

# **Understanding Intrusion Detection through Visualization**

**Stefan Axelsson and David Sands**

# Understanding Intrusion Detection Through Visualization

**Fatos Xhafa, Leonard Barolli, Admir Barolli, Petraq Papajorgji**



## **Understanding Intrusion Detection Through Visualization:**

*Understanding Intrusion Detection through Visualization* Stefan Axelsson, David Sands, 2006-06-01 This monograph is the outgrowth of Stefan Axelsson's PhD Dissertation at Chalmers University in Göteborg Sweden The dissertation in turn collects a number of research efforts performed over a period of six years or so into a coherent whole It was my honor to serve as the opponent at Dr Axelsson's examination In the Swedish system it is the job of the opponent to place the candidate's work into a broader perspective demonstrating its significance and contributions to the field and then to introduce the work to the attendees at the examination This done the candidate presents the technical details of the work and the opponent critiques the work giving the candidate the opportunity to defend it This forward is adapted from the introduction that I gave at the examination and should serve to acquaint the reader not only with the work at hand but also with the field to which it applies The title of the work *Understanding Intrusion Detection Through Visualization* is particularly telling As is the case with any good piece of research we hope to gain an understanding of a problem not just a recipe or simple solution of immediate but limited utility For much of its formative period computer security concentrated on developing systems that in effect embodied a fortress model of protection

*Modeling and Processing for Next-Generation Big-Data Technologies* Fatos Xhafa, Leonard Barolli, Admir Barolli, Petraq Papajorgji, 2014-11-04 This book covers the latest advances in Big Data technologies and provides the readers with a comprehensive review of the state of the art in Big Data processing analysis analytics and other related topics It presents new models algorithms software solutions and methodologies covering the full data cycle from data gathering to their visualization and interaction and includes a set of case studies and best practices New research issues challenges and opportunities shaping the future agenda in the field of Big Data are also identified and presented throughout the book which is intended for researchers scholars advanced students software developers and practitioners working at the forefront in their field

*Multivariate Public Key Cryptosystems* Jintai Ding, Jason E. Gower, Dieter S. Schmidt, 2006-11-24 Multivariate public key cryptosystems MPKC is a fast developing new area in cryptography In the past 10 years MPKC schemes have increasingly been seen as a possible alternative to number theoretic based cryptosystems such as RSA as they are generally more efficient in terms of computational effort As quantum computers are developed MPKC will become a necessary alternative *Multivariate Public Key Cryptosystems* systematically presents the subject matter for a broad audience Information security experts in industry can use the book as a guide for understanding what is needed to implement these cryptosystems for practical applications and researchers in both computer science and mathematics will find this book a good starting point for exploring this new field It is also suitable as a textbook for advanced level students Written more from a computational perspective the authors provide the necessary mathematical theory behind MPKC students with some previous exposure to abstract algebra will be well prepared to read and understand the material

*CryptoGraphics* Debra Cook, Angelos D. Keromytis, 2006-09-10 Software that covertly monitors user actions

also known as spyware has become a first level security threat due to its ubiquity and the difficulty of detecting and removing it This is especially so for video conferencing thin client computing and Internet cafes CryptoGraphics Exploiting Graphics Cards for Security explores the potential for implementing ciphers within GPUs and describes the relevance of GPU based encryption to the security of applications involving remote displays As the processing power of GPUs increases research involving the use of GPUs for general purpose computing has arisen This work extends such research by considering the use of a GPU as a parallel processor for encrypting data The authors evaluate the operations found in symmetric and asymmetric key ciphers to determine if encryption can be programmed in existing GPUs A detailed description for a GPU based implementation of AES is provided The feasibility of GPU based encryption allows the authors to explore the use of a GPU as a trusted system component Unencrypted display data can be confined to the GPU to avoid exposing it to any malware running on the operating system

