Machine Learning Forensics For Law Enforcement Security And Intelligence

Cyber Crime and Forensic Computing
Artificial Intelligence (AI) in Forensic Sciences
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Handbook of Digital Forensics of Multimedia Data and Devices, Enhanced E-Book
Understanding Forensic Digital Imaging
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Computer Applications for Handling Legal Evidence, Police Investigation and Case Argumentation
Countering Cyberterrorism
Machine Learning Forensics for Law Enforcement, Security, and Intelligence
Privacy, Security And Forensics in The Internet of Things (IoT)
Advanced Smart Computing Technologies in Cybersecurity and Forensics
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2020 13th International Conference on Systematic Approaches to Digital Forensic Engineering (SADFE)
Digital Forensics for Legal Professionals
Confluence of AI, Machine, and Deep Learning in Cyber Forensics
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Artificial Intelligence in Forensic Science
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Forensic Science E-Magazine (Jan-2024)
Digital Forensics in the Era of Artificial Intelligence
AI Detective: Solving Crimes with Artificial Intelligence
Forensic: Quantum Computing Methods
Social Network Forensics, Cyber Security, and Machine Learning
Machine Learning Forensics for Law Enforcement, Security, and Intelligence
Cyber Warfare and Terrorism: Concepts, Methodologies, Tools, and Applications
Artificial Intelligence and Blockchain in Digital Forensics
Intelligent Data Mining in Law Enforcement Analytics
Handbook of Big Data Analytics and Forensics
AI COP

RICE JAELYN

Cyber Crime and Forensic Computing John Wiley & Sons
ARTIFICIAL INTELLIGENCE (AI) IN FORENSIC SCIENCES Foundational text for teaching and learning within the field of Artificial Intelligence (AI) as it applies to forensic science Artificial Intelligence (AI) in Forensic Sciences presents an overview of the state-of-the-art applications of Artificial Intelligence within

Forensic Science, covering issues with validation and new crimes that use AI; issues with triage, preselection, identification, argumentation and explain ability; demonstrating uses of AI in forensic science; and providing discussions on bias when using AI. The text discusses the challenges for the legal presentation of AI data and interpretation and offers solutions to this problem while addressing broader practical and emerging issues in a growing area of interest in forensics. It builds on key developing areas of focus in academic and government research, providing an authoritative and well-researched perspective. Compiled by two highly qualified editors with significant experience in the field, and part of the Wiley — AAFS series 'Forensic Science in Focus', Artificial Intelligence (AI) in Forensic Sciences includes information on: Cyber IoT, fundamentals on AI in forensic science, speaker and facial comparison, and deepfake detection Digital-based evidence creation, 3D and AI, interoperability of standards, and forensic audio and speech analysis Text analysis, video and multimedia analytics, reliability, privacy, network forensics, intelligence operations, argumentation support in court, and case applications Identification of genetic markers, current state and federal legislation with regards to AI, and forensics and fingerprint analysis Providing comprehensive

coverage of the subject, Artificial Intelligence (AI) in Forensic Sciences is an essential advanced text for final year undergraduates and master's students in forensic science, as well as universities teaching forensics (police, IT security, digital science and engineering), forensic product vendors and governmental and cyber security agencies.
Artificial Intelligence (AI) in Forensic Sciences IGI Global
Artificial Intelligence in Forensic Science addresses the current and emerging opportunities being utilized to apply modern Artificial Intelligence (AI) technologies to current forensic and investigation practices. The book also showcases the increasing benefits of AI where and when it can be applied to various techniques and forensic disciplines. The increasing rate of sophisticated crimes has increased the opportunity and need for the forensic field to explore a variety of emerging technologies to counter criminals—and AI is no exception. There are many current investigative challenges that, with ingenuity and application, can be helped with the application of AI, especially in the digital forensic and cyber-crime arena. The book also explains many practical studies that have been carried out to test AI technologies in crime detection, uncovering evidence, and identifying perpetrators. In the last decade, the use of AI has become common in many fields and now is an ideal time to look at the various

ways AI can be integrated into judicial, forensic, and criminal cases to better collect and analyze evidence, thereby improving outcomes.

