Intelligence/Natural Language Processing/ Neural Networks 04. Bioinformatics/Biometrics 05. Data Mining/E-Commerce/E-Learning 06. Image Processing, Content Based Image Retrieval, Medical and Bio-Medical Imaging, Wavelets 07. Information Processing/Audio and Text Processing/Cryptography, Steganography and Digital Watermarking 08. Pattern Recognition/Machine Vision/Image Motion, Video Processing 09. Signal Processing and Communication/Remote Sensing 10. Speech Processing & Recognition, Human Computer Interaction 11. Information and Communication Technology

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.

This two-volume set constitutes the refereed proceedings of the Third International Conference on Recent Trends in Image Processing and Pattern Recognition (RTIP2R) 2020, held in Aurangabad, India, in January 2020. The 78 revised full papers presented were carefully reviewed and selected from 329 submissions. The papers are organized in topical sections in the two volumes. Part I: Computer vision and applications; Data science and machine learning; Document understanding and Recognition. Part II: Healthcare informatics and medical imaging; Image analysis and recognition; Signal processing and pattern recognition; Image and signal processing in Agriculture.

This book presents fascinating, state-of-the-art research findings in the field of signal and image processing. It includes conference papers covering a wide range of signal processing applications involving filtering, encoding, classification, segmentation, clustering, feature extraction, denoising, watermarking, object recognition, reconstruction and fractal analysis. It addresses various types of signals, such as image, video, speech, non-speech audio, handwritten text, geometric diagram, ECG and EMG signals; MRI, PET and CT scan images; THz signals; solar wind speed signals (SWS); and photoplethysmogram (PPG) signals, and demonstrates how new paradigms of intelligent computing, like quantum computing, can be applied to process and analyze signals precisely and effectively. The book also discusses applications of hybrid methods, algorithms and image filters, which are proving to be better than the individual techniques or algorithms.

This book focuses on research trends in image processing and recognition and corresponding developments. Among them, the book focuses on recent research, especially in the field of advanced human-computer interaction and intelligent computing. Given the existing interaction and recognition of the station, some novel topics are proposed, including how to establish a cognitive model in human-computer interaction and how to express and transfer human knowledge into human-machine image recognition. In an interactive implementation, how to implement user experience through image recognition during machine interaction. The main contents of this book are arranged as follows.

Chapter 1 introduces the research background, research questions, goals, research questions and overviews of this book. Chapter 2 focuses on image calculation methods based on principal component analysis (PCA) and related extensions. Chapter 3 presents an image processing scheme that takes into account the user experience and the optimal balance between QoE and QoS management. Chapter 4 focuses on the performance analysis of methods for classifying image textures based on local binary patterns. Chapter 5 introduces the generation of the anti-network (GAN) and its methods. Chapter 6 mainly discusses the recognition of the interest target as the visual consciousness of the image computing system and proposes a fuzzy target-based interest target differentiation system, which is applied to the extinction enhancement as a display. Chapter 7 focuses on the implementation and application of PCA image processing and its application in computer vision in the fields of image compression, visual tracking, image recognition, and super-resolution image reconstruction. Chapter 8 introduces various applications of feature extraction and classification techniques in seizures. Chapter 9 introduces some typical image processing based on GAN, involving multiple fields. Chapter 10 introduces an agent-based collaborative information processing framework with stereo vision applications. Chapter 11 introduces the MR application system as a synthesis of the methods and algorithms in each of the above chapters and discusses system design and implementation in terms of functions, modules, and workflows. Chapter 12 evaluates the book, draws conclusions, and proposes advances in image recognition and its advances in image recognition, limitations, and future work, and applies them to intelligent HCI in system design. Objects, human knowledge and user experience, QoE-QoS management, system management, and confidentiality and security.

Continuous improvements in technological applications have allowed more opportunities to develop automated systems. This not only leads to higher success in smart data analysis, but it increases the overall probability of technological progression. The Handbook of Research on Machine Learning Innovations and Trends is a key resource on the latest advances and research regarding the vast range of advanced systems and applications involved in machine intelligence. Highlighting multidisciplinary studies on decision theory, intelligent search, and multi-agent systems, this publication is an ideal reference source for professionals and researchers working in the field of machine learning and its applications.

