

A Novel Image Encryption Approach Using Matrix Reordering

This book focuses on the emerging advances in distributed communication systems, big data, intelligent computing and Internet of Things, presenting state-of-the-art research in frameworks, algorithms, methodologies, techniques and applications associated with data engineering and wireless distributed communication technologies. In addition, it discusses potential topics like performance analysis, wireless communication networks, data security and privacy, human computer interaction, 5G Networks, and smart automated systems, which will provide insights for the evolving data communication technologies. In a nutshell, this proceedings book compiles novel and high-quality research that offers innovative solutions for communications in IoT networks.

Image Encryption A Communication Perspective CRC Press

This text will provide the most recent knowledge and advances in the area of molecular computing and bioinformatics. Molecular computing and bioinformatics have a close relationship, paying attention to the same object but working towards different orientations. The articles will range from topics such as DNA computing and membrane computing to specific biomedical applications, including drug R&D and disease analysis.

The two-volume set LNCS 6753/6754 constitutes the refereed proceedings of the 8th International Conference on Image and Recognition, ICIAR 2011, held in Burnaby, Canada, in June 2011. The 84 revised full papers presented were carefully reviewed and selected from 147 submissions. The papers are organized in topical sections on image and video processing; feature extraction and pattern recognition; computer vision; color, texture, motion and shape; tracking; biomedical image analysis; biometrics; face recognition; image coding, compression and encryption; and applications.

Abstract: A novel image encryption method based on the random sequence generated from the generalized information domain and permutation–diffusion architecture is proposed. The random sequence is generated by reconstruction from the generalized information file and discrete trajectory extraction from the data stream. The trajectory address sequence is used to generate a P-box to shuffle the plain image while random sequences are treated as keystreams. A new factor called drift factor is employed to accelerate and enhance the performance of the random sequence generator. An initial value is introduced to make the encryption method an approximately one-time pad. Experimental results show that the random sequences pass the NIST statistical test with a high ratio and extensive analysis demonstrates that the new encryption scheme has superior security.

This volume contains selected papers presented at the 10th International Conference on Advanced Computing and Communication Technologies (10th ICACCT 2016), technically sponsored by Institution of Electronics and Telecommunication Engineers (India), held during 18 – 20 November 2016 at Asia Pacific Institute of Information Technology, Panipat, India. The volume reports latest research on a wide range of topics spanning theory, system, applications and case studies in the fields of computing and communication technologies. Topics covered are robotics, computational intelligence encompassing fuzzy logic, neural networks, GA and evolutionary computing, applications, knowledge representation, data encryption, distributed computing, data analytics and visualization, knowledge representation, wireless sensor networks, MEM sensor design, analog circuit, statistical machine translation, cellular automata and antenna design. The volume has 31 chapters, including an invited paper on swarm robotics, grouped into three parts, viz., Advanced Computing, Communication Technologies, and Micro Electronics and Antenna Design. The volume is directed to researchers and practitioners aspiring to solve practical issues, particularly applications of the theories of computational intelligence, using recent advances in computing and communication technologies.

This book constitutes the refereed proceedings of the International Symposium on Security in Computing and Communications, SSCC 2014, held in Delhi, India, in September 2013. The 36 revised full papers presented together with 12 work-in-progress papers were carefully reviewed and selected from 132 submissions. The papers are organized in topical sections on security and privacy in networked systems; authentication and access control systems; encryption and cryptography; system and network security; work-in-progress.

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

This book gathers selected high-quality research papers from the International Conference on Computational Methods and Data Engineering (ICMDE 2020), held at SRM University, Sonipat, Delhi-NCR, India. Focusing on cutting-edge technologies and the most dynamic areas of computational intelligence and data engineering, the respective contributions address topics including collective intelligence, intelligent transportation systems, fuzzy systems, data privacy and security, data mining, data warehousing, big data analytics, cloud computing, natural language processing, swarm intelligence, and speech processing.

This book presents recent applications and approaches as well as challenges in digital forensic science. One of the evolving challenges that is covered in the book is the cloud forensic analysis which applies the digital forensic science over the cloud computing paradigm for conducting either live or static investigations within the cloud environment. The book also covers the theme of multimedia forensics and watermarking in the area of information security. That includes highlights on intelligence techniques designed for detecting significant changes in image and video sequences. Moreover, the theme proposes recent robust and computationally efficient digital watermarking techniques. The last part of the book provides several digital forensics related applications, including areas such as evidence acquisition enhancement, evidence evaluation, cryptography, and finally, live investigation through the importance of reconstructing the botnet attack scenario to show the malicious activities and files as evidences to be presented in a court.