Artificial Intelligence in Cyber Security: Impact and Implications IGI Global

Digital forensics deals with the acquisition, preservation, examination, analysis and presentation of electronic evidence. Computer networks, cloud computing, smartphones, embedded devices and the Internet of Things 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 in legal proceedings. Digital forensics also has myriad intelligence applications; furthermore, it has a vital role in cyber security -- investigations of security breaches yield valuable information that can be used to design more secure and resilient systems. Advances in Digital Forensics XVI describes original research results and innovative applications in the 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, forensic techniques, filesystem forensics, cloud forensics, social media forensics, multimedia forensics, and novel applications. This book is

the sixteenth volume in the annual 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 sixteen edited papers from the Sixteenth Annual IFIP WG 11.9 International Conference on Digital Forensics, held in New Delhi, India, in the winter of 2020. Advances in Digital Forensics XVI 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.

Handbook of Digital Forensics of Multimedia Data and Devices, Enhanced E-Book Springer Nature

It is crucial that forensic science meets challenges such as identifying hidden patterns in data, validating results for accuracy, and understanding varying criminal activities in order to be authoritative so as to hold up justice and public safety. Artificial intelligence, with its potential subsets of machine learning and deep learning, has the potential to transform the domain of forensic science by handling diverse data, recognizing patterns, and analyzing, interpreting, and presenting results.

Machine Learning and deep learning frameworks, with developed mathematical and computational tools, facilitate the investigators to provide reliable results. Further study on the potential uses of these technologies is required to better understand their benefits. Aiding Forensic Investigation Through Deep Learning and Machine Learning Frameworks provides an outline of deep learning and machine learning frameworks and methods for use in forensic science to produce accurate and reliable results to aid investigation processes. The book also considers the challenges, developments, advancements, and emerging approaches of deep learning and machine learning. Covering key topics such as biometrics, augmented reality, and fraud investigation, this reference work is crucial for forensic scientists, law enforcement, computer scientists, researchers, scholars, academicians, practitioners, instructors, and students.

Understanding Forensic Digital Imaging

SkyCuration

We proudly present the January issue (Vol 19) of your favorite magazine, Forensic Science E-Magazine. As usual, the magazine's current issue has helpful content related to forensic science. Our editorial team works diligently to deliver the study material while keeping in mind the needs of our valued readers. We are confident that if you read it attentively and patiently,

it will go a long way toward giving you the information you need to tackle the difficult process of the exams and study and bring you certain knowledge and victory. Reputable authors have provided several important pieces on forensic science and science in the current edition. A variety of questions collected from various competitive exams are included in the magazine's most important section. Contents: Flow Chart Of Forensic Science: A Broad Overview Article On Cryptography and Network Security in Digital Forensics MCQs On Digital Forensics Flowchart for Forensic Ballistic Analysis: A Broad Overview Artificial Intelligence Technology and Forensic Science MCQs On Artificial Intelligence and Forensic Science Flowchart of Crime scene investigation: A Broad Overview Psychological Autopsy: Need of Forensic Psychology MCQs on Psychological Autopsy Flowchart for a Homicide Investigation: A Broad Overview Identification With Earprints: A Unique Form Of Forensic Evidence MCQs on Earprints Flowchart for Fingerprint Analysis: A Broad Overview

Adversarial Multimedia Forensics Springer Nature This book discusses the issues and challenges in Online Social Networks (OSNs). It highlights various aspects of OSNs consisting of novel social network strategies and the development of services using different computing models.

Moreover, the book investigates how OSNs are impacted by cutting-edge innovations.

