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B2UQ8L - MARISA SIMPSON

This book highlights recent research advances on biometrics using new methods such as deep learning, nonlinear graph embedding, fuzzy approaches, and ensemble learning. Included are special biometric technologies related to privacy and security issues, such as cancellable biometrics and soft biometrics. The book also focuses on several emerging topics such as big data issues, internet of things, medical biometrics, healthcare, and robot-human interactions. The authors show how these new applications have triggered a number of new biometric approaches. They show, as an example, how fuzzy extractor has become a useful tool for key generation in biometric banking, and vein/heart rates from medical records can also be used to identify patients. The contributors cover the topics, their methods, and their applications in depth.

This book constitutes the refereed proceedings of the International Conference on Biometrics, ICB 2007, held in Seoul, Korea, August 2007. Biometric criteria covered by the papers are assigned to face, fingerprint, iris, speech and signature, biometric fusion and performance evaluation, gait, keystrokes, and others. In addition, the volume also announces the results of the Face Authentication Competition, FAC 2006.

This book provides a unique picture of the complete 'in-the-wild' biometric recognition processing chain; from data acquisition through to detection, segmentation, encoding, and matching reactions against security incidents. Coverage includes: Data hardware architecture fundamentals Background subtraction of humans in outdoor scenes Camera synchronization Biometric traits: Real-time detection and data segmentation Biometric traits: Feature encoding / matching Fusion at different levels Reaction against security incidents Ethical issues in non-cooperative biometric recognition in public spaces With this book readers will learn how to: Use computer vision, pattern recognition and machine learning methods for biometric recognition in real-world, real-time settings, especially those related to forensics and security Choose the most suited biometric traits and recognition methods for uncontrolled settings Evaluate the performance of a biometric system on real world data Presents a complete picture of the biometric recognition processing chain, ranging from data acquisition to the reaction procedures against security incidents Provides specific requirements and issues behind each typical phase of the development of a robust biometric recognition system Includes a contextualization of the ethical/privacy issues behind the development of a covert recognition system which can be used for forensics and security activities

The two volume set LNCS 4841 and LNCS 4842 constitutes the refereed proceedings of the Third In-

ternational Symposium on Visual Computing, ISVC 2007, held in Lake Tahoe, NV, USA, in November 2007. The 77 revised full papers and 42 poster papers presented together with 32 full and five poster papers of six special tracks were carefully reviewed and selected. The papers cover the four main areas of visual computing: vision, graphics, visualization, and virtual reality.

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Biometric authentication is increasingly gaining popularity in a large spectrum of applications, ranging from government programs (e. g. , national ID cards, visas for international travel, and the fight against terrorism) to personal applications such as logical and physical access control. Although a number of effective solutions are currently available, new approaches and techniques are necessary to overcome some of the limitations of current systems and to open up new frontiers in biometric research and development. The 30 papers presented at Biometric Authentication Workshop 2004 (BioAW 2004) provided a snapshot of current research in biometrics, and identify some new trends. This volume is composed of sections: face recognition, fingerprint recognition, template protection and security, other biometrics, and fusion and multimodal biometrics. For classical biometrics like fingerprint and face recognition, most of the papers in Sect. 1 and 2 address robustness issues in order to make the biometric systems work in suboptimal conditions: examples include face detection and recognition under uncontrolled lighting and pose variations, and fingerprint matching in the case of severe skin distortion. Benchmarking and interoperability of sensors and liveness detection are also topics of primary interest for fingerprint-based systems. Biometrics alone is not the solution for complex security problems. Some of the papers in Sect. 3 focus on designing secure systems; this requires dealing with safe template storage, checking data integrity, and implementing solutions in a privacy-preserving fashion. The match-on-tokens approach, provided that current accuracy and cost limitations can be satisfactorily solved by using new algorithms and hardware, is certainly a promising alternative. The use of new biometric indicators like eye movement, 3D finger shape, and soft traits (e. g.

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

The LNCS volume 11818 constitutes the proceedings of the 14th Chinese Conference on Biometric Recognition, held in Zhuzhou, China, in October 2019. The 56 papers presented in this book were carefully reviewed and selected from 74 submissions. The papers cover a wide range of topics such as face recognition and analysis; hand-based biometrics; eye-based biometrics; gesture, gait, and action; emerging biometrics; feature extraction and classification theory; and behavioral biometrics.

