

Guide To Biometrics Guide To Biometrics

Handbook of Biometrics Anil K. Jain 2007-11-16 Biometrics is a rapidly evolving field with applications ranging from accessing one's computer to gaining entry into a country. The deployment of large-scale biometric systems in both commercial and government applications has increased public awareness of this technology. Recent years have seen significant growth in biometric research resulting in the development of innovative sensors, new algorithms, enhanced test methodologies and novel applications. This book addresses this void by inviting some of the prominent researchers in Biometrics to contribute chapters describing the fundamentals as well as the latest innovations in their respective areas of expertise.

Advances in Biometrics N. K. Ratha 2008 Recent advances in biometrics include new developments in sensors, modalities and algorithms. As new sensors are designed, newer challenges emerge in the algorithms for accurate recognition. Written for researchers, advanced students and practitioners to use as a handbook, this volume captures the very latest state-of-the-art research contributions from leading international researchers. It offers coverage of the entire gamut of topics in the field, including sensors, data acquisition, pattern-matching algorithms, and issues that impact at the system level, such as standards, security, networks, and databases

Encyclopedia of Biometrics Stan Z. Li 2021-01-14 With an A-Z format, this encyclopedia provides easy access to relevant information on all aspects of biometrics. It features approximately 250 overview entries and 800 definitional entries. Each entry includes a definition, key words, list of synonyms, list of related entries, illustration(s), applications, and a bibliography. Most entries include useful literature references providing the reader with a portal to more detailed information.

Guide to Biometrics Ruud M. Bolle 2013-06-29 Starting with fingerprints

more than a hundred years ago, there has been ongoing research in biometrics. Within the last forty years face and speaker recognition have emerged as research topics. However, as recently as a decade ago, biometrics itself did not exist as an independent field. Each of the biometric-related topics grew out of different disciplines. For example, the study of fingerprints came from forensics and pattern recognition, speaker recognition evolved from signal processing, the beginnings of face recognition were in computer vision, and privacy concerns arose from the public policy arena. One of the challenges of any new field is to state what the core ideas are that define the field in order to provide a research agenda for the field and identify key research problems.

Biometrics has been grappling with this challenge since the late 1990s. With the maturation of biometrics, the separate biometrics areas are coalescing into the new discipline of biometrics. The establishment of biometrics as a recognized field of inquiry allows the research community to identify problems that are common to biometrics in general. It is this identification of common problems that will define biometrics as a field and allow for broad advancement.

Our Biometric Future Kelly Gates 2011-01-23 Since the 1960s, a significant effort has been underway to program computers to "see" the human face—to develop automated systems for identifying faces and distinguishing them from one another—commonly known as Facial Recognition Technology. While computer scientists are developing FRT in order to design more intelligent and interactive machines, businesses and states agencies view the technology as uniquely suited for "smart" surveillance—systems that automate the labor of monitoring in order to increase their efficacy and spread their reach. Tracking this technological pursuit, *Our Biometric Future* identifies FRT as a prime example of the failed technocratic approach to governance, where new technologies are pursued as shortsighted solutions to complex social

problems. Culling news stories, press releases, policy statements, PR kits and other materials, Kelly Gates provides evidence that, instead of providing more security for more people, the pursuit of FRT is being driven by the priorities of corporations, law enforcement and state security agencies, all convinced of the technology's necessity and unhindered by its complicated and potentially destructive social consequences. By focusing on the politics of developing and deploying these technologies, *Our Biometric Future* argues not for the inevitability of a particular technological future, but for its profound contingency and contestability.