Computer and Intrusion Forensics

Springer Nature

This book explores various aspects of digital forensics, security and machine learning, while offering valuable insights into the ever-evolving landscape of multimedia forensics and data security. This book's content can be summarized in two main areas. The first area of this book primarily addresses techniques and methodologies related to digital image forensics. It discusses advanced techniques for image manipulation detection, including the use of deep learning architectures to generate and manipulate synthetic satellite images. This book also explores methods for face recognition under adverse conditions and the importance of forensics in criminal investigations. Additionally, the book highlights anti-forensic measures applied to photos and videos, focusing on their effectiveness and trade-offs. The second area of this book focuses on the broader landscape of security, including the detection of synthetic human voices, secure deep neural networks (DNNs) and federated learning in the context of machine learning security. It investigates novel methods for detecting synthetic human voices using neural vocoder artifacts, and it explores the vulnerabilities and security challenges of federated learning in the

face of adversarial attacks. Furthermore, this book delves into the realms of linguistic steganography and steganalysis, discussing the evolving techniques that utilize deep learning and natural language processing to enhance payload and detection accuracy. Overall, this book provides a comprehensive overview of the ever-evolving field of digital forensics and security, making it an invaluable resource for researchers and students interested in image forensics, machine learning security and information protection. It equips readers with the latest knowledge and tools to address the complex challenges posed by the digital landscape. Professionals working in this related field will also find this book to be a valuable resource.

Aiding Forensic Investigation Through Deep Learning and Machine Learning Frameworks Springer Nature

Increasingly, crimes and fraud are digital in nature, occurring at breakneck speed and encompassing large volumes of data. To combat this unlawful activity, knowledge about the use of machine learning technology and software is critical. Machine Learning Forensics for Law Enforcement, Security, and Intelligence integrates an assortment of deductive

Advances in Digital Forensics XVI Springer Nature

Legal Analytics: The Future of Analytics in Law navigates the

crisscrossing of intelligent technology and the legal field in building up a new landscape of transformation. Legal automation navigation is multidimensional, wherein it intends to construct streamline communication, approval, and management of legal tasks. The evolving environment of technology has emphasized the need for better automation in the legal field from time to time, although legal scholars took long to embrace information revolution of the legal field. • Describes the historical development of law and automation. • Analyzes the challenges and opportunities in law and automation. • Studies the current research and development in the convergence of law, artificial intelligence, and legal analytics. • Explores the recent emerging trends and technologies that are used by various legal systems globally for crime prediction and prevention. • Examines the applicability of legal analytics in forensic investigation. • Investigates the impact of legal analytics tools and techniques in judicial decision making. • Analyzes deep learning techniques and their scope in accelerating legal analytics in developed and developing countries. • Provides an in-depth analysis of implementation, challenges, and issues in society related to legal analytics. This book is primarily aimed at graduates and postgraduates in law and technology, computer

science, and information technology. Legal practitioners and academicians will also find this book helpful.

Big Data Analytics and Computing for Digital Forensic Investigations

CRC Press

This book provides an overview of computer techniques and tools — especially from artificial intelligence (AI) — for handling legal evidence, police intelligence, crime analysis or detection, and forensic testing, with a sustained discussion of methods for the modelling of reasoning and forming an opinion about the evidence, methods for the modelling of argumentation, and computational approaches to dealing with legal, or any, narratives. By the 2000s, the modelling of reasoning on legal evidence has emerged as a significant area within the well-established field of AI & Law. An overview such as this one has never been attempted before. It offers a panoramic view of topics, techniques and tools. It is more than a survey, as topic after topic, the reader can get a closer view of approaches and techniques. One aim is to introduce practitioners of AI to the modelling legal evidence. Another aim is to introduce legal professionals, as well as the more technically oriented among law enforcement professionals, or researchers in police science, to information technology resources from which their own respective field stands to benefit. Computer

scientists must not blunder into design choices resulting in tools objectionable for legal professionals, so it is important to be aware of ongoing controversies. A survey is provided of argumentation tools or methods for reasoning about the evidence. Another class of tools considered here is intended to assist in organisational aspects of managing of the evidence. Moreover, tools appropriate for crime detection, intelligence, and investigation include tools based on link analysis and data mining. Concepts and techniques are introduced, along with case studies. So are areas in the forensic sciences. Special chapters are devoted to VIRTOPSY (a procedure for legal medicine) and FLINTS (a tool for the police). This is both an introductory book (possibly a textbook), and a reference for specialists from various quarters.

