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Digital Watermarking *and* Steganography



SECOND EDITION

**Digital Watermarking And Steganography 2nd Ed The
Morgan Kaufmann Series In Multimedia Information
And Systems**

Myung-Soo Kim



Digital Watermarking And Steganography 2nd Ed The Morgan Kaufmann Series In Multimedia Information And Systems:

Digital Watermarking and Steganography Ingemar Cox, Matthew Miller, Jeffrey Bloom, Jessica Fridrich, Ton Kalker, 2007-11-23 Digital audio video images and documents are flying through cyberspace to their respective owners Unfortunately along the way individuals may choose to intervene and take this content for themselves Digital watermarking and steganography technology greatly reduces the instances of this by limiting or eliminating the ability of third parties to decipher the content that he has taken The many techniques of digital watermarking embedding a code and steganography hiding information continue to evolve as applications that necessitate them do the same The authors of this second edition provide an update on the framework for applying these techniques that they provided researchers and professionals in the first well received edition Steganography and steganalysis the art of detecting hidden information have been added to a robust treatment of digital watermarking as many in each field research and deal with the other New material includes watermarking with side information QIM and dirty paper codes The revision and inclusion of new material by these influential authors has created a must own book for anyone in this profession This new edition now contains essential information on steganalysis and steganography New concepts and new applications including QIM introduced Digital watermark embedding is given a complete update with new processes and applications

Digital Multimedia: Concepts, Methodologies, Tools, and Applications Management Association, Information Resources, 2017-09-13 Contemporary society resides in an age of ubiquitous technology With the consistent creation and wide availability of multimedia content it has become imperative to remain updated on the latest trends and applications in this field Digital Multimedia Concepts Methodologies Tools and Applications is an innovative source of scholarly content on the latest trends perspectives techniques and implementations of multimedia technologies Including a comprehensive range of topics such as interactive media mobile technology and data management this multi volume book is an ideal reference source for engineers professionals students academics and researchers seeking emerging information on digital multimedia

Techniques and Applications of Digital Watermarking and Content Protection Michael Konrad Arnold, Martin Schmucker, Stephen D. Wolthusen, 2003 Whether you need to quickly come up to speed on the state of the art in digital watermarking or want to explore the latest research in this area such as 3 D geometry watermarking this timely reference gives you the hands on knowledge you need for your work This book covers the full range of media still images audio data video 3 D geometry data formatted text music scores and program code that you can protect with digital watermarking

SOME INVESTIGATIONS ON STEGANOGRAPHY TECHNIQUES Dr. V. Nagaraj, 2021-05-20 Steganography is the art of hiding and transmitting data through apparently innocuous carriers in an effort to conceal the existence of the secret data The Least Significant Bit LSB steganography that replaces the least significant bits of the host medium is a widely used technique with

low computational complexity and high insertion capacity Although it has good perceptual transparency it is vulnerable to steganalysis which is based on statistical analysis Many other steganography algorithms have been developed such as Discrete Cosine Transform DCT Discrete Wavelet Transform DWT and Spread Spectrum Embedding But the insertion capacities for all the above methods were not satisfied Therefore developing new steganography algorithms against statistical analysis seems to be the prime requirement in steganography The LSB insertion method is the most common and easiest method for embedding messages in an image with high capacity However it is detectable by statistical analysis such as RS and Chisquare analysis Hence researchers are still in look out for steganography techniques with enhanced insertion capacity of secret data along with greater security and which can resist attacks In this work in order to enhance the embedding capacity of secret data four techniques for secret communication have been proposed They are classified into two categories In first category cryptography is used along with steganography to enhance the security while in second category only steganography is used In the first category two improved LSB substitution techniques have been proposed The first technique is known as Zigzag Modulo Substitution Method in which embedding locations are Sequence based The second technique is known as Random Modulo Substitution Method using Random Technique in LSB Steganography and user key based LSB substitution steganography for RGB images where in RSA algorithm is used for encryption The techniques under the first category are exclusively LSB array based The first LSB array based technique embeds message bits into LSB arrays of cover image by using zigzag scanning On the other hand the Random Modulo Substitution Method embeds secret data into the different locations of cover image by using pseudo random index generator Moreover both these LSB array based techniques use RSA algorithm to enhance security Histogram and Statistical analysis performed on the stego image proved that the proposed techniques can effectively resist steganalysis Comparison of the statistical parameters like Root Mean Square RMS Peak Signal to Noise Ratio PSNR and Structural Similarity Index Matrix SSIM for the proposed techniques with cover image and stego image was carried out and analyzed The Second category includes pixel value modification method and pixel value differencing method in which the embedding decision for a target pixel is taken by random technique Data hiding by using pixel value modification with modulus function in color images guarantees that no pixel value will exceed the range 0 to 255 in stego image In the existing PVD embedding methods only one secret digit was embedded for two consecutive pixels but the proposed method embeds one secret digit in only one pixel Proposed method on color images gives more capacity and security than the PVD methods It also provides better visual quality of stego image Moreover proposed method extracts the hidden secret message efficiently without using the range tables In existing steganography algorithms like Pixel Value Differencing PVD methods the secret data are embedded into the differences of adjacent pixels This pair wise modification mechanism in cover image increases the histogram distortion