When Biometrics Fail Shoshana Amielle Magnet 2011-11-11 From digital fingerprinting to iris and retina recognition, biometric identification systems are a multibillion dollar industry and an integral part of post-9/11 national security strategy. Yet these technologies often fail to work. The scientific literature on their accuracy and reliability documents widespread and frequent technical malfunction. Shoshana Amielle Magnet argues that these systems fail so often because rendering bodies in biometric code falsely assumes that people's bodies are the same and that individual bodies are stable, or unchanging, over time. By focusing on the moments when biometrics fail, Magnet shows that the technologies work differently, and fail to function more often, on women, people of color, and people with disabilities. Her assessment emphasizes the state's use of biometrics to control and classify vulnerable and marginalized populations—including prisoners, welfare recipients, immigrants, and refugees—and to track individuals beyond the nation's territorial boundaries. *When Biometrics Fail* is a timely, important contribution to thinking about the security state, surveillance, identity, technology, and human rights.

Biometrics Samir Nanavati 2002-04-04 An insight into the biometric industry and the steps for successful deployment Biometrics technologies verify identity through characteristics such as fingerprints, voices, and faces. By providing increased security and convenience, biometrics have begun to see widespread deployment in network, e-commerce, and retail applications. This book provides in-depth analysis of biometrics as a

solution for authenticating employees and customers. Leading authority, Samir Nanavati explores privacy, security, accuracy, system design, user perceptions, and lessons learned in biometric deployments. He also assesses the real-world strengths and weaknesses of leading biometric technologies: finger-scan, iris-scan, facial-scan, voice-scan, and signature-scan. This accessible book is a necessary step in understanding and implementing biometrics. Demystifies the complex world of optical networks for IT and business managers Over the past few years, the cost of fiber optic networking has decreased, making it the best solution for providing virtually unlimited bandwidth for corporate LANs and WANs, metropolitan networks, Internet access, and broadband to the home. The only strategic book on optical networking technologies written from a real-world business perspective, *Optical Networking* demystifies complex fiber technologies for managers, and details the practical business benefits an optical network can offer. Debra Cameron explores established and emerging markets for optical networks as well as the enabling technologies, applications, network architectures, key deployment issues, and cost considerations. She also provides in-depth case studies of optical networks now in use in the United States and abroad.

Introduction to Biometrics Anil K. Jain 2024-10-29 This textbook introduces the fundamental concepts and techniques used in biometric recognition to students, practitioners, and non-experts in the field. Specifically, the book describes key methodologies used for sensing, feature extraction, and matching of commonly used biometric modalities such as fingerprint, face, iris, and voice. In addition, it presents techniques for fusion of biometric information to meet stringent accuracy requirements, also discussing various security issues and associated remedies involved in the deployment of biometric systems. Furthermore, this second edition captures the progress made in the field of biometric recognition, with highlights including: Lucid explanation of core biometric concepts (e.g., individuality and persistence), which builds a strong foundation for more in-depth study and research on biometrics A new chapter on deep neural networks that provides a primer to recent

advancements in machine learning and computer vision Illustrative examples of how deep neural network models have contributed to the rapid evolution of biometrics in areas such as robust feature representation and synthetic biometric data generation A new chapter on speaker recognition, which introduces the readers to person recognition based on the human voice characteristics Presentation of emerging security threats such as deepfakes and adversarial attacks and sophisticated countermeasures such as presentation attack detection and template security While this textbook has been designed for senior undergraduate students and first-year graduate students studying a course on biometrics, it is also a useful reference guide for biometric system designers, developers, and integrators.

Biometrics Anil K. Jain 2006-04-18 *Biometrics: Personal Identification in Networked Society* is a comprehensive and accessible source of state-of-the-art information on all existing and emerging biometrics: the science of automatically identifying individuals based on their physiological or behavior characteristics. In particular, the book covers: *General principles and ideas of designing biometric-based systems and their underlying tradeoffs *Identification of important issues in the evaluation of biometrics-based systems *Integration of biometric cues, and the integration of biometrics with other existing technologies *Assessment of the capabilities and limitations of different biometrics *The comprehensive examination of biometric methods in commercial use and in research development *Exploration of some of the numerous privacy and security implications of biometrics. Also included are chapters on face and eye identification, speaker recognition, networking, and other timely technology-related issues. All chapters are written by leading internationally recognized experts from academia and industry. *Biometrics: Personal Identification in Networked Society* is an invaluable work for scientists, engineers, application developers, systems integrators, and others working in biometrics.

