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Contemporary Digital Forensic Investigations of Cloud and Mobile Applications

Kim-Kwang Raymond Choo
2016-10-12 Contemporary Digital Forensic Investigations of Cloud and Mobile Applications comprehensively discusses the implications of cloud (storage) services and mobile applications on digital forensic investigations. The book provides both digital forensic practitioners and researchers with an up-to-date and advanced knowledge of collecting and preserving electronic evidence from different types of cloud services, such as digital remnants of cloud applications accessed through mobile devices. This is the first book that covers the investigation of a wide range of cloud services. Dr. Kim-Kwang Raymond Choo and Dr. Ali Dehghantanha are leading researchers in cloud and mobile security and forensics, having organized research, led research, and been published widely in the field. Users will gain a deep overview of seminal research in the field while also identifying prospective future research topics and open challenges. Presents the most current, leading edge research on cloud and mobile application forensics, featuring a panel of top experts in the field Introduces the first book to provide an in-depth overview of the issues surrounding digital forensic investigations in cloud and associated mobile apps Covers key technical topics and provides readers with a complete understanding of the most current research findings Includes discussions on future research directions and challenges

Essential Mathematics and Statistics for Forensic Science Craig Adam 2011-09-20 This

text is an accessible, student-friendly introduction to the wide range of mathematical and statistical tools needed by the forensic scientist in the analysis, interpretation and presentation of experimental measurements. From a basis of high school mathematics, the book develops essential quantitative analysis techniques within the context of a broad range of forensic applications. This clearly structured text focuses on developing core mathematical skills together with an understanding of the calculations associated with the analysis of experimental work, including an emphasis on the use of graphs and the evaluation of uncertainties. Through a broad study of probability and statistics, the reader is led ultimately to the use of Bayesian approaches to the evaluation of evidence within the court. In every section, forensic applications such as ballistics trajectories, post-mortem cooling, aspects of forensic pharmacokinetics, the matching of glass evidence, the formation of bloodstains and the interpretation of DNA profiles are discussed and examples of calculations are worked through. In every chapter there are numerous self-assessment problems to aid student learning. Its broad scope and forensically focused coverage make this book an essential text for students embarking on any degree course in forensic science or forensic analysis, as well as an invaluable reference for post-graduate students and forensic professionals. Key features: Offers a unique mix of mathematics and statistics topics, specifically tailored to a forensic science undergraduate degree. All topics illustrated with examples from the forensic science discipline. Written in an accessible, student-friendly way to

engage interest and enhance learning and confidence. Assumes only a basic high-school level prior mathematical knowledge.

Crime Scene Investigation National Institute of Justice (U.S.). Technical Working Group on Crime Scene Investigation 2000 This is a guide to recommended practices for crime scene investigation. The guide is presented in five major sections, with sub-sections as noted: (1) Arriving at the Scene: Initial Response/Prioritization of Efforts (receipt of information, safety procedures, emergency care, secure and control persons at the scene, boundaries, turn over control of the scene and brief investigator/s in charge, document actions and observations); (2) Preliminary Documentation and Evaluation of the Scene (scene assessment, "walk-through" and initial documentation); (3) Processing the Scene (team composition, contamination control, documentation and prioritize, collect, preserve, inventory, package, transport, and submit evidence); (4) Completing and Recording the Crime Scene Investigation (establish debriefing team, perform final survey, document the scene); and (5) Crime Scene Equipment (initial responding officers, investigator/evidence technician, evidence collection kits).

The Future of Forensic Science Daniel A. Martell 2019-05-13 Offers a diverse, interdisciplinary, and eye-opening view of the future direction of forensic science This one-of-a-kind book is a collection of content from the Past and Current Presidents of the American Academy of Forensic Sciences—providing readers with all of their forensic science experience, knowledge, insight, and wisdom. It envisions where forensic science will be a decade from now and the impact of these emerging advances on the law (along with our place in it), emphasizing theoretical advances, innovative leads from the laboratory, and emerging technologies. Filled with information from some of the greatest forensic minds of their generation, *The Future of Forensic Science* covers all of the eleven sections that comprise the AAFS. It discusses new directions in forensic anthropology, and looks at the future of such disciplines as criminalistics, forensic engineering science, forensic psychiatry and behavioral science, forensic toxicology, and forensic document examination. It also touches

on the current and future state of digital and multimedia sciences. Contains contributions from an eminent group of forensic science experts Presents a valuable repository of forensic science experience, knowledge, insight, and wisdom Offers an insightful interdisciplinary look at the future of forensic science and how it is changing forensic science for the better Timed to coincide with the NIST forensic science initiative and the OSAC process *The Future of Forensic Science* is a must-have book for practicing forensic science professionals, academics, and advanced undergraduate and graduate students in forensic science. This book is published as part of the AAFS series 'Forensic Science in Focus'.

