

## Dwt Dct And Svd Based Digital Image Watermarking

As the age of Big Data emerges, it becomes necessary to take the five dimensions of Big Data- volume, variety, velocity, volatility, and veracity- and focus these dimensions towards one critical emphasis - value. The Encyclopedia of Business Analytics and Optimization confronts the challenges of information retrieval in the age of Big Data by exploring recent advances in the areas of knowledge management, data visualization, interdisciplinary communication, and others. Through its critical approach and practical application, this book will be a must-have reference for any professional, leader, analyst, or manager interested in making the most of the knowledge resources at their disposal.

This book consists of papers on the recent progresses in the state of the art in natural computation, fuzzy systems and knowledge discovery. The book is useful for researchers, including professors, graduate students, as well as R & D staff in the industry, with a general interest in natural computation, fuzzy systems and knowledge discovery. The work printed in this book was presented at the 2020 16th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2020), held in Xi'an, China, from 19 to 21 December 2020. All papers were rigorously peer-reviewed by experts in the areas.

E-health applications such as tele-medicine, tele-radiology, tele-ophthalmology, and tele-diagnosis are very promising and have immense potential to improve global healthcare. They can improve access, equity, and quality through the connection of healthcare facilities and healthcare professionals, diminishing geographical and physical barriers. One critical issue, however, is related to the security of data transmission and access to the technologies of medical information. Currently, medical-related identity theft costs billions of dollars each year and altered medical information can put a person's health at risk through misdiagnosis, delayed treatment or incorrect prescriptions. Yet, the use of hand-held devices for storing, accessing, and transmitting medical information is outpacing the privacy and security protections on those devices. Researchers are starting to develop some imperceptible marks to ensure the tamper-proofing, cost effective, and guaranteed originality of the medical records. However, the robustness, security and efficient image archiving and retrieval of medical data information against these cyberattacks is a challenging area for researchers in the field of e-health applications. Intelligent Data Security Solutions for e-Health Applications focuses on cutting-edge academic and industry-related research in this field, with particular emphasis on interdisciplinary approaches and novel techniques to provide security solutions for smart applications. The book provides an overview of cutting-edge security techniques and ideas to help graduate students, researchers, as well as IT professionals who want to understand the opportunities and challenges of using emerging techniques and algorithms for designing and developing more secure systems and methods for e-health applications. Investigates new security and privacy requirements related to eHealth technologies and large sets of applications Reviews how the abundance of digital information on system behavior is now being captured, processed, and used to improve and strengthen security and privacy Provides an overview of innovative security techniques which are being developed to ensure the guaranteed authenticity of transmitted, shared or stored data/information Quantum Inspired Computational Intelligence: Research and Applications explores the latest quantum computational intelligence approaches, initiatives, and applications in computing, engineering, science, and business. The book explores this emerging field of research that applies principles of quantum mechanics to develop more efficient and robust intelligent systems. Conventional computational intelligence—or soft computing—is conjoined with quantum computing to achieve this objective. The models covered can be applied to any endeavor which handles complex and meaningful information. Brings together quantum computing with computational intelligence to achieve enhanced performance and robust solutions Includes numerous case studies, tools, and technologies to apply the concepts to real world practice Provides the missing link between the research and practice Exchange of information and innovative ideas are necessary to accelerate the development of technology. With advent of technology, intelligent and soft computing techniques came into existence with a wide scope of implementation in engineering sciences. Keeping this ideology in preference, this book includes the insights that reflect the 'Advances in Computer and Computational Sciences' from upcoming researchers and leading academicians across the globe. It contains high-quality peer-reviewed papers of 'International Conference on Computer, Communication and Computational Sciences (ICCCS 2016), held during 12-13 August, 2016 in Ajmer, India'. These papers are arranged in the form of chapters. The content of the book is divided into two volumes that cover variety of topics such as intelligent hardware and software design, advanced communications, power and energy optimization, intelligent techniques used in internet of things, intelligent image processing, advanced software engineering, evolutionary and soft computing, security and many more. This book helps the perspective readers' from computer industry and academia to derive the advances of next generation computer and communication technology and shape them into real life applications.