Security and Privacy in Biometrics Patrizio Campisi 2013-06-28 This important text/reference presents the latest secure and privacy-compliant techniques in automatic human recognition. Featuring

viewpoints from an international selection of experts in the field, the comprehensive coverage spans both theory and practical implementations, taking into consideration all ethical and legal issues. Topics and features: presents a unique focus on novel approaches and new architectures for unimodal and multimodal template protection; examines signal processing techniques in the encrypted domain, security and privacy leakage assessment, and aspects of standardization; describes real-world applications, from face and fingerprint-based user recognition, to biometrics-based electronic documents, and biometric systems employing smart cards; reviews the ethical implications of the ubiquity of biometrics in everyday life, and its impact on human dignity; provides guidance on best practices for the processing of biometric data within a legal framework.

Pattern Recognition, Machine Intelligence and Biometrics Patrick S. P. Wang 2012-02-13 "Pattern Recognition, Machine Intelligence and Biometrics" covers the most recent developments in Pattern Recognition and its applications, using artificial intelligence technologies within an increasingly critical field. It covers topics such as: image analysis and fingerprint recognition; facial expressions and emotions; handwriting and signatures; iris recognition; hand-palm gestures; and multimodal based research. The applications span many fields, from engineering, scientific studies and experiments, to biomedical and diagnostic applications, to personal identification and homeland security. In addition, computer modeling and simulations of human behaviors are addressed in this collection of 31 chapters by top-ranked professionals from all over the world in the field of PR/AI/Biometrics. The book is intended for researchers and graduate students in Computer and Information Science, and in Communication and Control Engineering. Dr. Patrick S. P. Wang is a Professor Emeritus at the College of Computer and Information Science, Northeastern University, USA, Zijiang Chair of ECNU, Shanghai, and NSC Visiting Chair Professor of NTUST, Taipei. [3D Biometrics](#) David Zhang 2013-05-31 Automatic personal authentication using biometric information is becoming more essential in applications of public security, access control, forensics, banking, etc.

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

Guide to Biometrics for Large-Scale Systems Julian Ashbourn 2011-04-11

This book considers biometric technology in a broad light, integrating the concept seamlessly into mainstream IT, while discussing the cultural attitudes and the societal impact of identity management. Features: summarizes the material covered at the beginning of every chapter, and provides chapter-ending review questions and discussion points; reviews identity verification in nature, and early historical interest in anatomical measurement; provides an overview of biometric technology, presents a focus on biometric systems and true systems integration, examines the concept of identity management, and predicts future trends; investigates performance issues in biometric systems, the management and security

of biometric data, and the impact of mobile devices on biometrics technology; explains the equivalence of performance across operational nodes, introducing the APEX system; considers the legal, political and societal factors of biometric technology, in addition to user psychology and other human factors.

Technology in Forensic Science Deepak Rawtani 2020-08-28 The book "Technology in Forensic Science" provides an integrated approach by reviewing the usage of modern forensic tools as well as the methods for interpretation of the results. Starting with best practices on sample taking, the book then reviews analytical methods such as high-resolution microscopy and chromatography, biometric approaches, and advanced sensor technology as well as emerging technologies such as nanotechnology and taggant technology. It concludes with an outlook to emerging methods such as AI-based approaches to forensic investigations.

Multimodal Biometrics and Intelligent Image Processing for Security Systems Gavrilova, Marina L. 2013-03-31 "This book provides an in-depth description of existing and fresh fusion approaches for multimodal biometric systems, covering relevant topics affecting the security and intelligent industries"--Provided by publisher.