Instead of focusing on the mathematical properties of moments, this book is a compendium of research that demonstrates the effectiveness of orthogonal moment-based features in face recognition, expression recognition, fingerprint recognition and iris recognition. The usefulness of moments and their invariants in pattern recognition is well known. What is less well known is how orthogonal moments may be applied to specific problems in human-centric visual pattern recognition. Unlike previous books, this work highlights the fundamental issues involved in moment-based pattern recognition, from the selection of discriminative features in a high-dimensional setting, to addressing the question of how to classify a large number of patterns based on small training samples. In addition to offering new concepts that illustrate the use of statistical methods in addressing some of these issues, the book presents recent results and provides guidance on implementing the methods. Accordingly, it will be of interest to researchers and graduate students working in the broad areas of computer vision and visual pattern recognition.

This book presents latest results in computer recognition systems, pattern recognition, machine learning, web and data mining. It includes coverage of image processing and computer vision; speech and word recognition; and medical applications.

Intelligent technologies have emerged as imperative tools in computer science and information security. However, advanced computing practices have preceded new methods of attacks on the storage and transmission of data. Developing approaches such as image processing and pattern recognition are susceptible to breaches in security. Modern protection methods for these innovative techniques require additional research. The Handbook of Research on Intelligent Data Processing and Information Security Systems provides emerging research exploring the theoretical and practical aspects of cyber protection and applications within computer science and telecommunications. Special attention is paid to data encryption, steganography, image processing, and recognition, and it targets professionals who want to improve their knowledge in order to increase strategic capabilities and organizational effectiveness. As such, this book is ideal for analysts, programmers, computer engineers, software engineers, mathematicians, data scientists, developers, IT specialists, academicians, researchers, and students within fields of information technology, information security, robotics, artificial intelligence, image processing, computer science, and telecommunications.

The refereed proceedings of the 4th International Conference on Audio-and Video-Based Biometric Person Authentication, AVBPA 2003, held in Guildford, UK, in June 2003. The 39 revised full plenary papers and 72 revised full poster papers were carefully reviewed and selected for presentation. There are topical sections on face; speech; fingerprint; image, video processing, and tracking; general issues; handwriting, signature, and palm; gait; and fusion.

This book constitutes the thoroughly refereed post-workshop proceedings of the Third IAPR TC3 Workshop on Pattern Recognition of Social Signals in Human-Computer-Interaction, MPRSS 2014,

held in Stockholm, Sweden, in August 2014, as a satellite event of the International Conference on Pattern Recognition, ICPR 2014. The 14 revised papers presented focus on pattern recognition, machine learning and information fusion methods with applications in social signal processing, including multimodal emotion recognition, user identification, and recognition of human activities.

The volume includes a set of selected papers extended and revised from the 2011 International Conference on Mechanical Engineering and Technology, held on London, UK, November 24-25, 2011. Mechanical engineering technology is the application of physical principles and current technological developments to the creation of useful machinery and operation design. Technologies such as solid models may be used as the basis for finite element analysis (FEA) and / or computational fluid dynamics (CFD) of the design. Through the application of computer-aided manufacturing (CAM), the models may also be used directly by software to create "instructions" for the manufacture of objects represented by the models, through computer numerically controlled (CNC) machining or other automated processes, without the need for intermediate drawings. This volume covers the subject areas of mechanical engineering and technology, and also covers interdisciplinary subject areas of computers, communications, control and automation. We hope that researchers, graduate students and other interested readers benefit scientifically from the book and also find it stimulating in the process.

Biometric recognition is one of the most widely studied problems in computer science. The use of biometrics techniques, such as face, fingerprints, iris and ears is a solution for obtaining a secure personal identification. However, the "old" biometrics identification techniques are out of date. This goal of this book is to provide the reader with the most up to date research performed in biometric recognition and describe some novel methods of biometrics, emphasis on the state of the art skills. The book consists of 15 chapters, each focusing on a most up to date issue. The chapters are divided into five sections- fingerprint recognition, face recognition, iris recognition, other biometrics and biometrics security. The book was reviewed by editors Dr. Jucheng Yang and Dr. Loris Nanni. We deeply appreciate the efforts of our guest editors: Dr. Girija Chetty, Dr. Norman Poh, Dr. Jianjiang Feng, Dr. Dongsun Park and Dr. Sook Yoon, as well as a number of anonymous reviewers