The book presents high-quality papers from the Third International Conference on Microelectronics, Computing & Communication Systems (MCCS 2018). It discusses the latest technological trends and advances in MEMS and nanoelectronics, wireless communications, optical communication, instrumentation, signal processing, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers,

telemetry systems, embedded systems, and sensor network applications. It includes papers based on original theoretical, practical and experimental simulations, development, applications, measurements, and testing. The applications and solutions discussed in the book provide excellent reference material for future product development.

This book contains a selection of refereed and revised papers of Intelligent Informatics Track originally presented at the third International Symposium on Intelligent Informatics (ISI-2014), September 24-27, 2014, Delhi, India. The papers selected for this Track cover several intelligent informatics and related topics including signal processing, pattern recognition, image processing data mining and their applications.

The book is a collection of high-quality peer-reviewed research papers presented in the International Conference on Artificial Intelligence and Evolutionary Computations in Engineering Systems (ICAIECES 2017). The book discusses wide variety of industrial, engineering and scientific applications of the emerging techniques. Researchers from academia and industry have presented their original work and ideas, information, techniques and applications in the field of communication, computing and power technologies. Advances in Information Technology Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Information Technology. The editors have built Advances in Information Technology Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Information Technology in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Advances in Information Technology Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Analysis, assessment, and data management are core competencies for operation research analysts. This volume addresses a number of issues and developed methods for improving those skills. It is an outgrowth of a conference held in April 2013 at the Hellenic Military Academy, and brings together a broad variety of mathematical methods and theories with several applications. It discusses directions and pursuits of scientists that pertain to engineering sciences. It also presents the theoretical background required for algorithms and techniques applied to a large variety of concrete problems. A number of open questions as well as new future areas are also highlighted. This book will appeal to operations research analysts, engineers, community decision makers, academics, the military community, practitioners sharing the current "state-of-the-art," and analysts from coalition partners. Topics covered include Operations Research, Games and Control Theory, Computational Number Theory and Information Security, Scientific Computing and Applications, Statistical Modeling and Applications, Systems of Monitoring and Spatial Analysis.

This book constitutes the refereed proceedings of the 10th International Conference on Applications and Techniques in Information Security, ATIS 2019, held in Tamil Nadu, India, in November 2019. The 22 full papers and 2 short papers presented in the volume were carefully reviewed and selected from 50 submissions. The papers are organized in the following topical sections: information security; network security; intrusion detection system; authentication and key management system; security centric applications.

This book includes selected papers presented at the Indo-French Seminar on Optimization, Variational Analysis and Applications (IFSOVAA-2020), held at the Department of Mathematics, Institute of Science, Banaras Hindu University, Varanasi, India, from 24 February 2020. The book discusses current optimization problems and their solutions by using the powerful tool of variational analysis. Topics covered in this volume include set optimization, multiobjective optimization, mathematical programs with complementary, equilibrium, vanishing and switching constraints, copositive optimization, interval-valued optimization, sequential quadratic programming, bound-constrained optimization, variational inequalities, and more. Several applications in different branches of applied mathematics, engineering, economics, finance, and medical sciences have been included. Each chapter not only provides a detailed survey of the topic but also builds systematic theories and suitable algorithms to deduce the most recent findings in literature. This volume appeals to graduate students as well as researchers and practitioners in pure and applied mathematics and related fields that make use of variational analysis in solving optimization problems.

The recent explosion in complex global networking architectures has spurred a concomitant rise in the need for robust information security. Further, as computing power increases exponentially with every passing year, so do the number of proposed cryptographic schemata for improving and ensuring the encryption integrity of cutting-edge infosec protocols. Improving Information Security Practices through Computational Intelligence presents an overview of the latest and greatest research in the field, touching on such topics as cryptology, stream ciphers, and intrusion detection, and providing new insights to an audience of students, teachers, and entry-level researchers working in computational intelligence, information security, and security engineering.

The International conference series on Computer Science, Engineering & Applications (ICCSEA) aims to bring together researchers and practitioners from academia and industry to focus on understanding computer science, engineering and applications and to establish new collaborations in these areas. The Second International Conference on Computer Science, Engineering & Applications (ICCSEA-2012), held in Delhi, India, during May 25-27, 2012 attracted many local and international delegates, presenting a balanced mixture of intellect and research both from the East and from the West. Upon a strenuous peer-review process the best submissions were selected leading to an exciting, rich and a high quality technical conference program, which featured high-impact presentations in the latest developments of various areas of computer science, engineering and

applications research.

Image analysis is a fundamental task for extracting information from images acquired across a range of different devices. Since reliable quantitative results are requested, image analysis requires highly sophisticated numerical and analytical methods—particularly for applications in medicine, security, and remote sensing, where the results of the processing may consist of vitally important data. The contributions to this book provide a good overview of the most important demands and solutions concerning this research area. In particular, the reader will find image analysis applied for feature extraction, encryption and decryption of data, color segmentation, and in the support new technologies. In all the contributions, entropy plays a pivotal role.