Legal Analytics CRC Press

"Dive into 'Forensic: Quantum Computing Methods', exploring how quantum technologies are revolutionizing forensic science. This book covers everything from encryption to legal implications, offering a clear path through the evolving landscape of investigative techniques and data security. Perfect for researchers and practitioners alike, it's a must-read for anyone curious about the future of forensic science in the quantum age."

Digital Forensics with Open Source Tools Springer

Within modern forensic

science and criminal investigation, experts face several challenges including managing huge amounts of data, handling miniscule pieces of evidence in a chaotic and complex environment, navigating traditional laboratory structures, and, sometimes, dealing with insufficient knowledge. These challenges must be overcome to avoid failure in investigation or miscarriage of justice. Technologies to Advance Automation in Forensic Science and Criminal Investigation provides a platform for researchers to present state-of-the-art technologies within forensic science and criminal investigation. Covering topics such as financial fraud, machine learning, and source camera identification, this book is an essential reference for criminal investigators, justice departments, law enforcement, legislators, computer scientists, automation professionals, researchers, academicians, and students and educators in higher education. *Advances in Digital Forensics XIV* Walter de Gruyter GmbH & Co KG Increasingly, crimes and fraud are digital in nature, occurring at breakneck speed and encompassing large volumes of data. To combat this unlawful activity, knowledge about the use of machine learning technology and software is critical. Machine Learning Forensics for Law Enforcement, Security, and Intelligence integrates an assortment of deductive

Computer Applications for Handling Legal Evidence, Police Investigation and Case Argumentation John Wiley & Sons
This handbook discusses challenges and limitations in existing solutions, and presents state-of-the-art advances from both academia and industry, in big data analytics and digital forensics. The second chapter comprehensively reviews IoT security, privacy, and forensics literature, focusing on IoT and unmanned aerial vehicles (UAVs). The authors propose a deep learning-based approach to process cloud's log data and mitigate enumeration attacks in the third chapter. The fourth chapter proposes a robust fuzzy learning model to protect IT-based infrastructure against advanced persistent threat (APT) campaigns. Advanced and fair clustering approach for industrial data, which is capable of training with huge volume of data in a close to linear time is introduced in the fifth chapter, as well as offering an adaptive deep learning model to detect cyberattacks targeting cyber physical systems (CPS) covered in the sixth chapter. The authors evaluate the performance of unsupervised machine learning for detecting cyberattacks against industrial control systems (ICS) in chapter 7, and the next chapter presents a robust fuzzy Bayesian approach for ICS's cyber threat hunting. This handbook also evaluates the performance of supervised machine learning methods in

identifying cyberattacks against CPS. The performance of a scalable clustering algorithm for CPS's cyber threat hunting and the usefulness of machine learning algorithms for MacOS malware detection are respectively evaluated. This handbook continues with evaluating the performance of various machine learning techniques to detect the Internet of Things malware. The authors demonstrate how MacOSX cyberattacks can be detected using state-of-the-art machine learning models. In order to identify credit card frauds, the fifteenth chapter introduces a hybrid model. In the sixteenth chapter, the editors propose a model that leverages natural language processing techniques for generating a mapping between APT-related reports and cyber kill chain. A deep learning-based approach to detect ransomware is introduced, as well as a proposed clustering approach to detect IoT malware in the last two chapters. This handbook primarily targets professionals and scientists working in Big Data, Digital Forensics, Machine Learning, Cyber Security Cyber Threat Analytics and Cyber Threat Hunting as a reference book. Advanced level-students and researchers studying and working in Computer systems, Computer networks and Artificial intelligence will also find this reference useful. *Countering Cyberterrorism* Springer The book provides a