This book contains high-quality research articles and reviews that promote research and reflect the most recent advances in intelligent wavelet based techniques for advanced multimedia applications as well as other emerging areas. In recent time, wavelet transforms have become useful in many signal, image and video processing applications, especially for multimedia security and surveillance. A few applications of wavelets in security and surveillance are watermarking, fusion, steganography, object detection, tracking, motion recognition and intention recognition, etc. Wavelets are well capable of analyzing signal, image and video at different resolution levels, popularly known as multiresolution analysis. The multiresolution analysis is advantageous in multimedia security and surveillance applications. It provides flexibility in selection of different resolution levels that leads to better accuracy. Furthermore, recently sparse representation has become an advancement to analyze wavelet coefficients. It is observed that wavelet transforms possess the invariance property which makes them suitable for many vision applications. This book provides a concise overview of the current state of the art and disseminates some of the novel and exciting ideas and techniques. In addition, it is also helpful for the senior undergraduate and graduate students, researcher, academicians, IT professional and providers, citizens, customers as well as policy makers working in this area as well as other emerging applications demanding state-of-the-art wavelet based multimedia applications.

Cyber-attacks are rapidly becoming one of the most prevalent issues globally, and as they continue to escalate, it is imperative to explore new approaches and technologies that help ensure the security of the online community. Beyond cyber-attacks, personal information is now routinely and exclusively housed in cloud-based systems. The rising use of information technologies requires stronger information security and system procedures to reduce the risk of information breaches. Advanced Methodologies and Technologies in System Security, Information Privacy, and Forensics presents emerging research and methods on preventing information breaches and further securing system networks. While highlighting the rising concerns in information privacy and

system security, this book explores the cutting-edge methods combatting digital risks and cyber threats. This book is an important resource for information technology professionals, cybercrime researchers, network analysts, government agencies, business professionals, academicians, and practitioners seeking the most up-to-date information and methodologies on cybercrime, digital terrorism, network security, and information technology ethics.

This book introduces audio watermarking methods for copyright protection, which has drawn extensive attention for securing digital data from unauthorized copying. The book is divided into two parts. First, an audio watermarking method in discrete wavelet transform (DWT) and discrete cosine transform (DCT) domains using singular value decomposition (SVD) and quantization is introduced. This method is robust against various attacks and provides good imperceptible watermarked sounds. Then, an audio watermarking method in fast Fourier transform (FFT) domain using SVD and Cartesian-polar transformation (CPT) is presented. This method has high imperceptibility and high data payload and it provides good robustness against various attacks. These techniques allow media owners to protect copyright and to show authenticity and ownership of their material in a variety of applications. · Features new methods of audio watermarking for copyright protection and ownership protection · Outlines techniques that provide superior performance in terms of imperceptibility, robustness, and data payload · Includes applications such as data authentication, data indexing, broadcast monitoring, fingerprinting, etc.

This edited book is comprised of original research that focuses on technological advancements for effective teaching with an emphasis on learning outcomes, ICT trends in higher education, sustainable developments and digital ecosystem in education, management and industries. The contents of the book are classified as; (i) Emerging ICT Trends in Education, Management and Innovations (ii) Digital Technologies for advancements in education, management and IT (iii) Emerging Technologies for Industries and Education, and (iv) ICT Technologies for Intelligent Applications. The book represents a useful tool for academics, researchers, industry professionals and policymakers to share and learn about the latest teaching and learning practices supported by ICT. It also covers innovative concepts applied in education, management and industries using ICT tools.

In recent years bio-inspired computational theories and tools have developed to assist people in extracting knowledge from high dimensional data. These differ in how they take a more evolutionary approach to learning, as opposed to traditional artificial intelligence (AI) and what could be described as 'creationist' methods. Instead bio-inspired computing takes a bottom-up, de-centralized approach that often involves the method of specifying a set of simple rules, a set of simple organisms which adhere to those rules, and of iteratively applying those rules. Bio-Inspired Computing for Image and Video Processing covers interesting and challenging new theories in image and video processing. It addresses the growing demand for image and video processing in diverse application areas, such as secured biomedical imaging, biometrics, remote sensing, texture understanding, pattern recognition, content-based image retrieval, and more. This book is perfect for students following this topic at both undergraduate and postgraduate level. It will also prove indispensable to researchers who have an interest in image processing using bio-inspired computing.

