

## Crime Data Mining An Overview And Case Studies

The field of data mining is receiving significant attention in today's information-rich society, where data is available from different sources and formats, in large volumes, and no longer constitutes a bottleneck for knowledge acquisition. This rich information has paved the way for novel areas of research, particularly in the crime data analysis realm. *Data Mining Trends and Applications in Criminal Science and Investigations* presents scientific concepts and frameworks of data mining and analytics implementation and uses across various domains, such as public safety, criminal investigations, intrusion detection, crime scene analysis, and suspect modeling. Exploring the diverse ways that data is revolutionizing the field of criminal science, this publication meets the research needs of law enforcement professionals, data analysts, investigators, researchers, and graduate-level students.

This two-volume set LNCS 10904 and 10905 constitutes the refereed proceedings of the 20th International Conference on Human Interface and the Management of Information, HIMI 2018, held as part of HCI International 2018 in Las Vegas, NV, USA, in July 2018. The total of 1170 papers and 195 posters included in the 30 HCII 2018 proceedings volumes was carefully reviewed and selected from 4373 submissions. The 56 papers presented in this volume were organized in topical sections named: information visualization; multimodal interaction; information in virtual and augmented reality; information and vision; and text and data mining and analytics.

The IEEE International Conference on Intelligence and Security Informatics (ISI) and Pacific Asia Workshop on Intelligence and Security Informatics (PAISI) conference series (<http://www.isiconference.org>) have drawn significant attention in the recent years. Intelligence and Security Informatics is concerned with the study of the development and use of advanced information technologies and systems for national, international, and societal security-related applications. The ISI conference series have brought together academic researchers, law enforcement and intelligence experts, information technology consultant and practitioners to discuss their research and practice related to various ISI topics including ISI data management, data and text mining for ISI applications, terrorism informatics, deception and intent detection, terrorist and criminal social network analysis, public health and bio-security, crime analysis, cyber-infrastructure protection, transportation infrastructure security, policy studies and evaluation, information assurance, among others. In this book, we collect the work of the most active researchers in the area. Topics include data and text mining in terrorism, information sharing, social network analysis, Web-based intelligence monitoring and analysis, crime data analysis, infrastructure protection, deception and intent detection and more. **Scope and Organization** The book is organized in four major areas. The first unit focuses on the terrorism informatics and data mining. The second unit discusses the intelligence and crime analysis. The third unit covers access control, infrastructure protection, and privacy. The fourth unit presents surveillance and emergency response.

Through the rise of big data and the internet of things, terrorist organizations have been freed from geographic and logistical confines and now have more power than ever before to strike the average citizen directly at home. This, coupled with the

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inherently asymmetrical nature of cyberwarfare, which grants great advantage to the attacker, has created an unprecedented national security risk that both governments and their citizens are woefully ill-prepared to face. Examining cyber warfare and terrorism through a critical and academic perspective can lead to a better understanding of its foundations and implications. *Cyber Warfare and Terrorism: Concepts, Methodologies, Tools, and Applications* is an essential reference for the latest research on the utilization of online tools by terrorist organizations to communicate with and recruit potential extremists and examines effective countermeasures employed by law enforcement agencies to defend against such threats. Highlighting a range of topics such as cyber threats, digital intelligence, and counterterrorism, this multi-volume book is ideally designed for law enforcement, government officials, lawmakers, security analysts, IT specialists, software developers, intelligence and security practitioners, students, educators, and researchers.

This book explores cybersecurity research and development efforts, including ideas that deal with the growing challenge of how computing engineering can merge with neuroscience. The contributing authors, who are renowned leaders in this field, thoroughly examine new technologies that will automate security procedures and perform autonomous functions with decision making capabilities. To maximize reader insight into the range of professions dealing with increased cybersecurity issues, this book presents work performed by government, industry, and academic research institutions working at the frontier of cybersecurity and network sciences. *Cybersecurity Systems for Human Cognition Augmentation* is designed as a reference for practitioners or government employees working in cybersecurity. Advanced-level students or researchers focused on computer engineering or neuroscience will also find this book a useful resource.