Implementing Biometric Security John Chirillo 2003-05-09 * Biometrics authentication, which relies on fingerprints, speech, or other physical characteristics, is an increasingly important means of protecting critical data * Gives security professionals specific guidelines, applications, and procedures for implementing a biometric security system in a LAN, WAN, or wireless infrastructure * Covers fingerprint identification, hand geometry, speaker recognition, face location, retina scanning, and multibiometrics * Companion Web site contains articles, papers, source code, and product guides

Image Pattern Recognition Svetlana N. Yanushkevich 2007 The field of biometrics utilizes computer models of the physical and behavioral characteristics of human beings with a view to reliable personal identification. The human characteristics of interest include visual images, speech, and indeed anything which might help to uniquely

identify the individual. The other side of the biometrics coin is biometric synthesis OCo rendering biometric phenomena from their corresponding computer models. For example, we could generate a synthetic face from its corresponding computer model. Such a model could include muscular dynamics to model the full gamut of human emotions conveyed by facial expressions. This book is a collection of carefully selected papers presenting the fundamental theory and practice of various aspects of biometric data processing in the context of pattern recognition. The traditional task of biometric technologies OCo human identification by analysis of biometric. data OCo is extended to include the new discipline of biometric synthesis."

Biometric Systems James L. Wayman 2005-09-20 Biometric Systems provides practitioners with an overview of the principles and methods needed to build reliable biometric systems. It covers three main topics: key biometric technologies, design and management issues, and the performance evaluation of biometric systems for personal verification/identification. The four most widely used technologies are focused on - speech, fingerprint, iris and face recognition. Key features include: in-depth coverage of the technical and practical obstacles which are often neglected by application developers and system integrators and which result in shortfalls between expected and actual performance; and protocols and benchmarks which will allow developers to compare performance and track system improvements.

Biometrics: The Ultimate Reference John Woodward 2003-01-25 Discover how to make biometrics -- the technology involving scanning and analyzing unique body characteristics and matching them against information stored in a database -- a part of your overall security plan with this hands-on guide. Biometrics - the science of recognizing people by physical characteristics for personal traits. Learn about the technical properties and applications of fingerprints, hand geometry, facial and voice recognition, iris and retinal scans, signature and keystroke dynamics, and futuristic biometrics such as vein patterns. Follow sample scenarios and real-world case studies to understand ensuring biometric liveliness, deploying biometrics in large-scale systems, developing

technical standards, and testing and evaluating biometric technologies. Make financial and business dealings safer and more reliable, improve safety, and balance your needs for speed, convenience, and accuracy with help from this thorough resource.

The Practitioner's Guide to Biometrics William Sloan Coats 2007 Biometrics is the most accurate form of identifiers and, when used properly, can greatly simplify life. However, biometrics raise new questions about personal privacy, surveillance, and the effects of government and corporate databases that register and hold fingerprint data and other biometric information. This book covers such topics as ID cards, data theft, authentication, and digital rights management. *Identity Management with Biometrics* Lisa Bock 2020-10-15 Work with common biometrics such as face, fingerprint, and iris recognition for business and personal use to ensure secure identification and authentication for fintech, homes, and computer systems Key FeaturesExplore the next iteration of identity protection and overcome real-world challengesUnderstand different biometric use cases to deploy a large-scale biometric systemCurated by renowned security ambassador and experienced author Lisa BockBook Description Biometric technologies provide a variety of robust and convenient methods to securely identify and authenticate an individual. Unlike a password or smart card, biometrics can identify an attribute that is not only unique to an individual, but also eliminates any possibility of duplication. Identity Management with Biometrics is a solid introduction for anyone who wants to explore biometric techniques, such as fingerprint, iris, voice, palm print, and facial recognition. Starting with an overview of biometrics, you'll learn the various uses and applications of biometrics in fintech, buildings, border control, and many other fields. You'll understand the characteristics of an optimal biometric system and then review different types of errors and discover the benefits of multi-factor authentication. You'll also get to grips with analyzing a biometric system for usability and accuracy and understand the process of implementation, testing, and deployment, along with addressing privacy concerns. The book outlines the importance of protecting biometric data

by using encryption and shows you which factors to consider and how to analyze them before investing in biometric technologies. By the end of this book, you'll be well-versed with a variety of recognition processes and be able to make the right decisions when implementing biometric technologies. What you will learn