Digital Forensic Evidence Examination Fred Cohen 2012-03-01 *Digital Forensic Evidence Examination* focuses on the scientific basis for analysis, interpretation, attribution, and reconstruction of digital forensic evidence in a legal context. It defines the bounds of "Information Physics" as it affects digital forensics, describes a model of the overall processes associated with the use of such evidence in legal matters, and provides the detailed basis for the science of digital forensic evidence examination. It reviews and discusses digital forensic evidence analysis, interpretation, attribution, and reconstruction and their scientific bases, discusses tools and methodologies and their limits, and reviews the state of the science and its future outlook.

PROBING INTO COLD CASES: A Guide for Investigators Ronald L. Mendell 2014-05-14 The investigative experience offers many challenges in reconstructing past events and in discovering the persons, entities, and organizations involved in a crime or a civil wrong. The discussion begins with explaining the nature of cold cases and the major problems associated with these investigations. A cold case investigation progresses from the internal (the caseOCO center), proximal (contact evidence), distal (immediate vicinity) to the limbic (the world at large) realms of information. The text stresses the importance of gathering basic identifiers about the victim, suspect, product, or object that constitutes the OC centerOCO of the case. Fifteen keys exist that act as collection points for evidence, and these keys are discussed, including the role they play in the evolution of an

investigation. The following topics are featured: identifying the differences between physical evidence, traceable evidence, and information resources; the differences between the goals in criminal cases and in civil investigations; working with the medical examiner; the importance of visiting the locus or crime scene even after a considerable period of time has elapsed; the basics of computer forensics and tips on cyberprofiling; technical assistance and how to locate expert help; tools for uncovering witnesses; locating OC hiddenOCO information archives relevant to a particular case; financial evidence; managing a case; and response when using a combination of traditional and forensic techniques, which constitutes a modern synthesis of investigative methods. Despite analytical methods, it is necessary to understand when to stop an investigation. The text covers this issue and makes recommendations regarding the writing of reports on a case. The Appendix contains a Master Checklist that provides a wealth of information and expertise. This book will be a valuable resource for police investigators, private investigators, and governmental/regulatory investigators."

Hands-On Network Forensics Nipun Jaswal 2019-03-30 Gain basic skills in network forensics and learn how to apply them effectively Key FeaturesInvestigate network threats with easePractice forensics tasks such as intrusion detection, network analysis, and scanningLearn forensics investigation at the network levelBook Description Network forensics is a subset of digital forensics that deals with network attacks and their investigation. In the era of network attacks and malware threat, it's now more important than ever to have skills to investigate network attacks and vulnerabilities. Hands-On Network Forensics starts with the core concepts within network forensics, including coding, networking, forensics tools, and methodologies for forensic investigations. You'll then explore the tools used for network forensics, followed by understanding how to apply those tools to a PCAP file and write the accompanying report. In addition to this, you will understand how statistical flow analysis, network enumeration, tunneling and encryption, and malware detection can be used to investigate your network. Towards the end of this book, you will discover

how network correlation works and how to bring all the information from different types of network devices together. By the end of this book, you will have gained hands-on experience of performing forensics analysis tasks. What you will learnDiscover and interpret encrypted trafficLearn about various protocolsUnderstand the malware language over wireGain insights into the most widely used malwareCorrelate data collected from attacksDevelop tools and custom scripts for network forensics automationWho this book is for The book targets incident responders, network engineers, analysts, forensic engineers and network administrators who want to extend their knowledge from the surface to the deep levels of understanding the science behind network protocols, critical indicators in an incident and conducting a forensic search over the wire.

DNA Technology in Forensic Science National Research Council 1992-02-01 Matching DNA samples from crime scenes and suspects is rapidly becoming a key source of evidence for use in our justice system. DNA Technology in Forensic Science offers recommendations for resolving crucial questions that are emerging as DNA typing becomes more widespread. The volume addresses key issues: Quality and reliability in DNA typing, including the introduction of new technologies, problems of standardization, and approaches to certification. DNA typing in the courtroom, including issues of population genetics, levels of understanding among judges and juries, and admissibility. Societal issues, such as privacy of DNA data, storage of samples and data, and the rights of defendants to quality testing technology. Combining this original volume with the new update--The Evaluation of Forensic DNA Evidence--provides the complete, up-to-date picture of this highly important and visible topic. This volume offers important guidance to anyone working with this emerging law enforcement tool: policymakers, specialists in criminal law, forensic scientists, geneticists, researchers, faculty, and students.