### **Business Intelligence: Concepts, Methodologies, Tools, and Applications**

Management Association, Information Resources,2015-12-29 Data analysis is an important part of modern business administration as efficient compilation of information allows managers and business leaders to make the best decisions for the financial solvency of their organizations Understanding the use of analytics reporting and data mining in everyday business environments is imperative to the success of modern businesses Business Intelligence Concepts Methodologies Tools and Applications presents a comprehensive examination of business data analytics along with case studies and practical applications for businesses in a variety of fields and corporate arenas Focusing on topics and issues such as critical success factors technology adaptation agile development approaches fuzzy logic tools and best practices in business process management this multivolume reference is of particular use to business analysts investors corporate managers and entrepreneurs in a variety of prominent industries

### **Secure Data Management in Decentralized Systems**

Ting Yu,Sushil Jajodia,2007-05-11 The field of database security has expanded greatly with the rapid development of global inter networked infrastructure Databases are no longer stand alone systems accessible only to internal users of organizations Today businesses must allow selective access from different security domains New data services emerge every day bringing complex challenges to those whose job is to protect data security The Internet and the web offer means for collecting and sharing data with unprecedented flexibility and convenience presenting threats and challenges of their own This book identifies and addresses these new challenges and more offering solid advice for practitioners and researchers in industry

### **Preserving Privacy in On-Line Analytical Processing (OLAP)**

Lingyu Wang,Sushil Jajodia,Duminda Wijesekera,2007-04-06 This book addresses the privacy issue of On Line Analytic Processing OLAP systems OLAP systems usually need to meet two conflicting goals First the sensitive data stored in underlying data warehouses must be kept secret Second analytical queries about the data must be allowed for decision support purposes The main challenge is that sensitive data can be inferred from answers to seemingly innocent aggregations of the data This volume reviews a series of methods

that can precisely answer data cube style OLAP regarding sensitive data while provably preventing adversaries from inferring data

**Innovative Approaches of Data Visualization and Visual Analytics** Huang, Mao Lin, Huang, Weidong, 2013-07-31 Due to rapid advances in hardware and software technologies network infrastructure and data have become increasingly complex requiring efforts to more effectively comprehend and analyze network topologies and information systems Innovative Approaches of Data Visualization and Visual Analytics evaluates the latest trends and developments in force based data visualization techniques addressing issues in the design development evaluation and application of algorithms and network topologies This book will assist professionals and researchers working in the fields of data analysis and information science as well as students in computer science and computer engineering in developing increasingly effective methods of knowledge creation management and preservation

*Quality Of Protection* Dieter Gollmann, Fabio MASSACCI, Artsiom Yautsiukhin, 2008-05-06 Quality of Protection Security Measurements and Metrics is an edited volume based on the Quality of Protection Workshop in Milano Italy September 2005 This volume discusses how security research can progress towards quality of protection in security comparable to quality of service in networking and software measurements and metrics in empirical software engineering Information security in the business setting has matured in the last few decades Standards such as ISO17799 the Common Criteria ISO15408 and a number of industry certifications and risk analysis methodologies have raised the bar for good security solutions from a business perspective Designed for a professional audience composed of researchers and practitioners in industry Quality of Protection Security Measurements and Metrics is also suitable for advanced level students in computer science

**Security for Wireless Sensor Networks** Donggang Liu, Peng Ning, 2007-02-15 The recent technological advances have made it possible to deploy small low power low bandwidth and multi functional wireless sensor nodes to monitor and report the conditions and events in their local environments A large collection of these sensor nodes can thus form a wireless sensor network in an ad hoc manner creating a new type of information systems Such sensor networks have recently emerged as an important means to study and interact with the physical world and have received a lot of attention due to their wide applications in military and civilian operations such as target tracking and data acquisition However in many of these applications wireless sensor networks could be deployed in hostile environments where there are malicious attacks against the network Providing security services in sensor networks however turns out to be a very challenging task First sensor nodes usually have limited resources such as storage bandwidth computation and energy It is often undesirable to implement expensive algorithms e.g frequent public key operations on sensor nodes Second sensor nodes are usually deployed unattended and built without compromise prevention in mind An attacker can easily capture and compromise a few sensor nodes without being noticed When sensor nodes are compromised the attacker can learn all the secrets stored on them and launch a variety of attacks Thus any security mechanism for sensor networks has to be resilient to compromised sensor nodes