valuable reference for cyber security experts, digital forensic practitioners and network security professionals. In recent years, AI has gained substantial attention from researchers in both academia and industry, and as a result AI's capabilities are constantly increasing at an extraordinary pace. AI is considered to be the Fourth Industrial Revolution or at least the next significant technological change after the evolution in mobile and cloud computing technologies. AI is a vehicle for improving the quality of our lives across every spectrum with a broad range of beneficial applications in various sectors. Notwithstanding its numerous beneficial use, AI simultaneously poses numerous legal, ethical, security and privacy challenges that are compounded by its malicious use by criminals. These challenges pose many risks to both our privacy and security at national, organisational and individual levels. In view of this, this book aims to help address some of these challenges focusing on the implication, impact and mitigations of the stated issues. The book provides a comprehensive coverage of not only the technical and ethical issues presented by the use of AI but also the adversarial application of AI and its associated implications. The authors recommend a number of novel approaches to assist in better detecting, thwarting and addressing

AI challenges. The book also looks ahead and forecasts what attacks can be carried out in the future through the malicious use of the AI if sufficient defences are not implemented. The research contained in the book fits well into the larger body of work on various aspects of AI and cyber security. It is also aimed at researchers seeking to obtain a more profound knowledge of machine learning and deep learning in the context of cyber security, digital forensics and cybercrime. Furthermore, the book is an exceptional advanced text for Ph.D. and master's degree programmes in cyber security, digital forensics, network security, cyber terrorism and computer science. Each chapter contributed to the book is written by an internationally renowned expert who has extensive experience in law enforcement, industry or academia. Furthermore, this book blends advanced research findings with practice-based methods to provide the reader with advanced understanding and relevant skills.

Machine Learning Forensics for Law Enforcement, Security, and Intelligence Archana Singh

This book provides a comprehensive analysis covering the confluence of Artificial Intelligence (AI), Cyber Forensics and Digital Policing in the context of the United Kingdom (UK), United States (US) and European Union (EU) national cybersecurity. More specifically, this book

explores ways in which the adoption of AI algorithms (such as Machine Learning, Deep Learning, Natural Language Processing, and Big Data Predictive Analytics (BDPAs) transforms law enforcement agencies (LEAs) and intelligence service practices. It explores the roles that these technologies play in the manufacture of security, the threats to freedom and the levels of social control in the surveillance state. This book also examines the malevolent use of AI and associated technologies by state and non-state actors. Along with this analysis, it investigates the key legal, political, ethical, privacy and human rights implications of the national security uses of AI in the stated democracies. This book provides a set of policy recommendations to help to mitigate these challenges. Researchers working in the security field as well advanced level students in computer science focused on security will find this book useful as a reference. Cyber security professionals, network security analysts, police and law enforcement agencies will also want to purchase this book.

Privacy, Security And Forensics in The Internet of Things (IoT)

Springer Nature

This book presents a comprehensive study of different tools and techniques available to perform network forensics. Also, various aspects of network forensics are reviewed as well as related

technologies and their limitations. This helps security practitioners and researchers in better understanding of the problem, current solution space, and future research scope to detect and investigate various network intrusions against such attacks efficiently. Forensic computing is rapidly gaining importance since the amount of crime involving digital systems is steadily increasing. Furthermore, the area is still underdeveloped and poses many technical and legal challenges. The rapid development of the Internet over the past decade appeared to have facilitated an increase in the incidents of online attacks. There are many reasons which are motivating the attackers to be fearless in carrying out the attacks. For example, the speed with which an attack can be carried out, the anonymity provided by the medium, nature of medium where digital information is stolen without actually removing it, increased availability of potential victims and the global impact of the attacks are some of the aspects. Forensic analysis is performed at two different levels: Computer Forensics and Network Forensics. Computer forensics deals with the collection and analysis of data from computer systems, networks, communication streams and storage media in a manner admissible in a court of law. Network forensics deals with the capture, recording or analysis of network events in order to