The eight-volume set LNCS 13375 - 13382 constitutes the proceedings of the 22nd International Conference on Computational Science and Its Applications, ICCSA 2022, which was held in Malaga, Spain during July 4 - 7, 2022. The first two volumes contain the proceedings from ICCSA 2022, which are the 57 full and 24 short papers presented in these books were carefully reviewed and selected from 279 submissions. The other six volumes present the workshop proceedings, containing 285 papers out of 815 submissions. These six volumes includes the proceedings of the following workshops: Advances in Artificial Intelligence Learning Technologies: Blended Learning, STEM, Computational Thinking and Coding (AAILT 2022); Workshop on Advancements in Applied Machine-learning and Data Analytics (AAMDA 2022); Advances in information Systems and Technologies for Emergency management, risk assessment and mitigation based on the Resilience (ASTER 2022); Advances in Web Based Learning (AWBL 2022); Blockchain and Distributed Ledgers: Technologies and Applications (B-DLTA 2022); Bio and Neuro inspired Computing and Applications (BIONCA 2022); Configurational Analysis For Cities (CA Cities 2022); Computational and Applied Mathematics (CAM 2022), Computational and Applied Statistics (CAS 2022); Computational Mathematics, Statistics and Information Man-

agement (CMSIM); Computational Optimization and Applications (COA 2022); Computational Astrochemistry (CompAstro 2022); Computational methods for porous geomaterials (CompPor 2022); Computational Approaches for Smart, Conscious Cities (CASCC 2022); Cities, Technologies and Planning (CTP 2022); Digital Sustainability and Circular Economy (DiSCE 2022); Econometrics and Multidimensional Evaluation in Urban Environment (EMEUE 2022); Ethical AI applications for a human-centered cyber society (EthicAI 2022); Future Computing System Technologies and Applications (FiSTA 2022); Geographical Computing and Remote Sensing for Archaeology (GCRSArcheo 2022); Geodesign in Decision Making: meta planning and collaborative design for sustainable and inclusive development (GDM 2022); Geomatics in Agriculture and Forestry: new advances and perspectives (GeoForAgr 2022); Geographical Analysis, Urban Modeling, Spatial Statistics (Geog-An-Mod 2022); Geomatics for Resource Monitoring and Management (GRMM 2022); International Workshop on Information and Knowledge in the Internet of Things (IKIT 2022); 13th International Symposium on Software Quality (ISSQ 2022); Land Use monitoring for Sustainability (LUMS 2022); Machine Learning for Space and Earth Observation Data (MALSEOD 2022); Building multi-dimensional models for assessing complex environmental systems (MES 2022); MOdels and indicators for assessing and measuring the urban settlement deVELOPMENT in the view of ZERO net land take by 2050 (MOVEto0 2022); Modelling Post-Covid cities (MPCC 2022); Ecosystem Services: nature's contribution to people in practice. Assessment frameworks, models, mapping, and implications (NC2P 2022); New Mobility Choices For Sustainable and Alternative Scenarios (NEMOB 2022); 2nd Workshop on Privacy in the Cloud/Edge/IoT World (PCEIoT 2022); Psycho-Social Analysis of Sustainable Mobility in The Pre- and Post-Pandemic Phase (PSYCHE 2022); Processes, methods and tools towards RESilient cities and cultural heritage prone to SOD and ROD disasters (RES 2022); Scientific Computing Infrastructure (SCI 2022); Socio-Economic and Environmental Models for Land Use Management (SEMLUM 2022); 14th International Symposium on Software Engineering Processes and Applications (SEPA 2022); Ports of the future - smartness and sustainability (SmartPorts 2022); Smart Tourism (SmartTourism 2022); Sustainability Performance Assessment: models, approaches and applications toward interdisciplinary and integrated solutions (SPA 2022); Specifics of smart cities development in Europe (SPEED 2022); Smart and Sustainable Island Communities (SSIC 2022); Theoretical and Computational Chemistry and its Applications (TCCMA 2022); Transport Infrastructures for Smart Cities (TISC 2022); 14th International Workshop on Tools and Techniques in Software Development Process (TTSDP 2022); International Workshop on Urban Form Studies (UForm 2022); Urban Regeneration: Innovative Tools and Evaluation Model (URITEM 2022); International Workshop on Urban Space and Mobilities (USAM 2022); Virtual and Augmented Reality and Applications (VRA 2022); Advanced and Computational Methods for Earth Science Applications (WACM4ES 2022); Advanced Mathematics and Computing Methods in Complex Computational Systems (WAMCM 2022).