Review the advantages and disadvantages of biometric technology

Understand the characteristics of an optimal biometric system

Discover the uses of biometrics and where they are used

Compare different types of errors and see how to tune your system

Understand the benefits of multi-factor authentication

Work with commonly used biometrics such as face, fingerprint, and iris

Analyze a biometric system for usability and accuracy

Address privacy concerns and get a glimpse of the future of biometrics

Who this book is for

Identity Management with Biometrics is for IT managers, security professionals, students, teachers, and anyone involved in selecting, purchasing, integrating, or securing a biometric system. This book will help you understand how to select the right biometric system for your organization and walk you through the steps for implementing identity management and authentication. A basic understanding of biometric authentication techniques, such as fingerprint and facial recognition, and the importance of providing a secure method of authenticating an individual will help you make the most of the book.

Advanced Studies in Biometrics Massimo Tistarelli 2005-06-03 Automatic person authentication, the identification and verification of an individual as such, has increasingly been acknowledged as a significant aspect of various security applications. Various recognition and identification systems have been based on biometrics utilizing biometric features such as fingerprint, face, retina scans, iris patterns, hand geometry, DNA traces, gait, and others. This book originates from an international summer school on biometrics, held in Alghero, Italy, in June 2003. The seven revised tutorial lectures by leading researchers introduce the reader to biometrics-based person authentication, fingerprint recognition, gait recognition, various aspects of face recognition and face detection, topologies for biometric recognition, and hand detection. Also included are the four best selected student papers, all dealing with face

recognition.

Guide to Biometrics for Large-Scale Systems Julian Ashbourn

2014-08-23 This book considers biometric technology in a broad light, integrating the concept seamlessly into mainstream IT, while discussing the cultural attitudes and the societal impact of identity management. Features: summarizes the material covered at the beginning of every chapter, and provides chapter-ending review questions and discussion points; reviews identity verification in nature, and early historical interest in anatomical measurement; provides an overview of biometric technology, presents a focus on biometric systems and true systems integration, examines the concept of identity management, and predicts future trends; investigates performance issues in biometric systems, the management and security of biometric data, and the impact of mobile devices on biometrics technology; explains the equivalence of performance across operational nodes, introducing the APEX system; considers the legal, political and societal factors of biometric technology, in addition to user psychology and other human factors.

Biometrics in Identity Management Shimon K. Modi 2011 In today's digital infrastructure we have to interact with an increasing number of systems, both in the physical and virtual world. Identity management (IdM) -- the process of identifying an individual and controlling access to resources based on their associated privileges -- is becoming progressively complex. This has brought the spotlight on the importance of effective and efficient means of ascertaining an individual's identity. Biometric technologies like fingerprint recognition, face recognition, iris recognition etc. have a long history of use in law enforcement applications and are now transitioning towards commercial applications like password replacements, ATM authentication and others. This unique book provides you with comprehensive coverage of commercially available biometric technologies, their underlying principles, operational challenges and benefits, and deployment considerations. It also offers a look at the future direction these technologies are taking. By focusing on factors that drive the practical implementation of biometric technologies, this book serves to bridge the

gap between academic researchers and industry practitioners. This book focuses on design, development, and deployment issues related to biometric technologies, including operational challenges, integration strategies, technical evaluations of biometric systems, standardization and privacy preserving principles, and several open questions which need to be answered for successful deployments."

Vein Pattern Recognition Chuck Wilson 2010-03-10 As one of the most promising biometric technologies, vein pattern recognition (VPR) is quickly taking root around the world and may soon dominate applications where people focus is key. Among the reasons for VPR's growing acceptance and use: it is more accurate than many other biometric methods, it offers greater resistance to spoofing, it focuses *Biometrics and Kansei Engineering* Khalid Saeed 2012-10-16 Biometrics and Kansei Engineering is the first book to bring together the principles and applications of each discipline. The future of biometrics is in need of new technologies that can depend on people's emotions and the prediction of their intention to take an action. Behavioral biometrics studies the way people walk, talk, and express their emotions, and Kansei Engineering focuses on interactions between users, products/services and product psychology. They are becoming quite complementary. This book also introduces biometric applications in our environment, which further illustrates the close relationship between Biometrics and Kansei Engineering. Examples and case studies are provided throughout this book. Biometrics and Kansei Engineering is designed as a reference book for professionals working in these related fields. Advanced-level students and researchers studying computer science and engineering will find this book useful as a reference or secondary text book as well.