Digital Rights Management for E-Commerce Systems Drossos, Lambros, Tsolis, Dimitrios, Sioutas, Spyros, Papatheodorou, Theodore, 2008-10-31 This book

highlights innovative technologies used for the design and implementation of advanced e commerce systems facilitating digital rights management and protection Provided by publisher Handbook of Research on Threat Detection and Countermeasures in Network Security Al-Hamami, Alaa Hussein, Waleed al-Saadoon, Ghossoon M., 2014-10-31 Cyber attacks are rapidly becoming one of the most prevalent issues in the world As cyber crime continues to escalate it is imperative to explore new approaches and technologies that help ensure the security of the online community The Handbook of Research on Threat Detection and Countermeasures in Network Security presents the latest methodologies and trends in detecting and preventing network threats Investigating the potential of current and emerging security technologies this publication is an all inclusive reference source for academicians researchers students professionals practitioners network analysts and technology specialists interested in the simulation and application of computer network protection **Digital Watermarking and Steganography** Frank Y. Shih, 2017-04-10 This book intends to provide a comprehensive overview on different aspects of mechanisms and techniques for information security It is written for students researchers and professionals studying in the field of multimedia security and steganography Multimedia security and steganography is especially relevant due to the global scale of digital multimedia and the rapid growth of the Internet Digital watermarking technology can be used to guarantee authenticity and can be applied as proof that the content has not been altered since insertion Updated techniques and advances in watermarking are explored in this new edition The combinational spatial and frequency domains watermarking technique provides a new concept of enlarging the embedding capacity of watermarks The genetic algorithm GA based watermarking technique solves the rounding error problem and provide an efficient embedding approach Each chapter provides the reader with a fundamental theoretical framework while developing the extensive advanced techniques and considering the essential principles of the digital watermarking and steganographic systems Several robust algorithms that are presented throughout illustrate the framework and provide assistance and tools in understanding and implementing the fundamental principles *Information Hiding* Stefan Katzenbeisser, Ahmad-Reza Sadeghi, 2009-09-23 This book constitutes the thoroughly refereed post workshop proceedings of the 11th International Workshop on Information Hiding IH 2009 held in Darmstadt Germany in June 2009 The 19 revised full papers presented were carefully reviewed and selected from 55 submissions The papers are organized in topical sections on steganography steganalysis watermarking fingerprinting hiding in unusual content novel applications and forensics *How to Build a Digital Library* Ian H. Witten, David Bainbridge, David M. Nichols, 2009-11-09 How to Build a Digital Library reviews knowledge and tools to construct and maintain a digital library regardless of the size or purpose A resource for individuals agencies and institutions wishing to put this powerful tool to work in their burgeoning information treasuries The Second Edition reflects developments in the field as well as in the Greenstone Digital Library open source software In Part I the authors have added an entire new chapter on user groups user support collaborative browsing user contributions and so on

There is also new material on content based queries map based queries cross media queries There is an increased emphasis placed on multimedia by adding a digitizing section to each major media type A new chapter has also been added on internationalization which will address Unicode standards multi language interfaces and collections and issues with non European languages Chinese Hindi etc Part II the software tools section has been completely rewritten to reflect the new developments in Greenstone Digital Library Software an internationally popular open source software tool with a comprehensive graphical facility for creating and maintaining digital libraries Outlines the history of libraries on both traditional and digital Written for both technical and non technical audiences and covers the entire spectrum of media including text images audio video and related XML standards Web enhanced with software documentation color illustrations full text index source code and more

Multimedia Forensics and Security Li, Chang-Tsun, 2008-07-31 As information technology is rapidly progressing an enormous amount of media can be easily exchanged through Internet and other communication networks Increasing amounts of digital image video and music have created numerous information security issues and is now taken as one of the top research and development agendas for researchers organizations and governments worldwide *Multimedia Forensics and Security* provides an in depth treatment of advancements in the emerging field of multimedia forensics and security by tackling challenging issues such as digital watermarking for copyright protection digital fingerprinting for transaction tracking and digital camera source identification

Advances in Computational Intelligence Obdulia Pichardo Lagunas, Juan Martínez-Miranda, Bella Martínez Seis, 2022-10-22 The two volume set LNAI 13612 and 13613 constitutes the proceedings of the 21st Mexican International Conference on Artificial Intelligence MICA 2022 held in Monterrey Mexico in October 2022 The total of 63 papers presented in these two volumes was carefully reviewed and selected from 137 submissions The first volume *Advances in Computational Intelligence* contains 34 papers structured into three sections Machine and Deep Learning Image Processing and Pattern Recognition Evolutionary and Metaheuristic Algorithms The second volume contains 29 papers structured into two sections Natural Language Processing Intelligent Applications and Robotics