Digital image processing is a field that is constantly improving. Gaining high-level understanding from digital images is a key requirement for computing. One aspect of study that is assisting with this advancement is fractal theory. This new science has gained momentum and popularity as it has become a key topic of research in the area of image analysis. Examining Fractal Image Processing and Analysis is an essential reference source that discusses fractal theory applications and analysis, including box-counting analysis, multi-fractal analysis, 3D fractal analysis, and chaos theory, as well as recent trends in other soft computing

techniques. Featuring research on topics such as image compression, pattern matching, and artificial neural networks, this book is ideally designed for system engineers, computer engineers, professionals, academicians, researchers, and students seeking coverage on problem-oriented processing techniques and imaging technologies.

This book highlights recent advances and emerging technologies that utilize computational intelligence in signal processing, computing, imaging science, artificial intelligence, and their applications. It covers all branches of artificial intelligence and machine learning that are based on computation at some level, e.g. artificial neural networks, evolutionary algorithms, fuzzy systems, and automatic medical identification systems. Exploring recent trends in research and applications, the book offers a valuable resource for professors, researchers, and engineers alike.

This book constitutes the proceedings of the First International Conference on Emerging Trends in Engineering (ICETE), held at University College of Engineering and organised by the Alumni Association, University College of Engineering, Osmania University, in Hyderabad, India on 22–23 March 2019. The proceedings of the ICETE are published in three volumes, covering seven areas: Biomedical, Civil, Computer Science, Electrical & Electronics, Electronics & Communication, Mechanical, and Mining Engineering. The 215 peer-reviewed papers from around the globe present the latest state-of-the-art research, and are useful to postgraduate students, researchers, academics and industry engineers working in the respective fields. Volume 2 presents papers on the theme “Advances in Decision Sciences, Image Processing, Security and Computer Vision – International Conference on Emerging Trends in Engineering (ICETE)”. It includes state-of-the-art technical contributions in the areas of electronics and communication engineering and electrical and electronics engineering, discussing the latest sustainable developments in fields such as signal processing and communications; GNSS and VLSI; microwaves and antennas; signal, speech and image processing; power systems; and power electronics.

CI Techniques & Algorithms for a Variety of Medical Imaging Situations Documents recent advances and stimulates further research A compilation of the latest trends in the field, Computational Intelligence in Medical Imaging: Techniques and Applications explores how intelligent computing can bring enormous benefit to existing technology in medical image processing as well as improve medical imaging research. The contributors also cover state-of-the-art research toward integrating medical image processing with artificial intelligence and machine learning approaches. The book presents numerous techniques, algorithms, and models. It describes neural networks, evolutionary optimization techniques, rough sets, support vector machines, tabu search, fuzzy logic, a Bayesian probabilistic framework, a statistical parts-based appearance model, a reinforcement learning-based multistage image segmentation algorithm, a machine learning approach, Monte Carlo simulations, and intelligent, deformable models. The contributors discuss how these techniques are used to classify wound images, extract the boundaries of skin lesions, analyze prostate cancer, handle the inherent uncertainties in mammographic images, and encapsulate the natural intersubject anatomical variance in medical images. They also examine prostate segmentation in transrectal ultrasound images, automatic segmentation and diagnosis of bone scintigraphy, 3-D medical image segmentation, and the reconstruction of SPECT and PET tomographic images.

This book covers current technological innovations and applications in image processing, introducing analysis techniques and describing applications in remote sensing and manufacturing, among others. The authors include new concepts of color space transformation like color interpolation, among others. Also, the concept of Shearlet Transform and Wavelet Transform and their implementation are discussed. The authors include an interesting perspective about concepts and techniques of remote sensing like image mining, geographical, and agricultural resources. The book also includes several applications of human organ image analysis in biomedical image analysis. In addition, the principle of moving object detection and tracking -- including recent trends in moving vehicles and ship detection – is described.