The book provides copyright protection approaches for videos using watermarking. The various watermarking techniques using various transforms such as discrete cosine transform (DCT), discrete wavelet transform (DWT) and singular value decomposition (SVD) for videos are presented. The book also provides video watermarking approach using compressive sensing (CS) theory. The presented watermarking techniques are designed and implemented using color digital videos. The performance of the presented techniques is evaluated using Peak Signal to Noise Ratio (PSNR) and Normalized Correlation (NC).

This handbook is organized under three major parts. The first part of this handbook deals with multimedia security for emerging applications. The chapters include basic concepts of multimedia tools and applications, biological and behavioral biometrics, effective multimedia encryption and secure watermarking techniques for emerging applications, an adaptive face identification approach for android mobile devices, and multimedia using chaotic and perceptual hashing function. The second part of this handbook focuses on multimedia processing for various potential applications. The chapter includes a detail survey of image processing based automated glaucoma detection techniques and role of de-noising, recent study of dictionary learning based image reconstruction techniques for analyzing the big medical data, brief introduction of quantum image processing and its applications, a segmentation-less efficient Alzheimer detection approach, object recognition, image enhancements and de-noising techniques for emerging applications, improved performance of image compression approach, and automated detection of eye related diseases using digital image processing. The third part of this handbook introduces multimedia applications. The chapter includes the extensive survey on the role of multimedia in medicine and multimedia forensics classification, a finger based authentication system for e-health security, analysis of recently developed deep learning techniques for emotion and activity recognition. Further, the book introduces a case study on change of ECG according to time for user identification, role of multimedia in big data, cloud computing, the Internet of things (IoT) and blockchain environment in detail for real life applications. This handbook targets researchers, policy makers, programmers and industry professionals in creating new knowledge for developing efficient techniques/framework for multimedia applications. Advanced level students studying computer science, specifically security and multimedia will find this book useful as a reference.

This book discusses digital audio watermarking copyright assurance. The author first outlines the topic of watermarking data that can be used for copyright assurance that incorporates text messages, copyright audio, handwritten text, logo and cell phone numbers. The objective of this book is to propose a new algorithm that can embed and extract the watermarking information. The execution of the newly proposed algorithm is surveyed by testing data utilizing a group of various audio file types and against various attacks. The book also presents a new digital watermark algorithm that preserves the copyright property of the audio files. To do this, the author uses two techniques -- DWT and SVD -- with the combination of other techniques (DFT and DSSS) to enhance security and also provide high robustness and imperceptibility against various malicious attacks.

This book comprises select peer-reviewed papers from the International Conference on VLSI, Communication and Signal processing (VCAS) 2019, held at Motilal Nehru National Institute of Technology (MNNIT) Allahabad, Prayagraj, India. The contents focus on latest research in different domains of electronics and communication engineering, in particular microelectronics and VLSI design, communication systems and networks, and signal and image processing. The book also discusses the emerging applications of novel tools and techniques in image, video and multimedia signal processing. This book will be useful to students, researchers and professionals working in the electronics and communication domain.

This three-volume set LNCS 11901, 11902, and 11903 constitutes the refereed conference proceedings of the 10th International Conference on Image and Graphics, ICIG 2019, held in Beijing, China, in August 2019. The 183 full papers presented were selected from 384 submissions and focus on advances of theory, techniques and algorithms as well as innovative technologies of image, video and graphics processing and fostering innovation, entrepreneurship, and networking.

