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# Forensics Of Image Tampering Based On The Consistency Of

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There is More to a Picture than Meets the Eye  
Image Tampering Detection for Forensics Applications  
Proceedings of First International Conference on Computing, Communications, and  
Cyber-Security (IC4S 2019)  
From DeepFakes to Morphing Attacks  
Proceedings of the 2nd International Conference on Communication and Computing  
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New Trends in Image Analysis and Processing -- ICIAP 2015 Workshops  
Advances in Image and Graphics Technologies  
New Tools and Techniques  
Proceedings of the 11th International Conference on Computer Engineering and  
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Artificial Intelligence Applications and Innovations  
Digital Image Forensics  
Image Statistical Frameworks for Digital Image Forensics  
Digital Forensics and Watermarking  
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Advances in Digital Forensics  
Communication and Computing Systems  
IFIP International Conference on Digital Forensics, National Center for Forensic  
Science, Orlando, Florida, February 13-16, 2005  
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Proceedings of ICICA 2019  
Proceedings of ICCIS 2019  
Digital Forensics and Watermarking  
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*There is More to a Picture  
than Meets the Eye*

Springer

Digital forensics deals with the acquisition, preservation, examination, analysis and presentation of electronic evidence. Networked computing, wireless communications and portable electronic devices have expanded the role of digital forensics beyond traditional computer crime investigations. Practically every crime now involves some aspect of digital evidence; digital forensics provides the techniques and tools to articulate this evidence. Digital forensics also has myriad intelligence applications. Furthermore, it has a vital role in information assurance – investigations of security breaches yield valuable information that can be

used to design more secure systems. Advances in Digital Forensics describes original research results and innovative applications in the emerging discipline of digital forensics. In addition, it highlights some of the major technical and legal issues related to digital evidence and electronic crime investigations. The areas of coverage include: Themes and Issues in Digital Forensics Investigative Techniques Network Forensics Portable Electronic Device Forensics Linux and File System Forensics Applications and Techniques This book is the first volume of a new series produced by the International Federation for Information Processing (IFIP) Working Group 11.9 on Digital Forensics, an international community of scientists, engineers and practitioners dedicated to advancing the state of the art of research and practice in digital forensics. The book

contains a selection of twenty-five edited papers from the First Annual IFIP WG 11.9 Conference on Digital Forensics, held at the National Center for Forensic Science, Orlando, Florida, USA in February 2005. Advances in Digital Forensics is an important resource for researchers, faculty members and graduate students, as well as for practitioners and individuals engaged in research and development efforts for the law enforcement and intelligence communities. Mark Pollitt is President of Digital Evidence Professional Services, Inc., Ellicott City, Maryland, USA. Mr. Pollitt, who is retired from the Federal Bureau of Investigation (FBI), served as the Chief of the FBI's Computer Analysis Response Team, and Director of the Regional Computer Forensic Laboratory National Program. Sujeet Shenoj is the F.P. Walter Professor of Computer Science and a principal with the Center for

Information Security at the University of Tulsa, Tulsa, Oklahoma, USA. For more information about the 300 other books in the IFIP series, please visit [www.springeronline.com](http://www.springeronline.com). For more information about IFIP, please visit [www.ifip.org](http://www.ifip.org).

*Image Tampering Detection for Forensics Applications* Springer Nature

The use of digital photography has increased over the past few years, a trend which opens the door for new and creative ways to forge images. The manipulation of images through forgery influences the perception an observer has of the depicted scene, potentially resulting in ill consequences if created with malicious intentions. This poses a need to verify the authenticity of images originating from unknown sources in absence of any prior digital watermarking or authentication technique. This research explores the holes left by existing research; specifically, the ability to detect image forgeries created using multiple image sources and specialized methods tailored to the popular JPEG image format. In an effort to meet these goals,

this thesis presents four methods to detect image tampering based on fundamental image attributes common to any forgery. These include discrepancies in 1) lighting and 2) brightness levels, 3) underlying edge inconsistencies, and 4) anomalies in JPEG compression blocks. Overall, these methods proved encouraging in detecting image forgeries with an observed accuracy of 60% in a completely blind experiment containing a mixture of 15 authentic and forged images. [Proceedings of First International Conference on Computing, Communications, and Cyber-Security \(IC4S 2019\)](#) Springer Nature This book constitutes the refereed proceedings of the 16th International Workshop on Digital Forensics and Watermarking, IWDW 2017, held in Magdeburg, Germany, in August 2017. The 30 papers presented in this volume were carefully reviewed and selected from 48 submissions. The contributions are covering the state-of-the-art theoretical and practical developments in the fields of digital watermarking, steganography and

steganalysis, forensics and anti-forensics, visual cryptography, and other multimedia-related security issues. Also included are the papers on two special sessions on biometric image tampering detection and on emerging threats of criminal use of information hiding : usage scenarios and detection approaches.