Unleashing the Art of Digital Forensics Keshav Kaushik 2022-08-11 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.

The Evaluation of Forensic DNA Evidence
National Research Council 1996-12-12
In 1992 the National Research Council issued *DNA Technology in Forensic Science*, a book that documented the state of the art in this emerging field. Recently, this volume was brought to worldwide attention in the murder trial of celebrity O. J. Simpson. *The Evaluation of Forensic DNA Evidence* reports on developments in population genetics and statistics since the original volume was published. The committee comments on statements in the original book that proved controversial or that have been misapplied in the courts. This volume offers recommendations for handling DNA samples, performing calculations, and other aspects of using DNA as a forensic tool—modifying some recommendations presented in the 1992 volume. The update addresses two major areas:

- Determination of DNA profiles. The committee considers how laboratory errors (particularly false matches) can arise, how errors might be reduced, and how to take into account the fact that the error rate can never be reduced to zero.
- Interpretation of a finding that the DNA profile of a suspect or victim matches the evidence DNA. The committee addresses controversies in population genetics, exploring the problems that arise from the mixture of groups and subgroups in the American population and how this substructure can be accounted for in calculating frequencies. This volume examines statistical issues in interpreting frequencies as probabilities,

including adjustments when a suspect is found through a database search. The committee includes a detailed discussion of what its recommendations would mean in the courtroom, with numerous case citations. By resolving several remaining issues in the evaluation of this increasingly important area of forensic evidence, this technical update will be important to forensic scientists and population geneticists—and helpful to attorneys, judges, and others who need to understand DNA and the law. Anyone working in laboratories and in the courts or anyone studying this issue should own this book.

Who to Release? Nicola Padfield 2013-03-07
This book is concerned to explore the changing role of the Parole Board across the range of its responsibilities, including the prediction of risk and deciding on the release (or continued detention) of the growing number of recalled prisoners and of those subject to indeterminate sentences. In doing so it aims to rectify the lack of attention that has been given by lawyers, academics and practitioners to back door sentencing (where the real length of a sentence is decided by those who take the decision to release) compared to front door sentencing' (decisions taken by judges or magistrates in court). Particular attention is given in this book to the important changes made to the role and working of the Parole Board as a result of the impact of the early release scheme of the Criminal Justice Act 2005, with the Parole Board now deciding in Panels concerned with determinate sentence prisoners, lifers and recalled prisoners. A wide range of significant issues, and case law, has arisen as a result of these changes, which the contributors to this book, leading authorities in the field, aim to explore.

Forensic Emergency Medicine Jonathan S. Olshaker 2007
Updated for its Second Edition, this text provides the information emergency departments need about the medicolegal aspects of treating victims of violence, motor vehicle accidents, sexual assault, child abuse, elder abuse, and intimate partner abuse. It offers detailed guidelines on interviewing and examining the victim and collecting, preserving, and documenting evidence for legal proceedings. The book includes a chapter by an attorney on expert testimony and a chapter on forensic

photography. A full-color photo insert illustrates injury patterns and key evidence. This edition provides increased coverage of motor vehicle accidents, DNA evidence, and new drugs of abuse.

The Health Effects of Cannabis and

Cannabinoids National Academies of Sciences, Engineering, and Medicine 2017-03-31 Significant changes have taken place in the policy landscape surrounding cannabis legalization, production, and use. During the past 20 years, 25 states and the District of Columbia have legalized cannabis and/or cannabidiol (a component of cannabis) for medical conditions or retail sales at the state level and 4 states have legalized both the medical and recreational use of cannabis. These landmark changes in policy have impacted cannabis use patterns and perceived levels of risk. However, despite this changing landscape, evidence regarding the short- and long-term health effects of cannabis use remains elusive. While a myriad of studies have examined cannabis use in all its various forms, often these research conclusions are not appropriately synthesized, translated for, or communicated to policy makers, health care providers, state health officials, or other stakeholders who have been charged with influencing and enacting policies, procedures, and laws related to cannabis use. Unlike other controlled substances such as alcohol or tobacco, no accepted standards for safe use or appropriate dose are available to help guide individuals as they make choices regarding the issues of if, when, where, and how to use cannabis safely and, in regard to therapeutic uses, effectively. Shifting public sentiment, conflicting and impeded scientific research, and legislative battles have fueled the debate about what, if any, harms or benefits can be attributed to the use of cannabis or its derivatives, and this lack of aggregated knowledge has broad public health implications. *The Health Effects of Cannabis and Cannabinoids* provides a comprehensive review of scientific evidence related to the health effects and potential therapeutic benefits of cannabis. This report provides a research agenda—outlining gaps in current knowledge and opportunities for providing additional insight into these issues—that summarizes and prioritizes pressing research needs.