Machine Learning Methods for Signal, Image and Speech Processing M.A. Jabbar, MVV Prasad Kantipudi, Sheng-Lung Peng, Mamun Bin Ibne Reaz, Ana Maria Madureira, 2022-09-01 The signal processing SP landscape has been enriched by recent advances in artificial intelligence AI and machine learning ML yielding new tools for signal estimation classification prediction and manipulation Layered signal representations nonlinear function approximation and nonlinear signal prediction are now feasible at very large scale in both dimensionality and data size These are leading to significant performance gains in a variety of long standing problem domains like speech and Image analysis As well as providing the ability to construct new classes of nonlinear functions e g fusion nonlinear filtering This book will help academics researchers developers graduate and undergraduate students to comprehend complex SP data across a wide range of topical application areas such as social multimedia data collected from social media networks medical imaging data

data from Covid tests etc This book focuses on AI utilization in the speech image communications and virtual reality domains

Advancements in Security and Privacy Initiatives for Multimedia Images Kumar, Ashwani, Reddy, Seelam Sai Satyanarayana, 2020-09-25 The use of digital images in today's modernized market is rapidly increasing throughout organizations due to the prevalence of social media and digital content Companies who wish to distribute their content over the internet face numerous security risks such as copyright violation Advanced methods for the protection and security of digital data are constantly emerging and up to date research in this area is lacking Advancements in Security and Privacy Initiatives for Multimedia Images is a collection of innovative research on the methods and applications of contemporary techniques for the security and copyright protection of images and their distribution While highlighting topics including simulation based security digital watermarking protocols and counterfeit prevention this book is ideally designed for security analysts researchers developers programmers academicians practitioners students executives educators and policymakers seeking current research on modern security improvements for multimedia images

Digital Rights Management: Concepts, Methodologies, Tools, and Applications Management Association, Information Resources, 2012-10-31 This reference is a comprehensive collection of recent case studies theories research on digital rights management and its place in the world today

Encyclopedia of Multimedia Technology and Networking, Second Edition Pagani, Margherita, 2008-08-31 Advances in hardware software and audiovisual rendering technologies of recent years have unleashed a wealth of new capabilities and possibilities for multimedia applications creating a need for a comprehensive up to date reference The Encyclopedia of Multimedia Technology and Networking provides hundreds of contributions from over 200 distinguished international experts covering the most important issues concepts trends and technologies in multimedia technology This must have reference contains over 1 300 terms definitions and concepts providing the deepest level of understanding of the field of multimedia technology and networking for academicians researchers and professionals worldwide

Handbook of Research on Computational Forensics, Digital Crime, and Investigation: Methods and Solutions Li, Chang-Tsun, 2009-11-30 This book provides a media for advancing research and the development of theory and practice of digital crime prevention and forensics embracing a broad range of digital crime and forensics disciplines Provided by publisher

Cloud Computing and Security Zhiqiu Huang, Xingming Sun, Junzhou Luo, Jian Wang, 2016-01-04 This book constitutes the proceedings of the International Conference on Cloud Computing and Security ICCCS 2015 will be held on August 13 15 2015 in Nanjing China The objective of ICCCS 2015 is to provide a forum for researchers academicians engineers industrial professionals students and government officials involved in the general areas of information security and cloud computing

Modern Library Technologies for Data Storage, Retrieval, and Use Wei, Chia-Hung, 2013-02-28 In recent years libraries have embraced new technologies that organize and store a variety of digital information such as multimedia databases digital medical images and content based images Modern Library Technologies for Data Storage

Retrieval and Use highlights new features of digital library technology in order to educate the database community By contributing research from case studies on the emerging technology use in libraries this book is essential for academics and scientists interested in the efforts to understand the applications of data acquisition retrieval and storage Machine Learning: Concepts, Methodologies, Tools and Applications Management Association, Information Resources,2011-07-31 This reference offers a wide ranging selection of key research in a complex field of study discussing topics ranging from using machine learning to improve the effectiveness of agents and multi agent systems to developing machine learning software for high frequency trading in financial markets Provided by publishe **Digital Watermarking** Ton Kalker,Yong M. Ro,Ingemar J. Cox,2004-02-12 We are happy to present to you the proceedings of the 2nd International Workshop on Digital Watermarking IWDW 2003 Since its modern re appearance in the academic community in the early 1990s great progress has been made in understanding both the capabilities and the weaknesses of digital watermarking On the theoretical side we all are now well aware of the fact that digital waterma ing is best viewed as a form of communication using side information In the case of digital watermarking the side information in question is the document to be wat marked This insight has led to a better understanding of the limits of the capacity and robustness of digital watermarking algorithms It has also led to new and improved watermarking algorithms both in terms of capacity and imperceptibility Similarly the role of human perception and models thereof has been greatly enhanced in the study and design of digital watermarking algorithms and systems On the practical side applications of watermarking are not yet abundant The original euphoria on the role of digital watermarking in copy protection and copyright prot tion has not resulted in widespread usage in practical systems With hindsight a n ber of reasons can be given for this lack of practical applications

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