AI and Deep Learning in Biometric Security Gaurav Jaswal 2021-03-22 This book provides an in-depth overview of artificial intelligence and deep learning approaches with case studies to solve problems associated with biometric security such as authentication, indexing, template protection, spoofing attack detection, ROI detection, gender classification etc. This text highlights a showcase of cutting-edge

research on the use of convolution neural networks, autoencoders, recurrent convolutional neural networks in face, hand, iris, gait, fingerprint, vein, and medical biometric traits. It also provides a step-by-step guide to understanding deep learning concepts for biometrics authentication approaches and presents an analysis of biometric images under various environmental conditions. This book is sure to catch the attention of scholars, researchers, practitioners, and technology aspirants who are willing to research in the field of AI and biometric security.

Guide to Biometric Reference Systems and Performance Evaluation

Dijana Petrovska-Delacrétaz 2009-04-05 Biometrics has moved from using fingerprints to using many methods of assessing human physical and behavioral traits. This guide introduces a new performance evaluation framework designed to offer full coverage of performance evaluation of biometric systems.

Biometric State Keith Breckenridge 2016-10-20 A groundbreaking study of South Africa's role as a site for global experiments in biometric identification throughout the twentieth century.

Handbook of Face Recognition Stan Z. Li 2005-12-06 Although the history of computer-aided face recognition stretches back to the 1960s, automatic face recognition remains an unsolved problem and still offers a great challenge to computer-vision and pattern recognition researchers. This handbook is a comprehensive account of face recognition research and technology, written by a group of leading international researchers. Twelve chapters cover all the sub-areas and major components for designing operational face recognition systems. Background, modern techniques, recent results, and challenges and future directions are considered. The book is aimed at practitioners and professionals planning to work in face recognition or wanting to become familiar with the state-of-the-art technology. A comprehensive handbook, by leading research authorities, on the concepts, methods, and algorithms for automated face detection and recognition. Essential reference resource for researchers and professionals in biometric security, computer vision, and video image analysis.

Biometric Identification, Law and Ethics Marcus Smith 2021-12-10

This book is open access. This book undertakes a multifaceted and integrated examination of biometric identification, including the current state of the technology, how it is being used, the key ethical issues, and the implications for law and regulation. The five chapters examine the main forms of contemporary biometrics—fingerprint recognition, facial recognition and DNA identification— as well the integration of biometric data with other forms of personal data, analyses key ethical concepts in play, including privacy, individual autonomy, collective responsibility, and joint ownership rights, and proposes a raft of principles to guide the regulation of biometrics in liberal democracies. Biometric identification technology is developing rapidly and being implemented more widely, along with other forms of information technology. As products, services and communication moves online, digital identity and security is becoming more important. Biometric identification facilitates this transition. Citizens now use biometrics to access a smartphone or obtain a passport; law enforcement agencies use biometrics in association with CCTV to identify a terrorist in a crowd, or identify a suspect via their fingerprints or DNA; and companies use biometrics to identify their customers and employees. In some cases the use of biometrics is governed by law, in others the technology has developed and been implemented so quickly that, perhaps because it has been viewed as a valuable security enhancement, laws regulating its use have often not been updated to reflect new applications. However, the technology associated with biometrics raises significant ethical problems, including in relation to individual privacy, ownership of biometric data, dual use and, more generally, as is illustrated by the increasing use of biometrics in authoritarian states such as China, the potential for unregulated biometrics to undermine fundamental principles of liberal democracy. Resolving these ethical problems is a vital step towards more effective regulation.