The 13 Critical Tasks: An Inside-Out

Approach to Solving More Gun Crime Peter Gagliardi 2019-10-08 This book describes the people, processes, and technologies needed to extract actionable intelligence from the inside, and outside, of crime guns.

Policing in an Age of Reform James J. Nolan 2020-12-07 This book tackles the contentious issue of policing in an age of controversy and uncertainty. It is a timely book written by police scholars — predominantly former practitioners from Europe, Australia and North America — who draw from their own research and operational experiences to illuminate key issues relating to police reform in the present day. While acknowledging some relevance of usual proposed models, such as problem-solving, evidence-based policing and procedural justice, the contributors provide an insider look at a variety of perspectives and approaches to police reform which have emerged in recent decades. It invites university students, criminologists, social scientists, police managers, forensic scientists to question and adapt their perspectives on a broad range of topics such as community policing, hate crime, Islamic radicalisation, neighborhood dynamics, situational policing, antidiscrimination and civil society, police ethics, performance measures, and advances in forensic science, technology, intelligence and more in an accessible and comprehensive manner.

Strengthening Forensic Science in the United States

National Research Council 2009-07-29 Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. *Strengthening Forensic Science in the United States: A Path Forward* provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the

forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

Teaching Chemistry with Forensic Science

Amanda S. Harper-Leatherman 2020-09-22

Introduction to teaching chemistry with forensic science -- Chemistry and crime : investigating chemistry from a forensic science perspective -- Incorporating forensic science throughout the undergraduate analytical curriculum : from nonmajors through instrumental analysis -- Using forensic science to engage nontraditional learners -- Teaching introductory forensic chemistry using open educational and digital resources -- On utilizing forensic science to motivate students in a first-semester general chemistry laboratory -- Interdisciplinary learning communities : bridging the gap between the sciences and the humanities through forensic science -- Interdisciplinary learning activity incorporating forensic science and forensic nursing -- Drugs and DNA : forensic topics ideal for the analytical chemistry curriculum -- From DUIs to stolen treasure : using real-world sample analysis to increase engagement and critical thinking in analytical chemistry courses -- Integration of forensic themes in teaching instrumental analysis at Pace University -- Using expert witness testimony with an illicit substance analysis to increase student engagement in learning the GC/MS technique -- Generative learning strategies and prelecture assignments in a flipped forensic chemistry classroom.

Encyclopedia of Forensic Sciences Jay A. Siegel 2013

Footwear Impression Evidence William J. Bodziak 2017-11-22 Reviewed and recognized as the most authoritative source in the field, this

book describes the methods used worldwide to recover and identify footwear impressions from the scene of a crime. In this new edition, everything, including the original twelve chapters, bibliography, appendix, etc., has been clarified, updated and expanded. This edition includes updated and new information on recovery procedures and materials such as lifting, photography and casting; chemical enhancement; updated information about footwear manufacturing; footwear sizing; and known impression techniques and materials. **WHAT'S NEW IN THE SECOND EDITION:** Besides updating and expanding the twelve original chapters, *Footwear Impression Evidence: Detection, Recovery and Examination, Second Edition* adds three new chapters: one chapter on barefoot evidence, which concerns impressions made by the naked or sock-clad foot or those which remain in abandoned or discarded footwear; another new chapter on several cases in which the footwear impression evidence was of primary importance in bringing about a conviction or confession; and finally, a new chapter on the footwear impression evidence in the O.J. Simpson criminal and civil cases. [The Real Silent Witnesses](#) Wensley Clarkson 2021-11-09 Going beyond the popular TV show, this is the true story of forensic science from those who solve crimes without witnesses. How do you identify a serial killer? What are the tell-tale signs of guilt? Can we now solve the unsolvable? Since even before the first season of *Silent Witness* in 1996, forensic science has played an increasingly important role in the investigation of violent crimes. With a boom in cold-blooded cases throughout the 1980s, police began to rely on DNA evidence to help them find perpetrators and since then forensic science has taken off as a powerful tool in solving murders. Bestselling true crime author Wensley Clarkson takes us beyond the headlines to examine the real-life stories where forensics have played a crucial role. He speaks to experts who have worked on the most gruesome, most chilling and most shocking crime scenes and explains how notorious criminal cases from across the world were solved. And he shows how the silent witness is often the one who screams the loudest.