Telemedicine, which involves electronic communications and software, provides the same clinical services to patients without the requirement of an in-person visit. Essentially, this is considered remote healthcare. Though telemedicine is not a new practice, it has become an increasingly popular form of healthcare delivery due to current events, including the COVID-19 pandemic. Not only are visits being moved onto virtual platforms, but additional materials and correspondence can remain in the digital sphere. Virtual lab results, digital imaging,



medical diagnosis, and video consultations are just a few examples that encompass how telemedicine can be used for increased accessibility in healthcare delivery. With telemedicine being used in both the diagnosis and treatment of patients, technology in healthcare can be implemented at almost any phase of the patient experience. As healthcare delivery follows the digital shift, it is important to understand the technologies, benefits and challenges, and overall impacts of the remote healthcare experience. The Research Anthology on Telemedicine Efficacy, Adoption, and Impact on Healthcare Delivery presents the latest research on best practices for adopting telehealth into medical practices and its efficacy and solutions for the improvement of telemedicine, as well as addresses emerging challenges and opportunities, including issues such as securing patient data and providing healthcare accessibility to rural populations. Covering important themes that include doctor-patient relationships, tele-wound monitoring, and telemedicine regulations, this book is essential for healthcare professionals, doctors, medical students, academic and medical libraries, medical technologists, practitioners, stakeholders, researchers, academicians, and students interested in the emerging technological developments and solutions within the field of telemedicine.

This book presents multibiometric watermarking techniques for security of biometric data. This book also covers transform domain multibiometric watermarking techniques and their advantages and limitations. The authors have developed novel watermarking techniques with a combination of Compressive Sensing (CS) theory for the security of biometric data at the system database of the biometric system. The authors show how these techniques offer higher robustness, authenticity, better imperceptibility, increased payload capacity, and secure biometric watermarks. They show how to use the CS theory for the security of biometric watermarks before embedding into the host biometric data. The suggested methods may find potential applications in the security of biometric data at various banking applications, access control of laboratories, nuclear power stations, military base, and airports.

This book introduces medical imaging, its security requirements, and various security mechanisms using data hiding approaches. The book in particular provides medical data hiding techniques using various advanced image transforms and encryption methods. The book focuses on two types of data hiding techniques: steganography and watermarking for medical images. The authors show how these techniques are used for security and integrity verification of medical images and designed for various types of medical images such as grayscale image and color image. The implementation of techniques are done using discrete cosine transform (DCT), discrete wavelet transform (DWT), singular value decomposition (SVD), redundant DWT (RDWT), fast discrete curvelet transform (FDCuT), finite ridgelet transform (FRT) and non-subsampled contourlet transform (NSCT). The results of these techniques are also demonstrated after description of each technique. Finally, some future research directions are provided for security of medical images in telemedicine application.

Medical Image Watermarking Techniques and Applications Springer

This two-volume set (CCIS 1075 and CCIS 1076) constitutes the refereed proceedings of the Third International Conference on Advanced Informatics for Computing Research, ICAICR 2019, held in Shimla, India, in June 2019. The 78 revised full papers presented were carefully reviewed and selected from 382 submissions. The papers are organized in topical sections on computing methodologies; hardware; information systems; networks; software and its engineering. Although biometric systems present powerful alternatives to traditional authentication schemes, there are still many concerns about their security. Advances in Biometrics for Secure Human Authentication and Recognition showcases some of the latest technologies and algorithms being used for human authentication and recognition. Examining the full range of biometrics solutions, including unimodal and multimodal biometrics, the book covers conventional techniques as well as novel systems that have been developed over the past few years. It presents new biometric algorithms with novel feature extraction techniques, new computer vision approaches, soft computing approaches, and machine learning techniques under a unified framework used in biometrics systems. Filled with comprehensive graphical and modular illustrations, the text covers applications of affective computing in biometrics, matching sketch to photograph, cryptography approaches in biometrics, biometrics alteration, heterogeneous biometrics, and age invariant biometrics. It also presents biometrics algorithms with novel feature extraction techniques, computer vision approaches, soft computing approaches, and machine learning techniques under a unified framework used in biometrics systems. Containing the work of some of the world's most respected biometrics researchers, the book includes model question papers, mathematical notations, and exercises to reinforce understanding. Providing an up-to-date review of intelligence techniques and theories used in biometric technologies for secure human authentication and identification, this is an essential reference for researchers, scholars, graduate students, engineers, practitioners, and developers in the field of biometrics and its related fields.