Presenting encryption algorithms with diverse characteristics, *Image Encryption: A Communication Perspective* examines image encryption algorithms for the purpose of secure wireless communication. It considers two directions for image encryption: permutation-based approaches and substitution-based approaches. Covering the spectrum of image encryption principles and techniques, the book compares image encryption with permutation- and diffusion-based approaches. It explores number theory-based encryption algorithms such as the Data Encryption Standard, the Advanced Encryption Standard, and the RC6 algorithms. It not only details the strength of various encryption algorithms, but also describes their ability to work within the limitations of wireless communication systems. Since some ciphers were not designed for image encryption, the book explains how to modify these ciphers to work for image encryption. It also provides instruction on how to search for other approaches suitable for this task. To make this work comprehensive, the authors explore communication concepts concentrating on the orthogonal frequency division multiplexing (OFDM) system and present a simplified model for the OFDM communication system with its different implementations. Complete with simulation experiments and MATLAB® codes for most of the simulation experiments, this book will help you gain the understanding required to select the encryption method that best fulfills your application requirements.

This book presents the proceedings of the International Conference on Computational Intelligence 2018 (ICCI 2018). It brings together work by leading scientists, researchers and research scholars from around the globe on all aspects of computational intelligence. The work is mainly composed of the original and unpublished results of conceptual, constructive, empirical, experimental, or theoretical work in all areas of computational intelligence. Specifically, the major topics covered include classical computational intelligence models and artificial intelligence, neural networks and deep learning, evolutionary swarm and particle algorithms, hybrid systems optimization, constraint programming, human–machine interaction, computational intelligence for web analytics, robotics, computational neurosciences, neurodynamics, bioinspired and biomorphic algorithms, cross-disciplinary topics and applications.

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.

These proceedings from the 2012 symposium on "Chaos, complexity and leadership" reflect current research results from all branches of Chaos, Complex Systems and their applications in Management. Included are the diverse results in the fields of applied nonlinear methods, modeling of data and simulations, as well as theoretical achievements of Chaos and Complex Systems. Also highlighted are Leadership and Management applications of Chaos and Complexity Theory.

The ubiquity of modern technologies has allowed for increased connectivity between people and devices across the globe. This connected infrastructure of networks creates numerous opportunities for applications and uses. As the applications of the internet of things continue to progress so do the security concerns for this technology. The study of threat prevention in the internet of things is necessary as security breaches in this field can ruin industries and lives. *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications* is a vital reference source that examines recent developments and emerging trends in security and privacy for the internet of things through new models, practical solutions, and technological advancements related to security. Highlighting a range of topics such as cloud security, threat detection, and open source software, this multi-volume book is ideally designed for engineers, IT consultants, ICT procurement managers, network system integrators, infrastructure service providers, researchers, academics, and professionals interested in current research on security practices pertaining to the internet of things.

The book gathers papers addressing state-of-the-art research in all areas of Information and Communication Technologies and their applications in intelligent computing, cloud storage, data

mining and software analysis. It presents the outcomes of the third International Conference on Information and Communication Technology for Intelligent Systems, which was held on April 6–7, 2018, in Ahmedabad, India. Divided into two volumes, the book discusses the fundamentals of various data analytics and algorithms, making it a valuable resource for researchers' future studies.

The two-volume set CCIS 827 and 828 constitutes the thoroughly refereed proceedings of the Third International Conference on Next Generation Computing Technologies, NGCT 2017, held in Dehradun, India, in October 2017. The 135 full papers presented were carefully reviewed and selected from 948 submissions. There were organized in topical sections named: Smart and Innovative Trends in Communication Protocols and Standards; Smart and Innovative Trends in Computational Intelligence and Data Science; Smart and Innovative Trends in Image Processing and Machine Vision; Smart Innovative Trends in Natural Language Processing for Indian Languages; Smart Innovative Trends in Security and Privacy.

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 presents new approaches and methods applied to real-world problems, and in particular, exploratory research relating to novel approaches in the field of cybernetics and automation control theory. Particularly focusing on modern trends in selected fields of interest, it presents new algorithms and methods in intelligent systems in cybernetics. This book constitutes the third volume of the refereed proceedings of the Cybernetics and Algorithms in Intelligent Systems Section of the 7th Computer Science On-line Conference 2018 (CSOC 2018), held online in April 2018.