### Publisher Description

*Data Mining Applications with R* is a great resource for researchers and professionals to understand the wide use of R, a free software environment for statistical computing and graphics, in solving different problems in industry. R is widely used in leveraging data mining techniques across many different industries, including government, finance, insurance, medicine, scientific research and more. This book presents 15 different real-world case studies illustrating various techniques in rapidly growing areas. It is an ideal companion for data mining researchers in academia and industry looking for ways to turn this versatile software into a powerful analytic tool. R code, Data and color figures for the book are provided at the [RDataMining.com](http://RDataMining.com) website. Helps data miners to learn to use R in their specific area of work and see how R can apply in different industries Presents various case studies in real-world applications, which will help readers to apply the techniques in their work Provides code examples and sample data for readers to easily learn the techniques by running the code by themselves

This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computing Sciences, Software Engineering and Systems. The book presents selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2006). All aspects of the conference were managed on-line.

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Data Mining and Predictive Analysis Intelligence Gathering and Crime Analysis Butterworth-Heinemann

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

Computational Intelligence techniques have been widely explored in various domains including forensics. Analysis in forensic encompasses the study of pattern analysis that answer the question of interest in security, medical, legal, genetic studies and etc. However, forensic analysis is usually performed through experiments in lab which is expensive both in cost and time. Therefore, this book seeks to explore the progress and advancement of computational intelligence technique in different focus areas of forensic studies. This aims to build stronger connection between computer scientists and forensic field experts. This book, Computational Intelligence in Digital Forensics: Forensic Investigation and Applications, is the first volume in the Intelligent Systems Reference Library series. The book presents original research results and innovative applications of computational intelligence in digital forensics. This edited volume contains seventeen chapters and presents the latest state-of-the-art advancement of Computational Intelligence in Digital Forensics; in both theoretical and application papers related to novel discovery in intelligent forensics. The chapters are further organized into three sections: (1) Introduction, (2) Forensic Discovery and Investigation, which discusses the computational intelligence technologies employed in Digital Forensic, and (3) Intelligent Forensic Science Applications, which encompasses the applications of computational intelligence in Digital Forensic, such as human anthropology, human biometrics, human by products, drugs, and electronic devices.

This book presents selected proceedings of ICCI-2017, discussing theories, applications and future directions in the field of computational intelligence (CI). ICCI-2017 brought together international researchers presenting innovative work on self-adaptive systems and methods. This volume covers the current state of the field and explores new, open research directions. The book serves as a guide for readers working to develop and validate real-time problems and related applications using computational intelligence. It focuses on systems that deal with raw data intelligently, generate qualitative information that improves decision-making, and behave as smart systems, making it a valuable resource for researchers and professionals alike.

This book and its companion volumes, LNCS volumes 9140, 9141 and 9142, constitute the proceedings of the 6th International

Conference on Swarm Intelligence, ICSI 2015 held in conjunction with the Second BRICS Congress on Computational Intelligence, CCI 2015, held in Beijing, China in June 2015. The 161 revised full papers presented were carefully reviewed and selected from 294 submissions. The papers are organized in 28 cohesive sections covering all major topics of swarm intelligence and computational intelligence research and development, such as novel swarm-based optimization algorithms and applications; particle swarm optimization; ant colony optimization; artificial bee colony algorithms; evolutionary and genetic algorithms; differential evolution; brain storm optimization algorithm; biogeography based optimization; cuckoo search; hybrid methods; multi-objective optimization; multi-agent systems and swarm robotics; Neural networks and fuzzy methods; data mining approaches; information security; automation control; combinatorial optimization algorithms; scheduling and path planning; machine learning; blind sources separation; swarm interaction behavior; parameters and system optimization; neural networks; evolutionary and genetic algorithms; fuzzy systems; forecasting algorithms; classification; tracking analysis; simulation; image and texture analysis; dimension reduction; system optimization; segmentation and detection system; machine translation; virtual management and disaster analysis.