The book focuses on one of the key issues in document image processing – graphical symbol recognition, which is a sub-field of the larger research domain of pattern recognition. It covers several approaches: statistical, structural and syntactic, and discusses their merits and demerits considering the context. Through comprehensive experiments, it also explores whether these approaches can be combined. The book presents research problems, state-of-the-art methods that convey basic steps as well as prominent techniques, evaluation metrics and protocols, and research standpoints/directions that are associated with it. However, it is not limited to straightforward isolated graphics (visual patterns) recognition; it also addresses complex and composite graphical symbols recognition, which is motivated by real-world industrial problems.

This book constitutes the proceedings of the First International Conference on Emerging Trends in Engineering (ICETE), held at University College of Engineering and organised by the Alumni Association, University College of Engineering, Osmania University, in Hyderabad, India on 22–23 March 2019. The proceedings of the ICETE are published in three volumes, covering seven areas: Biomedical, Civil, Computer Science, Electrical & Electronics, Electronics & Communication, Mechanical, and Mining Engineering. The 215 peer-reviewed papers from around the globe present the latest state-of-the-art research, and are useful to postgraduate students, researchers, academics and industry engineers working in the respective fields. Volume 1 presents papers on the theme “Advances in Decision Sciences, Image Processing, Security and Computer Vision – International Conference on Emerging Trends in Engineering (ICETE)”. It includes state-of-the-art technical contributions in the area of biomedical and computer science engineering, discussing sustainable developments in the field, such as instrumentation and innovation, signal and image processing, Internet of Things, cryptography and network security, data mining and machine learning.

This three-book set constitutes the refereed proceedings of the Second International Conference on Recent Trends in Image Processing and Pattern Recognition (RTIP2R) 2018, held in Solapur, India, in December 2018. The 173 revised full papers presented were carefully reviewed and selected from 374 submissions. The papers are organized in topical sections in the three volumes. Part I: computer vision and pattern recognition; machine learning and applications; and image processing. Part II: healthcare and medical imaging; biometrics and applications. Part III: document image analysis; image analysis in agriculture; and data mining, information retrieval and applications.

This book presents high-quality peer-reviewed papers from the International Conference on Advanced Communication and Computational Technology (ICACCT) 2019 held at the National Institute of Technology, Kurukshetra, India. The contents are broadly divided into four parts: (i) Advanced Computing, (ii) Communication and Networking, (iii) VLSI and Embedded Systems, and (iv) Optimization Techniques. The major focus is on emerging computing technologies and their applications in the domain of communication and networking. The book will prove useful for engineers and researchers working on physical, data link and transport layers of communication protocols. Also, this will be useful for industry professionals interested in manufacturing of

communication devices, modems, routers etc. with enhanced computational and data handling capacities.

This book contains interesting findings of some state-of-the-art research in the field of signal and image processing. It contains twenty one chapters covering a wide range of signal processing applications involving filtering, encoding, classification, segmentation, clustering, feature extraction, denoising, watermarking, object recognition, reconstruction and fractal analysis. Various types of signals including image, video, speech, non-speech audio, handwritten text, geometric diagram, ECG and EMG signals, MRI, PET and CT scan images, THz signals, solar wind speed signals (SWS) and photoplethysmogram (PPG) signals have been dealt with. It demonstrates how new paradigms of intelligent computing like quantum computing can be applied to process and analyze signals in a most precise and effective manner. Processing of high precision signals for real time target recognition by radar and processing of brain images, ECG and EMG signals that feature in this book have significant implications in defense mechanism and medical diagnosis. There are also applications of hybrid methods, algorithms and image filters which are proving to be better than the individual techniques or algorithms. Thus the present volume, enriched in depth and variety of techniques and algorithms concerning processing of various types of signals, is likely to be used as a compact yet handy reference for the young researchers, academicians and scientists working in the domain of signal and image processing and also to the post graduate students of computer science and information technology.