[From DeepFakes to Morphing Attacks](#) Springer Science & Business Media The six-volume set comprising the LNCS volumes 11129-11134 constitutes the refereed proceedings of the workshops that took place in conjunction with the 15th European Conference on Computer Vision, ECCV 2018, held in Munich, Germany, in September 2018.43 workshops from 74 workshops proposals were selected for inclusion in the proceedings. The workshop topics present a good orchestration of new trends and traditional issues, built bridges into neighboring fields, and discuss fundamental technologies and novel applications. [Proceedings of the 2nd International Conference on Communication and Computing Systems \(ICCCS 2018\)](#), December

1-2, 2018, Gurgaon, India

Springer Nature

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Bureau of Investigation (FBI), served as the Chief of the FBI's Computer Analysis Response Team, and Director of the Regional Computer Forensic Laboratory National Program. Sujeet Shenoj is the F.P. Walter Professor of Computer Science and a principal with the Center for Information Security at the University of Tulsa, Tulsa, Oklahoma, USA. For more information about the 300 other books in the IFIP series, please visit [www.springeronline.com](http://www.springeronline.com). For more information about IFIP, please visit [www.ifip.org](http://www.ifip.org).

**New Trends in Image Analysis and Processing -- ICIAP 2015 Workshops**

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The first comprehensive and detailed presentation of techniques for authenticating digital images.

**Advances in Image and Graphics Technologies**

Springer

Digital forensics and multimedia forensics are rapidly growing disciplines whereby electronic information is extracted and interpreted for use in a court of law. These two fields are finding increasing importance in law enforcement and the investigation of

cybercrime as the ubiquity of personal computing and the internet becomes ever-more apparent. Digital forensics involves investigating computer systems and digital artefacts in general, while multimedia forensics is a sub-topic of digital forensics focusing on evidence extracted from both normal computer systems and special multimedia devices, such as digital cameras. This book focuses on the interface between digital forensics and multimedia forensics, bringing two closely related fields of forensic expertise together to identify and understand the current state-of-the-art in digital forensic investigation. Both fields are expertly attended to by contributions from researchers and forensic practitioners specializing in diverse topics such as forensic authentication, forensic triage, forensic photogrammetry, biometric forensics, multimedia device identification, and image forgery detection among many others. Key features: Brings digital and multimedia forensics together with contributions from academia, law

enforcement, and the digital forensics industry for extensive coverage of all the major aspects of digital forensics of multimedia data and devices Provides comprehensive and authoritative coverage of digital forensics of multimedia data and devices Offers not only explanations of techniques but also real-world and simulated case studies to illustrate how digital and multimedia forensics techniques work Includes a companion website hosting continually updated supplementary materials ranging from extended and updated coverage of standards to best practice guides, test datasets and more case studies  
*New Tools and Techniques* Springer  
This 2 volume-set of IFIP AICT 583 and 584 constitutes the refereed proceedings of the 16th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2020, held in Neos Marmaras, Greece, in June 2020.\* The 70 full papers and 5 short papers presented were carefully reviewed and selected from 149 submissions. They cover a broad range of topics related to

technical, legal, and ethical aspects of artificial intelligence systems and their applications and are organized in the following sections: Part I: classification; clustering - unsupervised learning - analytics; image processing; learning algorithms; neural network modeling; object tracking - object detection systems; ontologies - AI; and sentiment analysis - recommender systems. Part II: AI ethics - law; AI constraints; deep learning - LSTM; fuzzy algebra - fuzzy systems; machine learning; medical - health systems; and natural language. \*The conference was held virtually due to the COVID-19 pandemic.  
**Proceedings of the 11th International Conference on Computer Engineering and Networks** John Wiley & Sons  
This book features selected research papers presented at the First International Conference on Computing, Communications, and Cyber-Security (IC4S 2019), organized by Northwest Group of Institutions, Punjab, India, Southern Federal University, Russia, and IAC Educational Trust, India along with KEC,

Ghaziabad and ITS, College Ghaziabad as an academic partner and held on 12–13 October 2019. It includes innovative work from researchers, leading innovators and professionals in the area of communication and network technologies, advanced computing technologies, data analytics and intelligent learning, the latest electrical and electronics trends, and security and privacy issues.

**Computing in Engineering and Technology** Springer

This book gathers selected research papers presented at the International Conference on Communication and Intelligent Systems (ICCIS 2019), organised by Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT), Jaipur, India and Rajasthan Technical University, Kota, India on 9–10 November 2019. This book presents a collection of state-of-the-art research work involving cutting-edge technologies for communication and intelligent systems. Over the past few years, advances in artificial intelligence and machine learning have sparked

new research efforts around the globe, which explore novel ways of developing intelligent systems and smart communication technologies. The book presents single- and multi-disciplinary research on these themes in order to make the latest results available in a single, readily accessible source.