The volume includes a set of selected papers extended and revised from the I2009 Pacific-Asia Conference on Knowledge Engineering and Software Engineering (KESE 2009) was held on December 19~ 20, 2009, Shenzhen, China. Volume 2 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of Knowledge Engineering and Communication Technology to disseminate their latest research results and exchange views on the future research directions of these fields. 135 high-quality papers are included in the volume. Each paper has been peer-reviewed by at least 2 program committee members and selected by the volume editor Prof. Yanwen Wu. On behalf of the this volume, we would like to express our sincere appreciation to all of authors and referees for their efforts reviewing the papers. Hoping you can find lots of profound research ideas and results on the related fields of Knowledge Engineering and Communication Technology. Reflects a decade of leading-edge research on intelligence and security informatics. Dr Chen is researcher at the Artificial Intelligence Laboratory and the NSF COPLINK Center for Homeland Security Information Technology Research. Describes real-world community situations. Targets wide-ranging audience: from researchers in computer science, information management and information science via analysts and policy makers in federal departments and national laboratories to consultants in IT hardware, communication, and software companies.

This book examines innovation in the fields of computer engineering and networking, and explores important, state-of-the-art developments in areas such as artificial intelligence, machine learning, information analysis and communication. It gathers papers presented at the 8th International Conference on Computer Engineering and Networks (CENet2018), held in Shanghai, China on August 17–19, 2018. • Explores emerging topics in computer engineering and networking, along with their applications • Discusses how to improve productivity by using the latest advanced technologies • Examines innovation in the fields of computer engineering and networking

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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.

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Investigative Data Mining for Security and Criminal Detection is the first book to outline how data mining technologies can be used to combat crime in the 21st century. It introduces security managers, law enforcement investigators, counter-intelligence agents, fraud specialists, and information security analysts to the latest data mining techniques and shows how they can be used as investigative tools. Readers will learn how to search public and private databases and networks to flag potential security threats and root out criminal activities even before they occur. The groundbreaking book reviews the latest data mining technologies including intelligent agents, link analysis, text mining, decision trees, self-organizing maps, machine learning, and neural networks. Using clear, understandable language, it explains the application of these technologies in such areas as computer and network security, fraud prevention, law enforcement, and national defense. International case studies throughout the book further illustrate how these technologies can be used to aid in crime prevention. Investigative Data Mining for Security and Criminal Detection will also serve as an indispensable resource for software developers and vendors as they design new products for the law enforcement and intelligence communities. Key Features: \* Covers cutting-edge data mining technologies available to use in evidence gathering and collection \* Includes numerous case studies, diagrams, and screen captures to illustrate real-world applications of data mining \* Easy-to-read format illustrates current and future data mining uses in preventative law enforcement, criminal profiling, counter-terrorist initiatives, and forensic science \* Introduces cutting-edge technologies in evidence gathering and collection, using clear non-technical language \* Illustrates current and future applications of data mining tools in preventative law enforcement, homeland security, and other areas of crime detection and prevention \* Shows how to construct predictive models for detecting criminal activity and for behavioral profiling of perpetrators \* Features numerous Web links, vendor resources, case studies, and screen captures illustrating the use of artificial intelligence (AI) technologies

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

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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).

This book constitutes the refereed proceedings of the International Workshop on Intelligence and Security Informatics, WISI 2006, held in Singapore in conjunction with the 10th Pacific-Asia Conference on Knowledge Discovery and Data Mining. The 32 papers presented together with the abstract of the keynote talk were carefully reviewed. The papers are organized in sections on Web and text mining for terrorism informatics, cybercrime analysis, network security, and crime data mining.

*Crime and Intelligence Analysis: An Integrated Real-Time Approach*, 2nd Edition, covers everything crime analysts and tactical analysts need to know to be successful. Providing an overview of the criminal justice system as well as the more fundamental areas of crime analysis, the book enables students and law enforcement personnel to gain a better understanding of criminal behavior, learn the basics of conducting temporal analysis of crime patterns, use spatial analysis to better understand crime, apply research methods to crime analysis, and more successfully evaluate data and information to help predict criminal offending and solve criminal cases. A new chapter provides expert advice about terrorist threats and threat assessment. Criminal justice and police academy students, as well as civilians, sworn officers, and administrators, can build the skills to be credible crime analysts who play a critical role in the daily operations of law enforcement.