Applied Signal and Image Processing: Multidisciplinary Advancements highlights the growing multidisciplinary nature of signal and image processing by focusing on emerging applications and recent advances in well-established fields. This book covers sta This volume of original papers has been assembled to honor the achievements of Professor Thomas S Huang in the area of image processing and image analysis. Professor Huang's life of inquiry has spanned a number of decades as his work on imaging problems began in 1960's. Over these 40 years, he has made many fundamental and pioneering contributions to nearly every area of this field. Professor Huang has received numerous Awards, including the prestigious Jack Kilby Signal Processing Medal from IEEE. He has been elected to the National Academy of Engineering, and named Fellow of IEEE, Fellow of OSA, Fellow of IAPR, and Fellow of SPIE. Professor Huang has made fundamental contributions to image processing, pattern recognition, and computer vision: including design and stability test of multidimensional digital filters, digital holography; compression techniques for documents and images; 3D motion and modeling, analysis and visualization of the human face, hand and body, multi-modal human-computer interfaces; and multimedia databases. Many of his research ideas have been seminal, opening up new areas of research. Professor Huang is continuing his contribution to the field in the new millennium This book is intended to highlight his contributions by showing the breadth of areas in which his students are working. As such, contributed chapters were written by some of his many former graduate students (some with Professor Huang as a coauthor) and illustrate not only his contributions to imaging science but also his commitment to educational endeavor. The breadth of contributions is an indication of influence of Professor Huang to the field of signal processing, image processing, computer vision and applications; the book includes chapters on learning in image retrieval, facial motion analysis, cloud motion tracking, wavelet coding, robust video transmission, and many other topics. The Appendix contains several reprints of Professor Huang's most influential papers from 1970's to 1990's. This book is directed towards image processing researchers, including academic faculty, graduate students and industry researchers, as well as toward professionals working in application areas.

This book contains extended versions of papers presented at the international Conference VIPIMAGE 2009 – ECCOMAS Thematic Conference on Computational Vision and Medical Image, that was held at Faculdade de Engenharia da Universidade do Porto, Portugal, from 14th to 16th of October 2009. This conference was the second ECCOMAS thematic conference on computational vision and medical image processing. It covered topics related to image processing and analysis, medical imaging and computational modelling and simulation, considering their multidisciplinary nature. The book collects the state-of-the-art research, methods and new trends on the subject of computational vision and medical image processing contributing to the development of these knowledge areas.

This book constitutes the refereed proceedings of seven workshops held at the 19th International Conference on Image Analysis and Processing, ICIAP 2017, in Catania, Italy, in September 2017: First International Workshop on Brain-Inspired Computer Vision – WBICV 2017; Social Signal Processing and Beyond - SSPandBE 2017; Automatic affect analysis and synthesis - 3AS 2017; Background learning for detection and tracking from RGBD Videos - RGBD 2017; Natural human-computer Interaction and ecological perception in immersive Virtual and Augmented Reality - NIVAR 2017; 1st International Workshop on Biometrics as-a-service: cloud-based technology, systems and applications - IWBAAS 2017; 3rd International Workshop on Multimedia Assisted Dietary Management - MADiMa 2017.

As today's world continues to advance, Artificial Intelligence (AI) is a field that has become a staple of technological development and led to the advancement of numerous professional industries. An application within AI that has gained attention is machine learning. Machine learning uses statistical techniques and algorithms to give computer systems the ability to understand and its popularity has circulated through many trades. Understanding this technology and its countless implementations is pivotal for scientists and researchers across the world. The Handbook of Research on Emerging Trends and Applications of Machine Learning provides a high-level understanding of various machine learning algorithms along with modern tools and techniques using Artificial Intelligence. In addition, this book explores the critical role that machine learning plays in a variety of professional fields including healthcare, business, and computer science. While highlighting topics including image processing, predictive analytics, and smart grid management, this book is ideally designed for developers, data scientists, business analysts, information architects, finance agents, healthcare professionals, researchers, retail traders, professors, and graduate students seeking current research on the benefits, implementations, and trends of machine learning.

Computer vision and object recognition are two technological methods that are frequently used in various professional disciplines. In order to maintain high levels of quality and accuracy of services in these sectors, continuous enhancements and improvements are needed. The implementation of artificial intelligence and machine learning has assisted in the development of digital imaging, yet proper research on the applications of these advancing technologies is lacking. Applications of Advanced Machine Intelligence in Computer Vision and Object Recognition: Emerging Research and Opportunities explores the theoretical and practical aspects of modern advancements in digital image analysis and object detection as well as its applications within healthcare, security, and engineering fields. Featuring coverage on a broad range of topics such as disease detection, adaptive learning, and automated image segmentation, this book is ideally designed for engineers, physicians, researchers, academicians, practitioners, scientists, industry professionals, scholars, and students seeking research on the current developments in object recognition using artificial

intelligence.