This book gathers selected research papers presented at the First International Conference on Embedded Systems and Artificial Intelligence (ESAI 2019), held at Sidi Mohamed Ben Abdellah University, Fez, Morocco, on 2–3 May 2019. Highlighting the latest innovations in Computer Science, Artificial Intelligence, Information Technologies, and Embedded Systems, the respective papers will encourage and inspire researchers, industry professionals, and policymakers to put these methods into practice.

This book presents the proceedings of the 2018 International Conference on Security with Intelligent Computing and Big-data Services (SICBS 2018). With the proliferation of security with intelligent computing and big-data services, the issues of information security, big data, intelligent computing, blockchain technology, and network security have attracted a growing number of researchers. Discussing topics in areas including blockchain technology and applications; multimedia security; information processing; network, cloud and IoT security; cryptography and cryptosystems; as well as learning and intelligent computing and information hiding, the book provides a platform for researchers, engineers, academics and industrial professionals from around the globe to present their work in security-related areas. It not only introduces novel and interesting ideas, but also stimulates discussions and inspires new ideas.

Today, the scope of image processing and recognition has broadened due to the gap in scientific visualization. Thus, new imaging techniques have developed, and it is imperative to study this progression for optimal utilization. *Advanced Image Processing Techniques and Applications* is an essential reference publication for the latest research on digital image processing advancements. Featuring expansive coverage on a broad range of topics and perspectives, such as image and video steganography, pattern recognition, and artificial vision, this publication is ideally designed for scientists, professionals, researchers, and academicians seeking current research on solutions for new challenges in image processing.

"This edited book will start with an introduction to feature engineering and then move onto recent concepts, methods and applications with the use of various data types that includes: text, image, streaming data, social network data, financial data, biomedical data, bioinformatics etc. to help readers gain insight into how features can be extracted and transformed from raw data"--

These are the proceedings of the International Conference on ISMAC-CVB, held in Palladam, India, in May 2018. The book focuses on research to design new analysis paradigms and computational solutions for quantification of information provided by object recognition, scene understanding of computer vision and different algorithms like convolutional neural networks to allow computers to recognize and detect objects in images with unprecedented accuracy and to even understand the relationships between them. The proceedings treat the convergence of ISMAC in Computational Vision and Bioengineering technology and includes ideas and techniques like 3D sensing, human visual perception, scene understanding, human motion detection and analysis, visualization and graphical data presentation and a very wide range of sensor modalities in terms of surveillance, wearable applications, home automation etc. ISMAC-CVB is a forum for leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of computational vision and bioengineering.

Steganography is the art of secret writing. The purpose of steganography is to hide the presence of a message from the intruder by using state-of-the-art methods, algorithms, architectures, models, and methodologies in the domains of cloud, internet of things (IoT), and the Android platform. Though security controls in cloud computing, IoT, and Android platforms are not much different than security controls in an IT environment, they might still present different types of risks to an organization than the classic IT solutions. Therefore, a detailed discussion is needed in case there is a breach in security. It is important to review the security aspects of cloud, IoT, and Android platforms related to steganography to determine how this new technology is being utilized and improved continuously to protect information digitally. The benefits and challenges, along with the current and potential developments for the future, are important keystones in this critical area of security research. Multidisciplinary Approach to Modern Digital Steganography reviews the security aspects of cloud, IoT, and Android platforms related to steganography and addresses emerging security concerns, new algorithms, and case studies in the field. Furthermore, the book presents a new approach to secure data storage on cloud infrastructure and IoT along with including discussions on optimization models and security controls that could be implemented. Other important topics include data transmission, deep learning techniques, machine learning, and both image and text stenography. This book is essential for forensic engineers, forensic analysts, cybersecurity analysts, cyber forensic examiners, security engineers, cybersecurity network analysts, cyber network defense analysts, and digital forensic examiners along with practitioners, researchers, academicians, and students interested in the latest techniques and state-of-the-art methods in digital steganography.

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This book features a collection of high-quality, peer-reviewed papers presented at the Fourth International Conference on Intelligent Computing and Communication (ICICC 2020) organized by the Department of Computer Science and Engineering and the Department of Computer Science and Technology, Dayananda Sagar University, Bengaluru, India, on 18-20 September 2020. The book is organized in two volumes and discusses advanced and multi-disciplinary research regarding the design of smart computing and informatics. It focuses on innovation paradigms in system knowledge, intelligence and sustainability that can be applied to provide practical solutions to a number of problems in society, the environment and industry. Further, the book also addresses the deployment of emerging computational and knowledge transfer approaches, optimizing solutions in various disciplines of science, technology and health care.

This book contains a selection of refereed and revised papers of Intelligent Techniques and Applications track, and the Special Track on Intelligent Image Processing and Artificial Vision track originally presented at the International Symposium on Intelligent Systems Technologies and Applications (ISTA), August 10-13, 2015, Kochi, India.

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