The two volume set *CCIS 775 and 776* constitutes the refereed proceedings of the First International Conference on Computational Intelligence, Communications, and Business Analytics, CICBA 2017, held in Kolkata, India, in March 2017. The 90 revised full papers presented in the two volumes were carefully reviewed and selected from 276 submissions. The papers are organized in topical sections on data science and advanced data analytics; signal processing and communications; microelectronics, sensors, intelligent networks; computational forensics (privacy and security); computational intelligence in bio-computing; computational intelligence in mobile and quantum computing; intelligent data mining and data warehousing; computational intelligence.

The internet has launched the world into an era into which enormous amounts of data are generated every day through technologies with both positive and negative consequences. This often refers to big data . This book explores big data in organisations operating in the criminology and criminal justice fields. Big data entails a major disruption in the ways we think about and do things, which certainly applies to most organisations including those operating in the criminology and criminal justice fields.

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Big data is currently disrupting processes in most organisations – how different organisations collaborate with one another, how organisations develop products or services, how organisations can identify, recruit, and evaluate talent, how organisations can make better decisions based on empirical evidence rather than intuition, and how organisations can quickly implement any transformation plan, to name a few. All these processes are important to tap into, but two underlying processes are critical to establish a foundation that will permit organisations to flourish and thrive in the era of big data – creating a culture more receptive to big data and implementing a systematic data analytics-driven process within the organisation. Written in a clear and direct style, this book will appeal to students and scholars in criminology, criminal justice, sociology, and cultural studies but also to government agencies, corporate and non-corporate organisations, or virtually any other institution impacted by big data.

This book includes selected papers from the International Conference on Data Science and Intelligent Applications (ICDSIA 2020), hosted by Gandhinagar Institute of Technology (GIT), Gujarat, India, on January 24–25, 2020. The proceedings present original and high-quality contributions on theory and practice concerning emerging technologies in the areas of data science and intelligent applications. The conference provides a forum for researchers from academia and industry to present and share their ideas, views and results, while also helping them approach the challenges of technological advancements from different viewpoints. The contributions cover a broad range of topics, including: collective intelligence, intelligent systems, IoT, fuzzy systems, Bayesian networks, ant colony optimization, data privacy and security, data mining, data warehousing, big data analytics, cloud computing, natural language processing, swarm intelligence, speech processing, machine learning and deep learning, and intelligent applications and systems. Helping strengthen the links between academia and industry, the book offers a valuable resource for instructors, students, industry practitioners, engineers, managers, researchers, and scientists alike.

Data mining, an interdisciplinary field combining methods from artificial intelligence, machine learning, statistics and database systems, has grown tremendously over the last 20 years and produced core results for applications like business intelligence, spatio-temporal data analysis, bioinformatics, and stream data processing. The fifteen contributors to this volume are successful and well-known data mining scientists and professionals. Although by no means an exhaustive list, all of them have helped the field to gain the reputation and importance it enjoys today, through the many valuable contributions they have made. Mohamed Medhat Gaber has asked them (and many others) to write down their journeys through the data mining field, trying to answer the following questions: 1. What are your motives for conducting research in the data mining field? 2. Describe the milestones of your research in this field. 3. What are your notable success stories? 4. How did you learn from your failures? 5. Have you encountered unexpected results? 6. What are the current research issues and challenges in your area? 7. Describe your research tools and techniques. 8. How would you advise a young researcher to make an impact? 9. What do you predict for the next two years in your area? 10. What are your expectations in the long term? In order to maintain the informal character of their contributions, they were given

complete freedom as to how to organize their answers. This narrative presentation style provides PhD students and novices who are eager to find their way to successful research in data mining with valuable insights into career planning. In addition, everyone else interested in the history of computer science may be surprised about the stunning successes and possible failures computer science careers (still) have to offer.

This book constitutes the refereed proceedings of the 5th International Workshop on Databases in Networked Information Systems, DNIS 2007, held in Aizu-Wakamatsu, Japan in October 2007. Focusing on data semantics and infrastructure for information management and interchange, the papers are organized in topical sections on geospatial decision-making, Web data management systems, infrastructure of networked information systems, and Web query and web mining systems.