**ICIAP 2015 International Workshops, BioFor, CTMR, RHEUMA, ISCA, MADiMa, SBMI, and QoEM, Genoa, Italy, September 7-8, 2015, Proceedings** Springer

Nature  
The book is a collection of selected high quality research papers presented at the International Conference on Computing in Engineering and Technology (ICCET 2019), held on January 10–11, 2019 at Deogiri Institute of Engineering and Management Studies, Aurangabad, India. Focusing on frontier topics and next-generation technologies, it presents original and innovative research from academics, scientists, students, and engineers alike.

**Artificial Intelligence Applications and Innovations** Springer  
Nature

This book discusses blind investigation and recovery of digital evidence left behind on digital devices, primarily for the purpose of tracing cybercrime sources and criminals. It presents an overview of the challenges of digital image forensics, with a specific focus on two of the most common forensic problems. The first part of the book addresses image source investigation, which involves mapping an image back to its camera source to facilitate investigating and tracing the source of a crime. The second part of the book focuses on image-forgery detection, primarily focusing on “copy-move forgery” in digital images, and presenting effective solutions to copy-move forgery detection with an emphasis on additional related challenges such as blur-invariance, similar genuine object identification, etc. The book concludes with future research directions, including counter forensics. With the necessary mathematical information in every chapter, the book serves as a useful reference resource for researchers and professionals alike. In addition, it can also be



used as a supplementary text for upper-undergraduate and graduate-level courses on “Digital Image Processing”, “Information Security”, “Machine Learning”, “Computer Vision” and “Multimedia Security and Forensics”. Digital Image Forensics Springer Nature

The advances of digital cameras, scanners, printers, image editing tools, smartphones, tablet personal computers as well as high-speed networks have made a digital image a conventional medium for visual information. Creation, duplication, distribution, or tampering of such a medium can be easily done, which calls for the necessity to be able to trace back the authenticity or history of the medium. Digital image forensics is an emerging research area that aims to resolve the imposed problem and has grown in popularity over the past decade. On the other hand, anti-forensics has emerged over the past few years as a relatively new branch of research, aiming at revealing the weakness of the forensic technology. These two sides of research move digital image forensic

technologies to the next higher level. Three major contributions are presented in this dissertation as follows. First, an effective multi-resolution image statistical framework for digital image forensics of passive-blind nature is presented in the frequency domain. The image statistical framework is generated by applying Markovian rake transform to image luminance component. Markovian rake transform is the applications of Markov process to difference arrays which are derived from the quantized block discrete cosine transform 2-D arrays with multiple block sizes. The efficacy and universality of the framework is then evaluated in two major applications of digital image forensics: 1) digital image tampering detection; 2) classification of computer graphics and photographic images. Second, a simple yet effective anti-forensic scheme is proposed, capable of obfuscating double JPEG compression artifacts, which may vital information for image forensics, for instance, digital image tampering detection. Shrink-and-zoom (SAZ) attack, the

proposed scheme, is simply based on image resizing and bilinear interpolation. The effectiveness of SAZ has been evaluated over two promising double JPEG compression schemes and the outcome reveals that the proposed scheme is effective, especially in the cases that the first quality factor is lower than the second quality factor. Third, an advanced textural image statistical framework in the spatial domain is proposed, utilizing local binary pattern (LBP) schemes to model local image statistics on various kinds of residual images including higher-order ones. The proposed framework can be implemented either in single- or multi-resolution setting depending on the nature of application of interest. The efficacy of the proposed framework is evaluated on two forensic applications: 1) steganalysis with emphasis on HUGO (Highly Undetectable Steganography), an advanced steganographic scheme embedding hidden data in a content-adaptive manner locally into some image regions which are difficult for modeling image statics; 2) image recapture detection

(IRD). The outcomes of the evaluations suggest that the proposed framework is effective, not only for detecting local changes which is in line with the nature of HUGO, but also for detecting global difference (the nature of IRD).

*Image Statistical Frameworks for Digital Image Forensics* Springer Nature

The two volume sets LNCS 8033 and 8034

constitutes the refereed proceedings of the 9th International Symposium on Visual Computing, ISVC 2013, held in Rethymnon, Crete, Greece, in July 2013. The 63 revised full papers and 35 poster papers presented together with 32 special track papers were carefully reviewed and selected from more than 220 submissions. The papers are organized in topical sections: Part I (LNCS 8033) comprises computational bioimaging; computer graphics; motion, tracking and recognition; segmentation; visualization; 3D mapping, modeling and surface reconstruction; feature extraction, matching and recognition; sparse methods for computer vision, graphics and

medical imaging; face processing and recognition. Part II (LNCS 8034) comprises topics such as visualization; visual computing with multimodal data streams; visual computing in digital cultural heritage; intelligent environments: algorithms and applications; applications; virtual reality.