Biometrics for Network Security Paul Reid 2004 Reid (senior product manager, Cryptometrics) introduces the technical capabilities and limitations of computer biometric systems for measuring fingerprints,

eye characteristics, or other body information as a computer security measure serving a similar purpose to personal identification numbers. He describes the workings of the different types of technologies and examines some of the mathematics behind biometric systems. He also describes the conceptualization and implementation of a particular system with which he was involved. Annotation : 2004 Book News, Inc., Portland, OR (booknews.com).

Signal and Image Processing for Biometrics Jacob Scharcanski 2014-02-20 This volume offers a guide to the state of the art in the fast evolving field of biometric recognition to newcomers and experienced practitioners. It is focused on the emerging strategies to perform biometric recognition under uncontrolled data acquisition conditions. The mainstream research work in this field is presented in an organized manner, so the reader can easily follow the trends that best suits her/his interests in this growing field. The book chapters cover the recent advances in less controlled / covert data acquisition frameworks, segmentation of poor quality biometric data, biometric data quality assessment, normalization of poor quality biometric data. contactless biometric recognition strategies, biometric recognition robustness, data resolution, illumination, distance, pose, motion, occlusions, multispectral biometric recognition, multimodal biometrics, fusion at different levels, high confidence automatic surveillance.

Automatic Fingerprint Recognition Systems Nalini Ratha 2003-10-09 An authoritative survey of intelligent fingerprint-recognition concepts, technology, and systems is given. Editors and contributors are the leading researchers and applied R&D developers of this personal identification (biometric security) topic and technology. Biometrics and pattern recognition researchers and professionals will find the book an indispensable resource for current knowledge and technology in the field.

Selfie Biometrics Ajita Rattani 2019-09-21 This book highlights the field of selfie biometrics, providing a clear overview and presenting recent advances and challenges. It also discusses numerous selfie authentication techniques on mobile devices. Biometric authentication

using mobile devices is becoming a convenient and important means of verifying identity for secured access and services such as telebanking and electronic transactions. In this context, face and ocular biometrics in the visible spectrum has gained increased attention from the research community. However, device mobility and operation in uncontrolled environments mean that facial and ocular images captured with mobile devices exhibit substantial degradation as a result of adverse lighting conditions, specular reflections and motion and defocus blur. In addition, low spatial resolution and the small sensor of front-facing mobile cameras further degrade the sample quality, reducing the recognition accuracy of face and ocular recognition technology when integrated into smartphones. Presenting the state of the art in mobile biometric research and technology, and offering an overview of the potential problems in real-time integration of biometrics in mobile devices, this book is a valuable resource for final-year undergraduate students, postgraduate students, engineers, researchers and academics in various fields of computer engineering.

Handbook of Biometric Anti-Spoofing Sébastien Marcel 2014-07-17
Presenting the first definitive study of the subject, this Handbook of Biometric Anti-Spoofing reviews the state of the art in covert attacks against biometric systems and in deriving countermeasures to these attacks. Topics and features: provides a detailed introduction to the field of biometric anti-spoofing and a thorough review of the associated literature; examines spoofing attacks against five biometric modalities, namely, fingerprints, face, iris, speaker and gait; discusses anti-spoofing measures for multi-model biometric systems; reviews evaluation methodologies, international standards and legal and ethical issues; describes current challenges and suggests directions for future research; presents the latest work from a global selection of experts in the field, including members of the TABULA RASA project.

Deep Learning Approaches to Cloud Security Pramod Singh Rathore 2022-01-26 DEEP LEARNING APPROACHES TO CLOUD SECURITY
Covering one of the most important subjects to our society today, cloud security, this editorial team delves into solutions taken from evolving