[Forensic Analysis B](#) Suresh Shetty 2016-09-07 It

is my pleasure to place before you the book "Forensic Analysis - From Death to Justice" which presents one of the major portions of the broad specialty of Forensic Science comprising mainly of Thanatology and Criminalistics. This book has been designed to incorporate a wide range of new ideas and unique works from all authors from topics like Forensic Engineering, Forensic Entomology and Crime Scene Investigation. I hope that it will be useful to practitioners of forensic medicine, experts, pathologists, law makers, investigating authorities, undergraduate and postgraduate medical school graduates of medicine.

Ending Discrimination Against People with Mental and Substance Use Disorders National Academies of Sciences, Engineering, and Medicine

2016-09-03 Estimates indicate that as many as 1 in 4 Americans will experience a mental health problem or will misuse alcohol or drugs in their lifetimes. These disorders are among the most highly stigmatized health conditions in the United States, and they remain barriers to full participation in society in areas as basic as education, housing, and employment. Improving the lives of people with mental health and substance abuse disorders has been a priority in the United States for more than 50 years. The Community Mental Health Act of 1963 is considered a major turning point in America's efforts to improve behavioral healthcare. It ushered in an era of optimism and hope and laid the groundwork for the consumer movement and new models of recovery. The consumer movement gave voice to people with mental and substance use disorders and brought their perspectives and experience into national discussions about mental health. However over the same 50-year period, positive change in American public attitudes and beliefs about mental and substance use disorders has lagged behind these advances. Stigma is a complex social phenomenon based on a relationship between an attribute and a stereotype that assigns undesirable labels, qualities, and behaviors to a person with that attribute. Labeled individuals are then socially devalued, which leads to inequality and discrimination. This report contributes to national efforts to understand and change attitudes, beliefs and behaviors that can lead to stigma and discrimination. Changing

stigma in a lasting way will require coordinated efforts, which are based on the best possible evidence, supported at the national level with multiyear funding, and planned and implemented by an effective coalition of representative stakeholders. Ending Discrimination Against People with Mental and Substance Use Disorders: The Evidence for Stigma Change explores stigma and discrimination faced by individuals with mental or substance use disorders and recommends effective strategies for reducing stigma and encouraging people to seek treatment and other supportive services. It offers a set of conclusions and recommendations about successful stigma change strategies and the research needed to inform and evaluate these efforts in the United States.

The Basics of Digital Forensics John Sammons 2014-12-09 The Basics of Digital Forensics provides a foundation for people new to the digital forensics field. This book teaches you how to conduct examinations by discussing what digital forensics is, the methodologies used, key tactical concepts, and the tools needed to perform examinations. Details on digital forensics for computers, networks, cell phones, GPS, the cloud and the Internet are discussed. Also, learn how to collect evidence, document the scene, and how deleted data can be recovered. The new Second Edition of this book provides you with completely up-to-date real-world examples and all the key technologies used in digital forensics, as well as new coverage of network intrusion response, how hard drives are organized, and electronic discovery. You'll also learn how to incorporate quality assurance into an investigation, how to prioritize evidence items to examine (triage), case processing, and what goes into making an expert witness. The Second Edition also features expanded resources and references, including online resources that keep you current, sample legal documents, and suggested further reading. Learn what Digital Forensics entails Build a toolkit and prepare an investigative plan Understand the common artifacts to look for in an exam Second Edition features all-new coverage of hard drives, triage, network intrusion response, and electronic discovery; as well as updated case studies, expert interviews, and expanded resources and references

Forensic Sciences 1999

Science and the Detective Brian H. Kaye

1996-12-16 Who killed Napoleon? Were the witches of Salem high on LSD? What do maggots on a body tell us about the time of death? In his unique, engaging style, Brian Kaye tells the story of some spectacular cases in which forensic evidence played a key role. You'll also read about the fascinating ways in which scientific evidence can be used to establish guilt or innocence in today's courtroom. The use of voice analysis, methods for developing fingerprints and for uncovering art forgeries, and the examination of bullet wounds are just a few topics considered. In a special section on fraud, the author takes you into the world of counterfeit money. There's no solving crime without science. Written for everyone interested in whodunnits, this book explains the basis of the analytical techniques available for studying evidence in offenses ranging from doping in sports to first-degree murder.

Comparative Decision-Making Analysis

Thomas R. Zentall 2013-03-21 Decisions are made by individual humans-but also by corporations, plants, robots, and computer programs. The authors of this volume help initiate a powerful new comparative dimension for our analysis and application of decision making across an enormous range of intellectual enquiry.