Cross disciplinary biometric systems help boost the performance of the conventional systems. Not only is the recognition accuracy significantly improved, but also the robustness of the systems is greatly enhanced in the challenging environments, such as varying illumination conditions. By leveraging the cross disciplinary technologies, face recognition systems, fingerprint recognition systems, iris recognition systems, as well as image search systems all benefit in terms of recognition performance. Take face recognition for an example, which is not only the most natural way human beings

recognize the identity of each other, but also the least privacy-intrusive means because people show their face publicly every day. Face recognition systems display superb performance when they capitalize on the innovative ideas across color science, mathematics, and computer science (e.g., pattern recognition, machine learning, and image processing). The novel ideas lead to the development of new color models and effective color features in color science; innovative features from wavelets and statistics, and new kernel methods and novel kernel models in mathematics; new discriminant analysis frameworks, novel similarity measures, and new image analysis methods, such as fusing multiple image features from frequency domain, spatial domain, and color domain in computer science; as well as system design, new strategies for system integration, and different fusion strategies, such as the feature level fusion, decision level fusion, and new fusion strategies with novel similarity measures.

This book provides the new results in wavelet filter banks based feature extraction, and the classifier in the field of iris image recognition. It provides the broad treatment on the design of separable, non-separable wavelets filter banks, and the classifier. The design techniques presented in the book are applied on iris image analysis for person authentication. This book also brings together the three strands of research (wavelets, iris image analysis and classifier). It compares the performance of the presented techniques with state-of-the-art available schemes. This book contains the compilation of basic material on the design of wavelets that avoids reading many different books. Therefore, it provides an easier path for the new-comers, researchers to master the contents. In addition, the designed filter banks and classifier can also be effectively used than existing filter-banks in many signal processing applications like pattern classification, data-compression, watermarking, denoising etc. that will give the new directions of the research in the relevant field for the readers.

This book constitutes the refereed proceedings of the 5th International Conference on Audio- and Video-Based Biometric Person Authentication, AVBPA 2005, held in Hilton Rye Town, NY, USA, in July 2005. The 66 revised oral papers and 50 revised poster papers presented were carefully reviewed and selected from numerous submissions. The papers discuss all aspects of biometrics including iris, fingerprint, face, palm print, gait, gesture, speaker, and signature; theoretical and algorithmic issues are dealt with as well as systems issues. The industrial side of biometrics is evident from presentations on smart cards, wireless devices, and architectural and implementation aspects.

This book constitutes the thoroughly refereed proceedings of the 7th International Conference, ICIAR 2010, held in Póvoa de Varzin, Portugal in June 2010. The 88 revised full papers were selected from 164 submissions. The papers are organized in topical sections on Image Morphology, Enhancement and Restoration, Image Segmentation, Feature Extraction and Pattern Recognition, Computer Vision, Shape, Texture and Motion Analysis, Coding, Indexing, and Retrieval, Face Detection and Recognition, Biomedical Image Analysis, Biometrics and Applications.

The definitive work on iris recognition technology, this comprehensive handbook presents a broad overview of the state of the art in this exciting and rapidly evolving field. Revised and updated from the highly-successful original, this second edition has also been considerably expanded in scope and content, featuring four completely new chapters. Features: provides authoritative insights from an international selection of preeminent researchers from government, industry, and academia; reviews issues covering the full spectrum of the iris recognition process, from acquisition to encoding; pre-

sents surveys of topical areas, and discusses the frontiers of iris research, including cross-wave-length matching, iris template aging, and anti-spoofing; describes open source software for the iris recognition pipeline and datasets of iris images; includes new content on liveness detection, correcting off-angle iris images, subjects with eye conditions, and implementing software systems for iris recognition.