Image Processing, Computer Vision, and Pattern Recognition 2019 Worldcomp Internation

The two-volume set LNCS 11751 and 11752 constitutes the refereed proceedings of the 20th International Conference on Image Analysis and Processing, ICIAP 2019, held in Trento, Italy, in September 2019. The 117 papers presented were carefully reviewed and selected from 207 submissions. The papers cover both classic and the most recent trends in image processing, computer vision, and pattern recognition, addressing both theoretical and applicative aspects. They are organized in the following topical sections: Video Analysis and Understanding; Pattern Recognition and Machine Learning; Deep Learning; Multiview Geometry and 3D Computer Vision; Image Analysis, Detection and Recognition; Multimedia; Biomedical and Assistive Technology; Digital Forensics; Image processing for Cultural Heritage.

This book constitutes the refereed proceedings of the First International Conference on Recent Trends in Image Processing and Pattern Recognition, RTIP2R 2016, held in Bidar, Karnataka, India, in December 2016. The 39 revised full papers presented were carefully reviewed and selected from 99 submissions. The papers are organized in topical sections on document analysis; pattern analysis and machine learning; image analysis; biomedical image analysis; biometrics.

This book constitutes the refereed proceedings of five workshops and an industrial session held at the 20th International Conference on Image Analysis and Processing, ICIAP 2019, in Trento, Italy, in September 2019: Second International Workshop on Recent Advances in Digital Security: Biometrics and Forensics (BioFor 2019); First International Workshop on Pattern Recognition for Cultural Heritage (PatReCH 2019); First International Workshop eHealth in the Big Data and Deep Learning Era (e-BADLE 2019); International Workshop on Deep Understanding Shopper Behaviors and Interactions in Intelligent Retail Environments (DEEPRETAIL 2019); Industrial Session.

Image and Video Processing is an active area of research due to its potential applications for solving real-world problems. Integrating computational intelligence to analyze and interpret information from image and video technologies is an essential step to processing and applying multimedia data. Emerging Technologies in Intelligent Applications for Image and Video Processing presents the most current research relating to multimedia technologies including video and image restoration and enhancement as well as algorithms used for image and video compression, indexing and retrieval processes, and security concerns. Featuring insight from researchers from around the world, this publication is designed for use by engineers, IT specialists, researchers, and graduate level students.

A Decade of Extraordinary Growth The past decade has brought a surge of growth in the technologies for digital color imaging, multidimensional signal processing, and visual scene analysis. These advances have been crucial to developing new camera-driven applications and commercial products in digital photography. Single-Sensor Imaging: Methods and Applications for Digital Cameras embraces this extraordinary progress, comprehensively covering state-of-the-art systems, processing techniques, and emerging applications. Experts Address Challenges and Trends Single-Sensor Imaging: Methods and Applications for Digital Cameras presents leading experts elucidating their own accomplishments in developing the technologies reshaping this field. The editor invited renowned authorities to address specific research challenges and recent trends in their particular areas of expertise. The book discusses single-sensor digital color imaging fundamentals, including reusable embedded software platform, digital camera image processing chain, optical filter and color filter array designs. It also details the latest techniques and approaches in contemporary and traditional digital camera color image processing and analysis for various sophisticated applications, including: Demosaicking and color restoration White balancing and color transfer Color and exposure correction Image denoising and color enhancement Image compression and storage formats Red-eye detection and removal Image resizing Video-demosaicking and superresolution imaging Image and video stabilization A Solid Foundation of Knowledge to Solve Problems Single-Sensor Imaging: Methods and Applications for Digital Cameras builds a strong fundamental understanding of theory and methods for solving many of today's most interesting and challenging problems in digital color image and video acquisition, analysis, processing, and storage. A broad survey of the existing solutions and relevant literature makes this book a valuable resource both for researchers and those applying rapidly evolving digital camera technologies.

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