Report to the President Executive Office

Executive Office of the President 2016-09-15

Published and needed studies for pattern-based forensic science methods What studies have been published in the past 5 years that support the foundational aspects of each of the pattern-based forensic science methods, including (but not limited to) latent print analysis; firearms/toolmarks; shoe/tire prints; bitemark analysis; questioned documents? What studies are needed to demonstrate the reliability and validity of these methods? Have studies been conducted to establish baseline frequencies of characteristics or features used in these pattern-based matching techniques? If not, how might such studies be conducted? What publicly accessible databases exist that could support such studies? What closed databases exist? Where such databases exist, how are they controlled and curated? If studies have not been

conducted, what conclusions can and cannot be stated about the relationship between the crime scene evidence and a known suspect or tool (e.g., firearm)? How is performance testing (testing designed to determine the frequency with which individual examiners obtain correct answers) currently used in forensic laboratories? Are performance tests conducted in a blind manner? How could well-designed performance testing be used more systematically for the above pattern-based techniques to establish baseline error rates for individual examiners? What are the opportunities and challenges for developing and employing blind performance testing? What studies have been published in this area? What are the most promising new scientific techniques that are currently under development or could be developed in the next decade that would be most useful for forensic applications? Examples could include hair analysis by mass spectrometry, advances in digital forensics, and phenotypic DNA profiling. What standards of validity and reliability should new forensic methods be required to meet before they are introduced in court? Are there scientific and technology disciplines other than the traditional forensic science disciplines that could usefully contribute to and/or enhance the scientific, technical and/or societal aspects of forensic science? What mechanisms could be employed to encourage further collaboration between these disciplines and the forensic science community?

Recovery, Analysis, and Identification of Commingled Human Remains

Bradley J. Adams 2008-02-23 Commingling of human remains presents an added challenge to all phases of the forensic process. This book brings together tools from diverse sources within forensic science to offer a set of comprehensive approaches to handling commingled remains. It details the recovery of commingled remains in the field, the use of triage in the assessment of commingling, various analytical techniques for sorting and determining the number of individuals, the role of DNA in the overall process, ethical considerations, and data management. In addition, the book includes case examples that illustrate techniques found to be successful and those that proved problematic. Nuclear Forensic Analysis, Second Edition Kenton J. Moody 2014-12-10 Now in its second edition,

Nuclear Forensic Analysis provides a multidisciplinary reference for forensic scientists, analytical and nuclear chemists, and nuclear physicists in one convenient source. The authors focus particularly on the chemical, physical, and nuclear aspects associated with the production or interrogation of a radioactive sample. They consolidate fundamental principles of nuclear forensic analysis, all pertinent protocols and procedures, computer modeling development, interpretational insights, and attribution considerations. The principles and techniques detailed are then demonstrated and discussed in their applications to real-world investigations and casework conducted over the past several years. Highlights of the Second Edition include: A new section on sample analysis considerations and interpretation following a post-detonation nuclear forensic collection New case studies, including the most wide-ranging and multidisciplinary nuclear forensic investigation conducted by Lawrence Livermore National Laboratory to date Expanded treatments of radiologic dispersal devices (RDDs) and statistical analysis methodologies The material is presented with minimal mathematical formality, using consistent terminology with limited jargon, making it a reliable, accessible reference. The broad-based coverage provides important insight into the multifaceted changes facing this recently developed science.

Forensic Gait Analysis Ivan Birch 2020-07-02 Gait analysis is the systematic study of human walking, using the eye and brain of experienced observers, augmented by instrumentation for measuring body movements, body mechanics, and the activity of the muscles. Since Aristotle's work on gait analysis more than 2000 years ago, it has become an established clinical science used extensively in the healthcare and rehabilitation fields for diagnosis and treatment. Forensic Gait Analysis details the more recent, and rapidly developing, uses of gait analysis in the forensic sciences. This includes using observational gait analysis, especially based on video recordings, to assist in the process of identifying individuals. With the increase in use of CCTV and surveillance systems over the last 20 to 30 years, there has been a steady and rapid increase in the use of gait as evidence. Currently, gait analysis is widely used in the UK in criminal

investigations, with increasing awareness of its potential use in the US, Europe, and globally. The book details the history of the science, current practices, and emergent application to establish best-practice standards that conform to those of other forensic science disciplines. Engagement with the Forensic Science Regulator, the Chartered Society of Forensic Sciences in the UK, and the International Association for Identification has helped to ensure and enhance the quality assurance of forensic gait analysis. However, there remains a fundamental lack of standardized training and methodology for use in an evidentiary and investigative capacity. This book fills that void, serving as one of the first books to reflect the state of current practice and capabilities—outlining a standard of practice and expectations as to what gait analysis, and by association gait analysis experts, and corroborate. Forensic Gait Analysis will reflect the research and current forensic practices and serve as a state-of-the-art, definitive guide to the use of gait analysis in the forensic context—for both education and training purposes. It will be a welcome addition to the library of professionals in the areas of podiatry, gait analysis, forensic video analysis, law enforcement, and legal practitioners.