Following the previous four annual conferences, the 5th Chinese Conference on Biometrics Recognition (Sinobiometrics 2004) was held in Guangzhou, China in December 2004. The conference this year was aimed at promoting the international exchange of ideas and providing an opportunity for keeping abreast of the latest developments in biometric algorithms, systems, and applications. The 1st Biometrics Verification Competition (BVC) on face, iris, and fingerprint recognition was also conducted in conjunction with the conference. This book is composed of 74 papers presented at Sinobiometrics 2004, contributed by researchers and industrial practitioners from Korea, Japan, Singapore, Hong Kong, France, UK, US, as well as China. Of these, 60 papers were selected from 140 submissions and 14 were invited. The papers not only presented recent technical advances, but also addressed issues in biometric system design, standardization, and applications. Included among the invited were four feature papers on the ideas and algorithms of the best-performing biometric engines, which were either competition winners at the Face Authentication Test (FAT) 2004 or the Fingerprint Verification Competition (FVC) 2004, or they were the best-performing iris and palmprint recognition algorithms. The papers were complemented by five keynote lectures on biometrics, and face, fingerprint, and iris authentication and multimodal fusion by Arun Ross (West Virginia University) and Anil K. Jain (Michigan State University), Josef Kittler (University of Surrey), John Daugman (University of Cambridge), Raffaele Cappelli (University of Bologna), and Stan Z. Li (Chinese Academy of Sciences).

This book constitutes the refereed proceedings of the First International Conference on Biometric Authentication, ICBA 2004, held in Hong Kong, China in July 2004. The 104 revised full papers presented were carefully reviewed and selected from 157 submissions; also included are summaries of 3 biometric competitions on fingerprint verification, face authentication, and signature verification. The papers are organized in topical sections on face, fingerprint, iris, signature, speech, biometric fusion and risk analysis, and other biometric issues.

The contributed volume aims to explicate and address the difficulties and challenges for the seamless integration of two core disciplines of computer science, i.e., computational intelligence and data mining. Data Mining aims at the automatic discovery of underlying non-trivial knowledge from datasets by applying intelligent analysis techniques. The interest in this research area has experienced a considerable growth in the last years due to two key factors: (a) knowledge hidden in organizations' databases can be exploited to improve strategic and managerial decision-making; (b) the large volume of data managed by organizations makes it impossible to carry out a manual analysis. The book addresses different methods and techniques of integration for enhancing the overall goal of data mining. The book helps to disseminate the knowledge about some innovative, active research directions in the field of data mining, machine and computational intelligence, along with some current issues and applications of related topics.

Because of the accelerating progress in biometrics research and the latest nation-state threats to se-

curity, this book's publication is not only timely but also much needed. This volume contains seventeen peer-reviewed chapters reporting the state of the art in biometrics research: security issues, signature verification, fingerprint identification, wrist vascular biometrics, ear detection, face detection and identification (including a new survey of face recognition), person re-identification, electrocardiogram (ECT) recognition, and several multi-modal systems. This book will be a valuable resource for graduate students, engineers, and researchers interested in understanding and investigating this important field of study.

This book constitutes the refereed proceedings of the International Conference on Biometrics, ICB 2006, held in Hong Kong, China in January 2006. The book includes 104 revised full papers covering such areas of biometrics as the face, fingerprint, iris, speech and signature, biometric fusion and performance evaluation, gait, keystrokes, and more. In addition the results of the Face Authentication Competition (FAC 2006) are also announced in this volume.

This book includes the original, peer reviewed research articles from the 2nd International Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA 2020), held in August, 2020 at Goa, India. It covers the latest research trends or developments in areas of data science, artificial intelligence, neural networks, cognitive science and machine learning applications, cyber physical systems and cybernetics.

This book constitutes the refereed proceedings of the 9th Chinese Conference on Biometric Recognition, CCB 2014, held in Shenyang, China, in November 2014. The 60 revised full papers presented were carefully reviewed and selected from among 90 submissions. The papers focus on face, fingerprint and palmprint, vein biometrics, iris and ocular biometrics, behavioral biometrics, application and system of biometrics, multi-biometrics and information fusion, other biometric recognition and processing.