This volume brings together papers that offer conceptual analyses, highlight issues, propose solutions, and discuss practices regarding privacy and data protection. The first section of the book provides an overview of developments in data protection in different parts of the world. The second section focuses on one of the most captivating innovations of the data protection package: how to forget, and the right to be forgotten in a digital world. The third section presents studies on a recurring, and still important and much disputed, theme of the Computers, Privacy and Data Protection (CPDP) conferences : the surveillance, control and steering of individuals and groups of people and the increasing number of performing tools (data mining, profiling, convergence) to achieve those objectives. This part is illustrated by examples from the domain of law enforcement and smart surveillance. The book concludes with five chapters that advance our understanding of the changing nature of privacy (concerns) and data protection.

Intelligent data analytics for terror threat prediction is an emerging field of research at the intersection of information science and computer science, bringing with it a new era of tremendous opportunities and challenges due to plenty of easily available criminal data for further analysis. This book provides innovative insights that will help obtain interventions to undertake emerging dynamic scenarios of criminal activities. Furthermore, it presents emerging issues, challenges and management strategies in public safety and crime control development across various domains. The book will play a vital role in improvising human life to a great extent. Researchers and practitioners working in the fields of data mining, machine learning and artificial intelligence will greatly benefit from this book, which will be a good addition to the state-of-the-art approaches collected for intelligent data analytics. It will also be very beneficial for those who are new to the field and need to quickly become acquainted with the best performing methods. With this book they will be able to compare different approaches and carry forward their research in the most important areas of this field, which has a direct impact on the betterment of human life by maintaining the security of our society. No other book is currently on the market which

provides such a good collection of state-of-the-art methods for intelligent data analytics-based models for terror threat prediction, as intelligent data analytics is a newly emerging field and research in data mining and machine learning is still in the early stage of development.

Intelligent information and database systems are two closely related subfields of modern computer science which have been known for over thirty years. They focus on the integration of artificial intelligence and classic database technologies to create the class of next generation information systems. The book focuses on new trends in intelligent information and database systems and discusses topics addressed to the foundations and principles of data, information, and knowledge models, methodologies for intelligent information and database systems analysis, design, and implementation, their validation, maintenance and evolution. They cover a broad spectrum of research topics discussed both from the practical and theoretical points of view such as: intelligent information retrieval, natural language processing, semantic web, social networks, machine learning, knowledge discovery, data mining, uncertainty management and reasoning under uncertainty, intelligent optimization techniques in information systems, security in databases systems, and multimedia data analysis. Intelligent information systems and their applications in business, medicine and industry, database systems applications, and intelligent internet systems are also presented and discussed in the book. The book consists of 38 chapters based on original works presented during the 7th Asian Conference on Intelligent Information and Database Systems (ACIIDS 2015) held on 23–25 March 2015 in Bali, Indonesia. The book is divided into six parts related to Advanced Machine Learning and Data Mining, Intelligent Computational Methods in Information Systems, Semantic Web, Social Networks and Recommendation Systems, Cloud Computing and Intelligent Internet Systems, Knowledge and Language Processing, and Intelligent Information and Database Systems: Applications.

Easy to read and well-organized, CRIMINAL INVESTIGATION, 11th Edition delivers a field-based approach to modern investigative principles and practices that is strongly grounded in current research. Demonstrating techniques and practical applications, the book introduces long-standing tools, practices, and policies alongside the latest innovations in technology and science to give readers and future criminal justice professionals a broad perspective of criminal investigations today. Topics covered include D.N.A. evidence, terrorism and homeland security, the increasing standard of proof for stop vs. search/arrest vs. conviction, cybercrime, crimes against children, forensics and physical evidence, investigative photography and sketching, identity theft, white-collar crime, and ethics, among many others. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book constitutes the refereed proceedings of the International Conference on Soft Computing in Data Science,

SCDS 2016, held in Putrajaya, Malaysia, in September 2016. The 27 revised full papers presented were carefully reviewed and selected from 66 submissions. The papers are organized in topical sections on artificial neural networks; classification, clustering, visualization; fuzzy logic; information and sentiment analytics.

Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis, 2nd Edition, describes clearly and simply how crime clusters and other intelligence can be used to deploy security resources most effectively. Rather than being reactive, security agencies can anticipate and prevent crime through the appropriate application of data mining and the use of standard computer programs. Data Mining and Predictive Analysis offers a clear, practical starting point for professionals who need to use data mining in homeland security, security analysis, and operational law enforcement settings. This revised text highlights new and emerging technology, discusses the importance of analytic context for ensuring successful implementation of advanced analytics in the operational setting, and covers new analytic service delivery models that increase ease of use and access to high-end technology and analytic capabilities. The use of predictive analytics in intelligence and security analysis enables the development of meaningful, information based tactics, strategy, and policy decisions in the operational public safety and security environment. Discusses new and emerging technologies and techniques, including up-to-date information on predictive policing, a key capability in law enforcement and security Demonstrates the importance of analytic context beyond software Covers new models for effective delivery of advanced analytics to the operational environment, which have increased access to even the most powerful capabilities Includes terminology, concepts, practical application of these concepts, and examples to highlight specific techniques and approaches in crime and intelligence analysis

The current policing landscape has seen the rise in serious and organized crime across the globe. Criminals are innovating in real-time leveraging cyber, social media, enhanced surveillance to support their activities. In so doing, the criminal landscape has become transnational whereby collaborative networks have flourished thereby creating greater complexity and novel threats for the international policing community. As new threats to local, regional, national and global security are emerging, leveraging science and technology innovations has become more important. Advances in big data analytics, cyber forensics, surveillance, modeling and simulation has led to a more data driven, hypothesis generated and model informed approach. Novel science and technology innovations are presented in this edited book to provide insights and pathways that challenges the emerging and complex criminal threat landscape by supporting policing operations.

One of the few bestselling introductory criminal justice texts written by professors who actively teach the course to large numbers of undergraduates each year, INTRODUCTION TO CRIMINAL JUSTICE is uniquely attuned to the needs of today's students and instructors. Now in its fifteenth edition and known for its authoritative, solidly researched content, Siegel and Worrall's text delivers comprehensive, cutting-edge coverage of criminal justice. Extremely student friendly, the text's balanced and objective presentation is packed with provocative real-world examples and the latest developments from the field. Crisp writing, complemented by vivid illustrations, deftly guides

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readers through the intricate workings of the police, courts, and correctional systems; the concepts and processes of justice; and key policy issues. The book also includes an emphasis on today's criminal justice careers, offering insights from numerous professionals on the rewards and realities of their jobs. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book constitutes the refereed proceedings of the 9th International Conference on Advances in Brain Inspired Cognitive Systems, BICS 2018, held in Xi'an, China, in July 2018. The 83 papers presented in this volume were carefully reviewed and selected from 137 submissions. The papers were organized in topical sections named: neural computation; biologically inspired systems; image recognition: detection, tracking and classification; data analysis and natural language processing; and applications.

The field of data mining provides techniques for automated discovery of valuable information from the accumulated data of computerized operations of enterprises. This book offers a clear and comprehensive introduction to both data mining theory and practice. It is written primarily as a textbook for the students of computer science, management, computer applications, and information technology. The book ensures that the students learn the major data mining techniques even if they do not have a strong mathematical background. The techniques include data pre-processing, association rule mining, supervised classification, cluster analysis, web data mining, search engine query mining, data warehousing and OLAP. To enhance the understanding of the concepts introduced, and to show how the techniques described in the book are used in practice, each chapter is followed by one or two case studies that have been published in scholarly journals. Most case studies deal with real business problems (for example, marketing, e-commerce, CRM). Studying the case studies provides the reader with a greater insight into the data mining techniques. The book also provides many examples, review questions, multiple choice questions, chapter-end exercises and a good list of references and Web resources especially those which are easy to understand and useful for students. A number of class projects have also been included.