Genetic Witness Jay D. Aronson 2007 When DNA profiling was first introduced into the American legal system in 1987, it was heralded as a technology that would revolutionize law enforcement. Yet, this promise took ten turbulent years to be fulfilled. In Genetic Witness, Jay D. Aronson uncovers the dramatic early history of DNA profiling that has been obscured by the technique's recent success.

Technology in Forensic Science Deepak Rawtani 2020-08-28 The book "Technology in Forensic Science" provides an integrated approach by reviewing the usage of modern forensic tools as well as the methods for interpretation of the results. Starting with best practices on sample taking, the book then reviews analytical methods such as high-resolution microscopy and chromatography, biometric approaches, and advanced sensor technology as well as emerging technologies such as nanotechnology and taggant technology. It concludes with an outlook to emerging methods such as AI-based approaches to forensic investigations.

Forensic Genetics in the Governance of Crime

Helena Machado 2020-01-28 This open access book uses a critical sociological perspective to explore contemporary ways of reformulating the governance of crime through genetics. Through the lens of scientific knowledge and genetic technology, Machado and Granja offer a unique perspective on current trends in crime governance. They explore the place and role of genetics in criminal justice systems, and show how classical and contemporary social theory can help address challenges posed by social processes and interactions generated by the uses, meanings, and expectations attributed to genetics in the governance of crime. Cutting-edge methods and research techniques are also integrated to address crucial aspects of this social reality. Finally, the authors examine new challenges emerging from recent paradigm shifts within forensic genetics, moving away from the construction of evidence as presented in court to the production of intelligence guiding criminal investigations.

Autopsy of a Crime Lab Brandon L. Garrett 2021-03-23 This book exposes the dangerously imperfect forensic evidence that we rely on for criminal convictions. "That's not my fingerprint, your honor," said the defendant, after FBI experts reported a "100-percent identification." They were wrong. It is shocking how often they are. *Autopsy of a Crime Lab* is the first book to catalog the sources of error and the faulty science behind a range of well-known forensic evidence, from fingerprints and firearms to forensic algorithms. In this devastating forensic takedown, noted legal expert Brandon L. Garrett poses the questions that should be asked in courtrooms every day: Where are the studies that validate the basic premises of widely accepted techniques such as fingerprinting? How can experts testify with 100 percent certainty about a fingerprint, when there is no such thing as a 100 percent match? Where is the quality control in the laboratories and at the crime scenes? Should we so readily adopt powerful new technologies like facial recognition software and rapid DNA machines? And why have judges been so reluctant to consider the weaknesses of so many long-accepted methods? Taking us into the lives of the wrongfully convicted or nearly convicted, into crime labs rocked by scandal, and

onto the front lines of promising reform efforts driven by professionals and researchers alike, *Autopsy of a Crime Lab* illustrates the persistence and perniciousness of shaky science and its well-meaning practitioners.

Dead Center Shiya Ribowsky 2009-10-13 A city with eight million people has eight million ways to die For fifteen years, Shiya Ribowsky worked as a medicolegal investigator in New York City's medical examiner's office—the largest, most sophisticated organization of its kind in the world. Utilizing his background in medicine, he led the investigations of more than eight thousand individual deaths, becoming a key figure in some of New York's most bizarre death cases and eventually taking charge of the largest forensic investigation ever attempted: identifying the dead in the aftermath of the September 11 tragedies. Now, in this mesmerizing book, Ribowsky pulls back the curtain on the New York City's medical examiner's office, giving an enthralling, never-before-seen glimpse into death and the city. Born and raised in New York City's orthodox Jewish community, Ribowsky seems an unlikely candidate for this macabre profession. Nevertheless he has forsaken a promising career of medical work with the living, descending instead into the realm of the dead, enticed by the challenge of confronting death on a daily basis. Taking you through the vermin-infested Bowery flophouses and posh Upper East Side apartments of the city's dead, Ribowsky explores in gruesome detail the skeletons that hang in the Big Apple's closets. Combing through the autopsy room, he also exposes the grim secrets that only a scalpel and a dead body can tell and explains how forensic investigation does not merely solve crimes—it saves lives. But it is in the aftermath of September 11 that the ME's office is handed its biggest challenge: to identify as many of the fallen as possible. With poignant descriptions, Ribowsky provides a dramatic account of the office's diligent and unflappable work with the families of the victims, helping them emerge from the ashes of this tragedy while displaying the strength, grit, intelligence, and compassion that Americans expect from true New Yorkers. At once compelling and heartbreaking, *Dead Center* is a story of New York unlike any other, blending the haunting with the sublime, while painting a striking portrait of death (and life) in the city that

never sleeps.