Internet usage has become a facet of everyday life, especially as more technological advances have made it easier to connect to the web from virtually anywhere in the developed world. However, with this increased usage comes heightened threats to security within digital environments. The Handbook of Research on Modern Cryptographic Solutions for Computer and Cyber Security identifies emergent research and techniques being utilized in the field of cryptology and cyber threat prevention. Featuring theoretical perspectives, best practices, and future research directions, this handbook of research is a vital resource for professionals, researchers, faculty members, scientists, graduate students, scholars, and software developers interested in threat identification and prevention.

This book covers selected high-quality research papers presented at the International Conference on Big Data, Machine Learning, and Applications (BigDML 2019). It focuses on both theory and applications in the broad areas of big data and machine learning. It brings together the academia, researchers, developers and practitioners from scientific organizations and industry to share and disseminate recent research findings.

This book presents the recent research adoption of a variety of enabling wireless communication technologies like RFID tags, BLE, ZigBee, etc., and embedded sensor and actuator nodes, and various protocols like CoAP, MQTT, DNS, etc., that has made Internet of things (IoT) to step out of its infancy to become smart things. Now, smart sensors can collaborate directly with the machine without human involvement to automate decision making or to control a task. Smart

technologies including green electronics, green radios, fuzzy neural approaches, and intelligent signal processing techniques play important roles in the developments of the wearable healthcare systems. In the proceedings of 5th International Conference on Internet of Things and Connected Technologies (ICIoTCT), 2020, brought out research works on the advances in the Internet of things (IoT) and connected technologies (various protocols, standards, etc.). This conference aimed at providing a forum to discuss the recent advances in enabling technologies and applications for IoT.

Understanding and realizing the security and privacy challenges for information systems is a very critical and demanding task for both software engineers and developers to design and implement reliable and trustworthy information systems. This book provides novel contributions and research efforts related to security and privacy by shedding light on the legal, ethical, and technical aspects of security and privacy. This book consists of 12 chapters divided in three groups. The first contains works that discuss the ethical and legal aspects of security and privacy, the second contains works that focus more on the technical aspects of security and privacy, and the third contains works that show the applicability of various solutions in the aforementioned fields. This book is perfect for both experienced readers and young researchers that wish to read about the various aspects of security and privacy.

This book constitutes the refereed proceedings of the 6th EAI International Conference on Industrial Networks and Intelligent Systems, INISCOM 2020, held in Hanoi, Vietnam, in August 2020. Due to COVID-19 pandemic the conference was held virtually. The 26 full papers were selected from 59 submissions and are organized thematically in tracks on telecommunications systems and networks; hardware, software and application designs; information processing and data analysis; industrial networks and intelligent systems; security and privacy.

This book comprehensively reviews the various automated and semi-automated signal and image processing techniques, as well as deep-learning-based image analysis techniques, used in healthcare diagnostics. It highlights a range of data pre-processing methods used in signal processing for effective data mining in remote healthcare, and discusses pre-processing using filter techniques, noise removal, and contrast-enhanced methods for improving image quality. The book discusses the status quo of artificial intelligence in medical applications, as well as its future. Further, it offers a glimpse of feature extraction methods for reducing dimensionality and extracting discriminatory information hidden in biomedical signals. Given its scope, the book is intended for academics, researchers and practitioners interested in the latest real-world technological innovations.