The book provides insights into the Second International Conference on Computer Vision & Image Processing (CVIP-2017) organized by Department of Computer Science and Engineering of Indian Institute of Technology Roorkee. The book presents technological progress and research outcomes in the area of image processing and computer vision. The topics covered in this book are image/video processing and analysis; image/video formation and display; image/video filtering, restoration, enhancement and super-resolution; image/video coding and transmission; image/video storage, retrieval and authentication; image/video quality; transform-based and multi-resolution image/video analysis; biological and perceptual models for image/video processing; machine learning in image/video analysis; probability and uncertainty handling for image/video processing; motion and tracking; segmentation and recognition; shape, structure and stereo.

Iris recognition is one of the highest accuracy techniques used in biometric systems. The accuracy of the iris recognition system is measured by False Reject Rate (FRR), which measures the authenticity of a user who is incorrectly rejected by the system due to changes in iris features (such as aging and health condition) and external factors that affect iris image, for instance, high noise rate. External factors such as technical fault, occlusion, and source of lighting that causes the image acquisition to produce distorted iris images create error, hence are incorrectly rejected by the biometric system. FRR can be reduced using wavelets and Gabor filters, cascaded classifiers, ordinal measures, multiple biometric modalities, and a selection of unique iris features. Nonetheless, in the long duration of

the matching process, existing methods were unable to identify the authenticity of the user since the iris structure itself produces a template changed due to aging. In fact, the iris consists of unique features such as crypts, furrows, collarette, pigment blotches, freckles, and pupils that are distinguishable among humans. Earlier research was done by selecting unique iris features. However, these had low accuracy levels. A new way of identifying and matching the iris template using the nature-inspired algorithm is described in this book. It provides an overview of iris recognition that is based on nature-inspired environment technology. The book is useful for students from universities, polytechnics, community colleges; practitioners; and industry practitioners.

This book constitutes the research papers presented at the Joint 2101 & 2102 International Conference on Biometric ID Management and Multimodal Communication. BioID_MultiComm'09 is a joint International Conference organized cooperatively by COST Actions 2101 & 2102. COST 2101 Action is focused on 'Biometrics for Identity Documents and Smart Cards (BIDS)', while COST 2102 Action is entitled 'Cross-Modal Analysis of Verbal and Non-verbal Communication'. The aim of COST 2101 is to investigate novel technologies for unsupervised multimodal biometric authentication systems using a new generation of biometrics-enabled identity documents and smart cards. COST 2102 is devoted to develop an advanced acoustical, perceptual and psychological analysis of verbal and non-verbal communication signals originating in spontaneous face-to-face interaction, in order to identify algorithms and automatic procedures capable of recognizing human emotional states.

The LNCS volume 10996 constitutes the proceedings of the 13th Chinese Conference on Biometric Recognition, held in Urumchi, China, in August 2018. The 79 regular papers presented in this book were carefully reviewed and selected from 112 submissions. The papers cover a wide range of topics such as Biometrics, Speech recognition, Activity recognition and understanding, Online handwriting recognition, System forensics, Multi-factor authentication, Graphical and visual passwords.

This authoritative and comprehensive handbook is the definitive work on the current state of the art of Biometric Presentation Attack Detection (PAD) – also known as Biometric Anti-Spoofing. Building on the success of the previous, pioneering edition, this thoroughly updated second edition has been considerably expanded to provide even greater coverage of PAD methods, spanning biometrics systems based on face, fingerprint, iris, voice, vein, and signature recognition. New material is also included on major PAD competitions, important databases for research, and on the impact of recent international legislation. Valuable insights are supplied by a selection of leading experts in the field, complete with results from reproducible research, supported by source code and further information available at an associated website. Topics and features: reviews the latest developments in PAD for fingerprint biometrics, covering optical coherence tomography (OCT) technology, and issues of interoperability; examines methods for PAD in iris recognition systems, and the application of stimulated pupillary light reflex for this purpose; discusses advancements in PAD methods for face recognition-based biometrics, such as research on 3D facial masks and remote photoplethysmography (rPPG); presents a survey of PAD for automatic speaker recognition (ASV), including the use of convolutional neural networks (CNNs), and an overview of relevant databases; describes the results yielded by key competitions on fingerprint liveness detection, iris liveness detection, and software-based face anti-spoofing; provides analyses of PAD in fingervein recognition, online handwritten signature verification, and in biometric technologies on mobile devices includes coverage of international stan-

dards, the E.U. PSDII and GDPR directives, and on different perspectives on presentation attack evaluation. This text/reference is essential reading for anyone involved in biometric identity verification, be they students, researchers, practitioners, engineers, or technology consultants. Those new to the field will also benefit from a number of introductory chapters, outlining the basics for the most important biometrics.