This book explores the concepts of data mining and data warehousing, a promising and flourishing frontier in data base systems and new data base applications and is also designed to give a broad, yet in-depth overview of the field of data mining. Data mining is a multidisciplinary field, drawing work from areas including database technology, AI, machine learning, NN, statistics, pattern recognition, knowledge based systems, knowledge acquisition, information retrieval, high performance computing and data visualization. This book is intended for a wide audience of readers who are not necessarily experts in data warehousing and data mining, but are interested in receiving a general introduction to these areas and their many practical applications. Since data mining technology has become a hot topic not only among academic students but also for decision makers, it provides valuable hidden business and scientific intelligence from a large amount of historical data. It is also written for technical managers and executives as well as for technologists interested in learning about data mining. Bachelor Thesis from the year 2017 in the subject Computer Science - Commercial Information Technology, grade: 1.3, Heilbronn University, language: English, abstract: White-collar crime is and has always been an urgent issue for the society. In recent years, white-collar crime has increased dramatically by technological advances. The studies show that companies are affected annually by corruption, balance-sheet manipulation, embezzlement, criminal insolvency and other economic crimes. The companies are usually unable to identify the damage caused by fraudulent activities. To prevent fraud, companies have the opportunity to use intelligent IT approaches. The data analyst or the investigator can use the data which is stored digitally in today's world to detect fraud. In the age of Big Data, digital information is increasing enormously. Storage is cheap today and no longer a limited medium. The estimates assume that today up to 80 percent of all operational

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information is stored in the form of unstructured text documents. This bachelor thesis examines Data Mining and Text Mining as intelligent IT approaches for fraud detection in white-collar crime. Text Mining is related to Data Mining. For a differentiation, the source of the information and the structure is important. Text Mining is mainly concerned with weak- or unstructured data, while Data Mining often relies on structured sources. At the beginning of this bachelor thesis, an insight is first given on white-collar crime. For this purpose, the three essential tasks of a fraud management are discussed. Based on the fraud triangle of Cressey it is showed which conditions need to come together so that an offender commits a fraudulent act. Following, some well-known types of white-collar crime are considered in more detail. Text Mining approach was used to demonstrate how to extract potentially useful knowledge from unstructured text. For this purpose, two self-generated e-mails were converted into structured format. Moreover, a case study will be conducted on fraud detection in credit card dataset. The dataset contains legitimate and fraudulent transactions. Based on a literature research, Data Mining techniques are selected and then applied on the dataset by using various sampling techniques and hyperparameter optimization with the goal to identify correctly predicted fraudulent transactions. The CRISP-DM reference model was used as a methodical procedure.

We compare our proposed strategy, which is called a dynamic game, with three other strategies: static rule (no data mining, no game), dynamic rule (data mining, but no game) and static game (game, but no data mining) in single and multi-crime models. The dynamic strategies that utilize data mining models for crime prediction are divided into those that assume a perfect data mining forecast (with zero error in crime prediction) and a more realistic forecast (that might have an error of about 40% in estimating crime levels). We use as performance measures the police and criminal game theory payoffs (average, lowest and highest value), the difference between the two players payoffs, the percentage of police wins (percentage of the time that the police payoff is greater or equal to the criminal payoff) and percentage of catches, which is the percentage of criminals that the police catch over the total number of criminals that commit crimes. To compute the players' payoffs and the number of catches we need police and criminals costs and rewards for each zone, the probability of being caught and the police and criminal vector of distribution of police and criminals respectively. These last vectors are decision variables, given for the different strategies, and we present a methodology to infer payoff component (costs and rewards) using real crime data. In all types of crimes and types of models, the proposed dynamic game strategy achieves better results for the police, in terms of average police payoff, percentage of police wins and percentage of criminal catches. Not unexpectedly, we observe that the more sophisticated the strategy the better the results. We also analyze how the average police payoff changes while the ratio of police reward to criminal cost is varied. A robustness analysis of the dynamic game strategy is also provided to explore how the accuracy of the data mining models affects the outcomes of the game. Here, we demonstrate that the dynamic game strategy remains better than the others strategies, even with mean absolute percentage errors in the crime prediction of up to 100%. It is intended that the proposed model can be used for scenario analysis, to explore how different costs and rewards can affect the outcomes of the game for the police and criminals, and can help to drive police decision making about resources to tackle crime.

The International Conference on "Computational Intelligence in Data Mining" (ICCIDM), after three successful versions, has reached to its fourth version with a lot of aspiration. The best selected conference papers are reviewed and compiled to form this volume. The proceedings discusses the latest solutions, scientific results and methods in solving intriguing problems in the fields of data mining, computational intelligence, big data analytics, and soft computing. The volume presents a sneak preview into the strengths and weakness of trending applications and research findings in the field of computational intelligence and data mining along with related field.

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