File System Forensic Analysis Brian Carrier
2005-03-17 The Definitive Guide to File System Analysis: Key Concepts and Hands-on Techniques
Most digital evidence is stored within the computer's file system, but understanding how file systems work is one of the most technically challenging concepts for a digital investigator because there exists little documentation. Now, security expert Brian Carrier has written the definitive reference for everyone who wants to understand and be able to testify about how file system analysis is performed. Carrier begins with an overview of investigation and computer foundations and then gives an authoritative, comprehensive, and illustrated overview of contemporary volume and file systems: Crucial information for discovering hidden evidence, recovering deleted data, and validating your tools. Along the way, he describes data structures, analyzes example disk images, provides advanced investigation scenarios, and uses today's most valuable open source file system analysis tools—including tools he personally developed. Coverage includes Preserving the digital crime scene and duplicating hard disks for "dead analysis" Identifying hidden data on a disk's Host Protected Area (HPA) Reading source data: Direct versus BIOS access, dead versus live acquisition, error handling, and more Analyzing DOS, Apple, and GPT partitions; BSD disk labels; and Sun Volume Table of Contents using key concepts, data structures, and specific techniques Analyzing the contents of multiple disk volumes, such as RAID and disk spanning Analyzing FAT, NTFS, Ext2, Ext3, UFS1, and UFS2 file systems using key concepts, data structures, and specific techniques Finding evidence: File metadata, recovery of deleted files, data hiding locations, and more Using The Sleuth Kit (TSK), Autopsy Forensic Browser, and related open source tools
When it comes to file system analysis, no other book offers this much detail or expertise. Whether you're a digital forensics specialist, incident response team member, law enforcement officer, corporate security specialist, or auditor, this book will become an indispensable resource for forensic investigations, no matter what analysis tools you use.

Education and Training in Forensic Science 2004

The Global Practice of Forensic Science Douglas H. Ubelaker
2015-02-16 The Global Practice of Forensic Science presents histories, issues, patterns, and diversity in the applications of international forensic science. Written by 64 experienced and internationally recognized forensic scientists, the volume documents the practice of forensic science in 28 countries from Africa, the Americas, Asia, Australia and Europe. Each country's chapter explores factors of political history, academic linkages, the influence of individual cases, facility development, types of cases examined, integration within forensic science, recruitment, training, funding, certification, accreditation, quality control, technology, disaster preparedness, legal issues, research and future directions. Aimed at all scholars interested in international forensic science, the volume provides detail on the diverse fields within forensic science and their applications around the world.

Forensic Psychology: A Very Short Introduction David Canter
2010-06-17 Lie detection, offender profiling, jury selection, insanity in the law, predicting the risk of re-offending, the minds of serial killers and many other topics that fill news and fiction are all aspects of the rapidly developing area of scientific psychology broadly known as Forensic Psychology. *Forensic Psychology: A Very Short Introduction* discusses all the aspects of psychology that are relevant to the legal and criminal process as a whole. It includes explanations of criminal behaviour and criminality, including the role of mental disorder in crime, and discusses how forensic psychology contributes to helping investigate the crime and catching the perpetrators. It also explains how psychologists provide guidance to all those involved in civil and criminal court proceedings, including both the police and the accused, and what expert testimony can be provided by a psychologist about the offender at the trial. Finally, David Canter examines how forensic psychology is used, particularly in prisons, to help in the management, treatment and rehabilitation of offenders, once they have been convicted. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every

subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Forensic Microbiology David O. Carter

2017-03-27 Forensic Microbiology focuses on newly emerging areas of microbiology relevant to medicolegal and criminal investigations: postmortem changes, establishing cause of death, estimating postmortem interval, and trace evidence analysis. Recent developments in sequencing technology allow researchers, and potentially practitioners, to examine microbial communities at unprecedented resolution and in

multidisciplinary contexts. This detailed study of microbes facilitates the development of new forensic tools that use the structure and function of microbial communities as physical evidence. Chapters cover: Experiment design Data analysis Sample preservation The influence of microbes on results from autopsy, toxicology, and histology Decomposition ecology Trace evidence This diverse, rapidly evolving field of study has the potential to provide high quality microbial evidence which can be replicated across laboratories, providing spatial and temporal evidence which could be crucial in a broad range of investigative contexts. This book is intended as a resource for students, microbiologists, investigators, pathologists, and other forensic science professionals.