*Transport of Water*

*versus Transport over Water* Carlos Ocampo-Martinez, Rudy R. Negenborn, 2015-06-03 This book aims at stimulating discussion between researchers working on state of the art approaches for operational control and design of transport of water on the one hand and researchers working on state of the art approaches for transport over water on the other hand The main contribution of the book as a whole is to present novel perspectives ultimately leading to the management of an envisioned unified management framework taking the recent advances from both worlds as a baseline The book is intended to be a reference for control oriented engineers who manage water systems with either or both purposes in mind transport of water transport of goods over water It highlights the possible twofold nature of water projects where water either acts as primary object of study or as a means The book is dedicated to comparing and relating to one another different strategies for operational management and control of different but strongly related systems in the framework of the water In that sense the book presents different approaches treating both the transport of water and transport over water It compares the different approaches within the same field highlighting their distinguishing features and advantages according to selected qualitative indices and demonstrates the interaction and cross relations between both fields It will also help to determine the gaps and common points for both fields towards the design of such a unifying framework which is lacking in the literature Additionally the book looks at case studies where the design of modeling control strategies of either transport of water or transport over water have been proposed discussed or simulated [Proceedings of the ... ACM Workshop on Visualization and Data Mining for Computer Security](#) ,2004 **Interactive Visualization Techniques for Computer Network Security** Soon Tee Teoh,2004 **Exploring Three-dimensional Visualization of Intrusion Detection System Alerts and Network Statistics** Adam Ronald Oline,2005 Intrusion Detection Systems IDS have been popular tools in the battle against adversaries who for whatever reason desire to break into networks compromise hosts and steal valuable information One problem with current IDS implementations however is the sheer number of alerts they can generate many of which tend to be false alarms This drawback makes effective use of such systems a challenging task In this thesis we explore three dimensional approaches to visualizing network IDS alerts and aggregated network statistics in order to provide the system administrator with a better picture of the events occurring on his or her network While some research has been done using two dimensional concepts 3D approaches have not received much attention with regard to detecting network intrusions Evaluation of our visualizations using the 1999 DARPA Intrusion Detection Evaluation data set demonstrates the potential benefit of utilizing the third dimension We show how a number of attack types in the data set including Denial of Service Probe and Remote to Local generate visual evidence of abnormal activity that a security administrator might use as motivation for further investigation Using three dimensions provides a rich environment for visualization concepts and while our initial efforts were successful there is much room for other ideas and more complex techniques for interaction and drill down We hope research will continue in this direction and provide the basis for ever more powerful tools to aid security

administrators in the fight against information technology threats     *Data Mining, Intrusion Detection, Information Assurance, and Data Networks Security ...* ,2007     The British National Bibliography Arthur James Wells,2009  
    **American Book Publishing Record** ,2005     *Applied Cryptography and Network Security* ,2003     **Proceedings of the Workshop on Intrusion Detection and Network Monitoring (ID '99) : April 9-12, 1999, Santa Clara, California**  
    USENIX Association,1999     **Graphics Interface 2014** Paul G. Kry,Andrea Bunt,2014-05-06 This book is the proceedings of the 40th annual Graphics Interface conference the oldest continuously scheduled conference in the field The book includes high quality papers on recent advances in interactive systems human computer interaction and graphics from around the world It covers the following topics shading and rendering geometric modeling and meshing image based rendering image synthesis and realism computer animation real time rendering non photorealistic rendering interaction techniques human interface devices augmented reality data and information visualization mobile computing haptic and tangible interfaces and perception

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web full title angels in america a gay fantasia on national themes part one millennium approaches part two perestroika where written new york city and san francisco literary period contemporary queer theater genre political theater or self described gay fantasia on national themes setting new york city in 1985 and 1990 as well as

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web english x 119 pages 23 cm angels in america a gay fantasia on national themes consists of two full length plays millennium approaches part 1 and perestroika part 2 in part 1 kushner tells the story of a handful of people trying to make sense of the world

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