**Digital Forensics and Watermarking** Springer

This 2 volume-set of IFIP AICT 583 and 584

constitutes the refereed proceedings of the 16th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2020, held in Neos Marmaras, Greece, in June 2020.\* The 70 full papers and 5 short papers presented were carefully reviewed and selected from 149 submissions. They cover a broad range of topics related to technical, legal, and ethical aspects of artificial intelligence systems and their applications and are organized in the following sections: Part I: classification; clustering - unsupervised learning - analytics; image processing; learning algorithms; neural network modeling; object tracking - object detection systems; ontologies - AI;

and sentiment analysis - recommender systems.

Part II: AI ethics - law; AI constraints; deep learning - LSTM; fuzzy algebra - fuzzy systems; machine learning; medical - health systems; and natural language. \*The conference was held virtually due to the COVID-19 pandemic.

Computer Engineering and Networking Springer

AI and Cloud Computing, Volume 120 in the

Advances in Computers series, highlights new advances in the field, with this updated volume presenting interesting chapters on topics including A Deep-forest based Approach for Detecting Fraudulent Online Transaction, Design of Cyber-Physical-Social Systems with Forensic-awareness Based on Deep Learning, Review on Privacy-preserving Data Comparison Protocols in Cloud Computing, Fingerprint Liveness Detection Using an Improved CNN with the Spatial Pyramid Pooling Structure, Protecting Personal Sensitive Data Security in the Cloud with Blockchain, and more. Provides the authority and expertise of leading contributors from an international board of authors Presents the



latest release in the Advances in Computers series Includes the latest information on AI and Cloud Computing  
Proceedings of the 2013 International Conference on Computer Engineering and Network (CENet2013)  
 IGI Global

This book presents a general introduction to the computational aspects of forensic science, covering the different tools needed for forensic investigations, the importance of forensics and biometrics, and the use of Benford's law for biometrics and network traffic analysis. It specifically focuses on the application of these techniques in Africa, and how they can be of benefit in the investigation of crime in Nigeria in particular.

*Encyclopedia of Information Science and Technology, Third Edition*  
 IGI Global

This book presents the proceedings of the 2nd International Conference on Networks and Advances in Computational Technologies (NetACT19) which took place on July 23-25, 2019 at Mar Baselios College of Engineering and Technology in Thiruvananthapuram,

India. The conference was in association with Bowie State University, USA, Gannon University, USA and Malardalen University, Sweden.

Papers presented were included in technical programs that were part of five parallel tracks, namely Computer Application, Image Processing, Network Security, Hardware & Network Systems and Machine Learning. The proceedings brings together experts from industry, governments and academia from around the world with vast experiences in design, engineering and research. Presents the proceedings of the 2nd International Conference on Networks and Advances in Computational Technologies (NetACT19); Includes research in Computer Application, Image Processing, Network Security, Hardware & Network Systems and Machine Learning; Provides perspectives from industry, academia and government.

A Case Study of the Science in Nigeria  
 Springer

This book presents the peer-reviewed proceedings of the 5th

International Conference on Intelligent Computing and Applications (ICICA 2019), held in Ghaziabad, India, on December 6-8, 2019. The contributions reflect the latest research on advanced computational methodologies such as neural networks, fuzzy systems, evolutionary algorithms, hybrid intelligent systems, uncertain reasoning techniques, and other machine learning methods and their applications to decision-making and problem-solving in mobile and wireless communication networks.

*Technologies to Advance Automation in Forensic Science and Criminal Investigation* Springer  
 Science & Business Media

This textbook provides an introduction to digital forensics, a rapidly evolving field for solving crimes. Beginning with the basic concepts of computer forensics, each of the book's 21 chapters focuses on a particular forensic topic composed of two parts: background knowledge and hands-on experience through practice exercises. Each theoretical or background section concludes with a series of review questions, which are

prepared to test students' understanding of the materials, while the practice exercises are intended to afford students the opportunity to apply the concepts introduced in the section on background knowledge. This experience-oriented textbook is meant to assist students in gaining a better understanding of digital forensics through

hands-on practice in collecting and preserving digital evidence by completing various exercises. With 20 student-directed, inquiry-based practice exercises, students will better understand digital forensic concepts and learn digital forensic investigation techniques. This textbook is intended for upper undergraduate and graduate-level students who are taking

digital-forensic related courses or working in digital forensics research. It can also be used by digital forensics practitioners, IT security analysts, and security engineers working in the IT security industry, particular IT professionals responsible for digital investigation and incident handling or researchers working in these related fields as a reference book.

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