discover evidential information about the source of security attacks in a court of law. Network forensics is not another term for network security. It is an extended phase of network security as the data for forensic analysis are collected from security products like firewalls and intrusion detection systems. The results of this data analysis are utilized for investigating the attacks. Network forensics generally refers to the collection and analysis of network data such as network traffic, firewall logs, IDS logs, etc. Technically, it is a member of the already-existing and expanding the field of digital forensics. Analogously, network forensics is defined as "The use of scientifically proved techniques to collect, fuses, identifies, examine, correlate, analyze, and document digital evidence from multiple, actively processing and transmitting digital sources for the purpose of uncovering facts related to the planned intent, or measured success of unauthorized activities meant to disrupt, corrupt, and or compromise system components as well as providing information to assist in response to or recovery from these activities." Network forensics plays a significant role in the security of today’s organizations. On the one hand, it helps to learn the details of external attacks ensuring similar future attacks are thwarted. Additionally, network forensics is essential for investigating insiders’

abuses that constitute the second costliest type of attack within organizations. Finally, law enforcement requires network forensics for crimes in which a computer or digital system is either being the target of a crime or being used as a tool in carrying a crime. Network security protects the system against attack while network forensics focuses on recording evidence of the attack. Network security products are generalized and look for possible harmful behaviors. This monitoring is a continuous process and is performed all through the day. However, network forensics involves post mortem investigation of the attack and is initiated after crime notification. There are many tools which assist in capturing data transferred over the networks so that an attack or the malicious intent of the intrusions may be investigated. Similarly, various network forensic frameworks are proposed in the literature.

Advanced Smart Computing Technologies in Cybersecurity and Forensics IGI Global Unleashing the Art of Digital Forensics is intended to describe and explain the steps taken during a forensic examination, with the intent of making the reader aware of the constraints and considerations that apply during a forensic examination in law enforcement and in the private sector. Key Features: • Discusses the recent advancements in

Digital Forensics and Cybersecurity • Reviews detailed applications of Digital Forensics for real-life problems • Addresses the challenges related to implementation of Digital Forensics and Anti-Forensic approaches • Includes case studies that will be helpful for researchers • Offers both quantitative and qualitative research articles, conceptual papers, review papers, etc. • Identifies the future scope of research in the field of Digital Forensics and Cybersecurity. This book is aimed primarily at and will be beneficial to graduates, postgraduates, and researchers in Digital Forensics and Cybersecurity.

Advances in Digital Forensics XVII CRC Press Digital forensics has been a discipline of Information Security for decades now. Its principles, methodologies, and techniques have remained consistent despite the evolution of technology, and, ultimately, it and can be applied to any form of digital data. However, within a corporate environment, digital forensic professionals are particularly challenged. They must maintain the legal admissibility and forensic viability of digital evidence in support of a broad range of different business functions that include incident response, electronic discovery (ediscovery), and ensuring the controls and accountability of such information across networks. Digital Forensics and Investigations: People, Process, and Technologies

to Defend the Enterprise provides the methodologies and strategies necessary for these key business functions to seamlessly integrate digital forensic capabilities to guarantee the admissibility and integrity of digital evidence. In many books, the focus on digital evidence is primarily in the technical, software, and investigative elements, of which there are numerous publications. What tends to get overlooked are the people and process elements within the organization. Taking a step back, the book outlines the importance of integrating and accounting for the people, process, and technology components of digital forensics. In essence, to establish a holistic paradigm—and best-practice procedure and policy approach—to defending the enterprise. This book serves as a roadmap for professionals to successfully integrate an organization's people, process, and technology with other key business functions in an enterprise's digital forensic capabilities.

2020 13th International Conference on Systematic Approaches to Digital Forensic Engineering (SADFE) Elsevier

Annotation A comprehensive and broad introduction to computer and intrusion forensics, covering the areas of law enforcement, national security and corporate fraud, this practical book helps professionals understand case studies from around the world, and treats key emerging

areas such as identification, authorship categorization, and stegoforensics, image machine learning.

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