deep learning approaches, solutions allowing computers to learn from experience and understand the world in terms of a hierarchy of concepts, with each concept defined through its relation to simpler concepts. Deep learning is the fastest growing field in computer science. Deep learning algorithms and techniques are found to be useful in different areas like automatic machine translation, automatic handwriting generation, visual recognition, fraud detection, and detecting developmental delay in children. However, applying deep learning techniques or algorithms successfully in these areas needs a concerted effort, fostering integrative research between experts ranging from diverse disciplines from data science to visualization. This book provides state of the art approaches of deep learning in these areas, including areas of detection and prediction, as well as future framework development, building service systems and analytical aspects. In all these topics, deep learning approaches, such as artificial neural networks, fuzzy logic, genetic algorithms, and hybrid mechanisms are used. This book is intended for dealing with modeling and performance prediction of the efficient cloud security systems, thereby bringing a newer dimension to this rapidly evolving field. This groundbreaking new volume presents these topics and trends of deep learning, bridging the research gap, and presenting solutions to the challenges facing the engineer or scientist every day in this area. Whether for the veteran engineer or the student, this is a must-have for any library. Deep Learning Approaches to Cloud Security: Is the first volume of its kind to go in-depth on the newest trends and innovations in cloud security through the use of deep learning approaches Covers these important new innovations, such as AI, data mining, and other evolving computing technologies in relation to cloud security Is a useful reference for the veteran computer scientist or engineer working in this area or an engineer new to the area, or a student in this area Discusses not just the practical applications of these technologies, but also the broader concepts and theory behind how these deep learning tools are vital not just to cloud security, but society as a whole Audience: Computer scientists, scientists and engineers working with information technology, design, network security, and manufacturing, researchers in computers,

electronics, and electrical and network security, integrated domain, and data analytics, and students in these areas

Biometric Technologies and Verification Systems John R. Vacca 2007-03-16 Biometric Technologies and Verification Systems is organized into nine parts composed of 30 chapters, including an extensive glossary of biometric terms and acronyms. It discusses the current state-of-the-art in biometric verification/authentication, identification and system design principles. It also provides a step-by-step discussion of how biometrics works; how biometric data in human beings can be collected and analyzed in a number of ways; how biometrics are currently being used as a method of personal identification in which people are recognized by their own unique corporal or behavioral characteristics; and how to create detailed menus for designing a biometric verification system. Only biometrics verification/authentication is based on the identification of an intrinsic part of a human being. Tokens, such as smart cards, magnetic stripe cards, and physical keys can be lost, stolen, or duplicated. Passwords can be forgotten, shared, or unintentionally observed by a third party. Forgotten passwords and lost "smart cards" are a nuisance for users and an expensive time-waster for system administrators. Biometric security solutions offer some unique advantages for identifying and verifying/authenticating human beings over more traditional security methods. This book will serve to identify the various security applications biometrics can play a highly secure and specific role in.* Contains elements such as Sidebars, Tips, Notes and URL links* Heavily illustrated with over 150 illustrations, screen captures, and photographs* Details the various biometric technologies and how they work while providing a discussion of the economics, privacy issues and challenges of implementing biometric security solutions

Biometric Security Jiankun Hu 2015-02-05 Modern biometrics delivers an enhanced level of security by means of a "proof of property". The design and deployment of a biometric system, however, hide many pitfalls, which, when underestimated, can lead to major security weaknesses and privacy threats. Issues of concern include biometric

identity theft and privacy invasion because of the strong connection between a user and his identity. This book showcases a collection of comprehensive references on the advances of biometric security technology. It compiles a total of fourteen articles, all contributed by thirty-two eminent researchers in the field, thus providing concise and accessible coverage of not only general issues, but also state-of-the-art solutions. The book is divided into five parts: (1) Biometric Template Protection, which covers cancellable biometrics and parameter management protocol; (2) Biometric Key and Encryption, focusing on biometric key generation and visual biometric cryptography; (3) Biometric Systems Analysis, dealing with biometric system security, and privacy evaluation and assessment; (4) Privacy-Enhanced Biometric Systems, covering privacy-enhanced biometric system protocol design and implementation; and (5) Other Biometric Security Technologies. The book will be of particular interest to researchers, scholars, graduate students, engineers, practitioners and developers interested in security and privacy-related issues in biometric systems. It will also be attractive to managers of various organizations with strong security needs.

Guide To Biometrics Guide To Biometrics

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