Distributed and peer-to-peer (P2P) applications are increasing daily, and cyberattacks are constantly adopting new mechanisms to threaten the security and privacy of users in these Internet of Things (IoT) environments. Blockchain, a decentralized cryptographic-based technology, is a promising element for IoT security in manufacturing, finance, healthcare, supply chain, identity management, e-governance, defence, education, banking, and trading. Blockchain has the potential to secure IoT through repetition, changeless capacity, and encryption. Blockchain for Information Security and Privacy provides essential knowledge of blockchain usage in the mainstream areas of security, trust, and privacy in decentralized domains. This book is a source of technical information regarding blockchain-oriented software and applications. It provides tools to researchers and developers in both computing and software engineering to develop solutions and automated systems that can promote security, trust, and privacy in cyberspace. FEATURES Applying blockchain-based secured data management in confidential cyberdefense applications Securing online voting systems using blockchain Safeguarding electronic healthcare record (EHR) management using blockchain Impacting security and privacy in digital identity management Using blockchain-based security and privacy for smart contracts By providing an overview of blockchain technology application domains in IoT (e.g., vehicle web, power web, cloud internet, and edge computing), this book features side-by-side comparisons of modern methods toward secure and privacy-preserving blockchain technology. It also examines safety objectives, efficiency, limitations, computational complexity, and communication overhead of various applications using blockchain. This book also addresses the combination of blockchain and industrial IoT. It explores novel various-levels of information sharing systems.

This book presents essential principles, technical information, and expert insights on multimedia security technology. Illustrating the need for improved content security as the Internet and digital multimedia applications rapidly evolve, it presents a wealth of everyday protection application examples in fields including . Giving readers an in-depth introduction to different aspects of information security mechanisms and methods, it also serves as an instructional tool on the fundamental theoretical framework required for the development of advanced techniques.

This book proposes new algorithms to ensure secured communications and prevent unauthorized data exchange in secured multimedia systems. Focusing on numerous applications' algorithms and scenarios, it offers an in-depth analysis of data hiding technologies including watermarking, cryptography, encryption, copy control, and authentication. The authors present a framework for visual data hiding technologies that resolves emerging problems of modern multimedia applications in several contexts including the medical, healthcare, education, and wireless communication networking domains. Further, it introduces several intelligent security techniques with real-time implementation. As part of its comprehensive coverage, the book discusses contemporary multimedia authentication and fingerprinting techniques, while also proposing personal authentication/recognition systems based on hand images, surveillance system security using gait recognition, face recognition under restricted constraints such as dry/wet face conditions, and three-dimensional face identification using the approach developed here. This book equips perception technology professionals with the latest technologies, techniques, and strategies for multimedia security systems, offering a valuable resource for engineers and researchers working to develop security systems.

This book provides information on digital audio watermarking, its applications, and its evaluation for copyright protection of audio signals – both basic and advanced. The author covers various advanced digital audio watermarking algorithms



that can be used for copyright protection of audio signals. These algorithms are implemented using hybridization of advanced signal processing transforms such as fast discrete curvelet transform (FDCuT), redundant discrete wavelet transform (RDWT), and another signal processing transform such as discrete cosine transform (DCT). In these algorithms, Arnold scrambling is used to enhance the security of the watermark logo. This book is divided into three portions: basic audio watermarking and its classification, audio watermarking algorithms, and audio watermarking algorithms using advanced signal transforms. The book also covers optimization based audio watermarking. Describes basic of digital audio watermarking and its applications, including evaluation parameters for digital audio watermarking algorithms; Provides audio watermarking algorithms using advanced signal transformations; Provides optimization based audio watermarking algorithms.

This six volume set LNCS 11063 – 11068 constitutes the thoroughly refereed conference proceedings of the 4th International Conference on Cloud Computing and Security, ICCCS 2018, held in Haikou, China, in June 2018. The 386 full papers of these six volumes were carefully reviewed and selected from 1743 submissions. The papers cover ideas and achievements in the theory and practice of all areas of inventive systems which includes control, artificial intelligence, automation systems, computing systems, electrical and informative systems. The six volumes are arranged according to the subject areas as follows: cloud computing, cloud security, encryption, information hiding, IoT security, multimedia forensics.