"Applications of Pulse-Coupled Neural Networks" explores the fields of image processing, including image filtering, image segmentation, image fusion, image coding, image retrieval, and biometric recognition, and the role of pulse-coupled neural networks in these fields. This book is intended for researchers and graduate students in artificial intelligence, pattern recognition, electronic engineering, and computer science. Prof. Yide Ma conducts research on intelligent information processing, biomedical image processing, and embedded system development at the School of Information Science and Engineering, Lanzhou University, China.

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

This book constitutes the refereed proceedings of the 10th Chinese Conference on Biometric Recognition, CCBR 2015, held in Tianjin, China, in November 2015. The 85 revised full papers presented were carefully reviewed and selected from among 120 submissions. The papers focus on face, fingerprint and palmprint, vein biometrics, iris and ocular biometrics, behavioral biometrics, application and system of biometrics, multi-biometrics and information fusion, other biometric recognition and processing.

This book focuses on contemporary technologies and research in computational intelligence that has reached the practical level and is now accessible in preclinical and clinical settings. This book's principal objective is to thoroughly understand significant technological breakthroughs and research results in predictive modeling in healthcare imaging and data analysis. Machine learning and deep learning could be used to fully automate the diagnosis and prognosis of patients in medical fields. The healthcare industry's emphasis has evolved from a clinical-centric to a patient-centric model. However, it is still facing several technical, computational, and ethical challenges. Big data analytics in health care is becoming a revolution in technical as well as societal well-being viewpoints. Moreover, in this age of big data, there is increased access to massive amounts of regularly gathered data from the healthcare industry that has necessitated the development of predictive models and automated solutions for the early identification of critical and chronic illnesses. The book contains high-quality, original work that will assist readers in realizing novel applications and contexts for deep learning architectures and algorithms, making it an indispensable reference guide for academic researchers, professionals, industrial software engineers, and innovative model developers in health-

care industry.

The two volume set LNCS 7431 and 7432 constitutes the refereed proceedings of the 8th International Symposium on Visual Computing, ISVC 2012, held in Rethymnon, Crete, Greece, in July 2012. The 68 revised full papers and 35 poster papers presented together with 45 special track papers were carefully reviewed and selected from more than 200 submissions. The papers are organized in topical sections: Part I (LNCS 7431) comprises computational bioimaging; computer graphics; calibration and 3D vision; object recognition; illumination, modeling, and segmentation; visualization; 3D mapping, modeling and surface reconstruction; motion and tracking; optimization for vision, graphics, and medical imaging, HCI and recognition. Part II (LNCS 7432) comprises topics such as unconstrained biometrics: advances and trends; intelligent environments: algorithms and applications; applications; virtual reality; face processing and recognition.

This book describes bio-inspired models and applications of hybrid intelligent systems using soft computing techniques for image analysis and pattern recognition based on biometrics and other sources. Each section groups papers on a similar subject.

This proceedings book presents state-of-the-art research innovations in computational vision and bio-inspired techniques. Due to the rapid advances in the emerging information, communication and computing technologies, the Internet of Things, cloud and edge computing, and artificial intelligence play a significant role in the computational vision context. In recent years, computational vision has contributed to enhancing the methods of controlling the operations in biological systems, like ant colony optimization, neural networks, and immune systems. Moreover, the ability of computational vision to process a large number of data streams by implementing new computing paradigms has been demonstrated in numerous studies incorporating computational techniques in the emerging bio-inspired models. The book reveals the theoretical and practical aspects of bio-inspired computing techniques, like machine learning, sensor-based models, evolutionary optimization, and big data modeling and management, that make use of effectual computing processes in the bio-inspired systems. As such it contributes to the novel research that focuses on developing bio-inspired computing solutions for various domains, such as human-computer interaction, image processing, sensor-based single processing, recommender systems, and facial recognition, which play an indispensable part in smart agriculture, smart city, biomedical and business intelligence applications.