This book is a collection of accepted papers that were presented at the International Conference on Communication and Computing Systems (ICCCS-2016), Dronacharya College of Engineering, Gurgaon, September 9–11, 2016. The purpose of the conference was to provide a platform for interaction between scientists from industry, academia and other areas of society to discuss the current advancements in the field of communication and computing systems. The papers submitted to the proceedings were peer-reviewed by 2-3 expert referees. This volume contains 5 main subject areas: 1. Signal and Image Processing, 2. Communication & Computer Networks, 3. Soft Computing, Intelligent System, Machine Vision and Artificial Neural Network, 4. VLSI & Embedded System, 5. Software Engineering and Emerging Technologies.

This book presents medical image watermarking techniques and algorithms for telemedicine and other emerging applications. This book emphasizes on medical image watermarking to ensure the authenticity of transmitted medical information. It begins with an introduction of digital watermarking, important characteristics, novel applications, different watermarking attacks and standard benchmark tools. This book also covers spatial and transform domain medical image watermarking techniques and their merits and limitations. The authors have developed improved/novel watermarking techniques for telemedicine applications that offer higher robustness, better perceptual quality and increased embedding capacity and secure watermark. The suggested methods may find potential applications in the prevention of patient identity theft and health data management issues which is a growing concern in telemedicine applications. This book provides a sound platform for understanding the medical image watermarking paradigm for researchers in the field and advanced-level students. Industry professionals working in this field, as well as other emerging applications demanding robust and secure watermarking will find this book useful as a reference.

This book presents selected papers from 1st International Conference on Optical and Wireless Technologies, providing insights into the analytical, experimental, and developmental aspects of systems, techniques, and devices in these spheres. It explores the combined use of various optical and wireless technologies in next-generation networking applications, and discusses the latest developments in applications such as photonics, high-speed communication systems and networks, visible light communication, nanophotonics, and wireless and multiple-input-multiple-output (MIMO) systems. The book will serve as a valuable reference resource for academics and researchers across the globe. As industries are rapidly being digitalized and information is being more heavily stored and transmitted online, the security of information has become a top priority in securing the use of online networks as a safe and effective platform. With the vast and diverse potential of artificial intelligence (AI) applications, it has become easier than ever to identify cyber vulnerabilities, potential threats, and the identification of solutions to these unique problems. The latest tools and technologies for AI applications have untapped potential that conventional systems and human security systems cannot meet, leading AI to be a frontrunner in the fight against malware, cyber-attacks, and various security issues. However, even with the tremendous progress AI has made within the sphere of security, it's important to understand the impacts, implications, and critical issues and challenges of AI applications along with the many benefits and emerging trends in this essential field of security-based research. Research Anthology on Artificial Intelligence Applications in Security seeks to address the fundamental advancements and technologies being used in AI applications for the security of digital data and information. The included chapters cover a wide range of topics related to AI in security stemming from the development and design of these applications, the latest tools and technologies, as well as the utilization of AI and what challenges and impacts have been discovered along the way. This resource work is a critical exploration of the latest research on security and an overview of how AI has impacted the field and will continue to advance as an essential tool for security, safety, and privacy online. This book is ideally intended for cyber security analysts, computer engineers, IT specialists, practitioners, stakeholders, researchers, academicians, and students interested in AI applications in the realm of security research.

This Edited Volume contains a selection of refereed and revised papers originally presented at the second International Symposium on Signal Processing and Intelligent Recognition Systems (SIRS-2015), December 16-19, 2015, Trivandrum, India. The program committee received 175 submissions. Each paper was peer reviewed by at least three or more independent referees of the program committee and the 59 papers were finally selected. The papers offer stimulating insights into biometrics, digital watermarking, recognition systems, image and video processing, signal and speech processing, pattern recognition, machine learning and knowledge-based systems. The book is directed to the researchers and scientists engaged in various field of signal processing and related areas.

This book presents best selected research papers presented at the First International Conference on Integrated Intelligence Enable Networks and Computing (IIENC 2020), held from May 25 to May 27, 2020, at the Institute of Technology, Gopeshwar, India (Government Institute of Uttarakhand Government and affiliated to Uttarakhand Technical University). The book includes papers in the field of intelligent computing. The book covers the areas of machine learning and robotics, signal processing and Internet of things, big data and renewable energy sources.

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